

KAKATIYA UNIVERSITY
B.SC I YEAR SEMESTER-I - CBCS
Ability Enhancement Compulsory Course (AECC)

ENVIRONMENTAL STUDIES

(2 hrs./week)

Credits – 2

UNIT - I : Ecosystem, Biodiversity & Natural Resources

(15 hrs.)

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity , Genetic,Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu)
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation , Rain water harvesting & Watershed management.

UNIT – II: Environmental Pollution , Global Issues & Legislation

(15 hrs.)

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-
(a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

❖ **Field Study:**

(5 hours)

- Pond Ecosystem
- Forest Ecosystem

REFERENCES:

- Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
- A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana

Dr. G. SHAMITHA
Chairperson
Board of Studies
Department of Zoology & Sericulture Unit
KAKATIYA UNIVERSITY - WGL-506009 (T.S)

SEMESTER-I

2.1 Differential and Integral Calculus

DSC-1A

BS:101

Theory: 5 credits and Tutorials: 0 credits
Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The course is aimed at exposing the students to some basic notions in differential calculus.

Outcome: By the time students complete the course they realize wide ranging applications of the subject.

Unit- I

Partial Differentiation: Introduction - Functions of two variables - Neighbourhood of a point (a, b) - Continuity of a Function of two variables, Continuity at a point - Limit of a Function of two variables - Partial Derivatives - Geometrical representation of a Function of two Variables - Homogeneous Functions.

Unit- II

Theorem on Total Differentials - Composite Functions - Differentiation of Composite Functions - Implicit Functions - Equality of $f_{xy}(a, b)$ and $f_{yx}(a, b)$ - Taylor's theorem for a function of two Variables - Maxima and Minima of functions of two variables - Lagrange's Method of undetermined multipliers.

Unit- III

Curvature and Evolutes: Introduction - Definition of Curvature - Radius of Curvature - Length of Arc as a Function, Derivative of arc - Radius of Curvature - Cartesian Equations - Newtonian Method - Centre of Curvature - Chord of Curvature.

Evolutes: Evolutes and Involutes - Properties of the evolute.

Envelopes: One Parameter Family of Curves - Consider the family of straight lines - Definition - Determination of Envelope.

Unit- IV

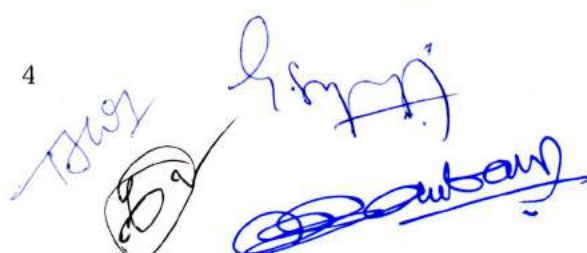
Lengths of Plane Curves: Introduction - Expression for the lengths of curves $y = f(x)$ - Expressions for the length of arcs $x = f(y)$; $x = f(t)$, $y = \varphi(t)$; $r = f(\theta)$

Volumes and Surfaces of Revolution: Introduction - Expression for the volume obtained by revolving about either axis - Expression for the volume obtained by revolving about any line - Area of the surface of the frustum of a cone - Expression for the surface of revolution - Pappus Theorems - Surface of revolution.

Text:

- Shanti Narayan, P.K. Mittal *Differential Calculus*, S.CHAND, NEW DELHI
- Shanti Narayan *Integral Calculus*, S.CHAND, NEW DELHI

References:



- William Anthony Granville, Percy F Smith and William Raymond Longley; *Elements of the differential and integral calculus*
 - Joseph Edwards , *Differential calculus for beginners*
 - Smith and Minton, *Calculus*
 - Elis Pine, *How to Enjoy Calculus*
 - Hari Kishan, *Differential Calculus*
-

Handwritten signatures in blue ink:
A. Pine
J. Edwards
W. R. Longley
H. Kishan

B.Sc I Yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER I
Paper - I
Chemistry - I

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S1- I-1. Chemical Bonding

8 h

Ionic solids- lattice and solvation energy, solubility of ionic solids, Fajan's rule, polarity and polarizability of ions. VSPER Theory - Common hybridization- sp , sp^2 , sp^3 , sp^3d , sp^3d^2 and sp^3d^3 , shapes of molecules. Molecular orbital theory: Shapes and sign convention of atomic orbitals. Modes of bonds. Criteria for orbital overlap. LCAO concept. π and σ overlapping. Concept of Types of molecular orbitals- bonding, antibonding and non bonding. MOED of homonuclear diatomics - H_2 , N_2 , O_2^- , O_2^{2-} , F_2 (unhybridized diagrams only) and heteronuclear diatomics CO , CN^- , NO , NO^+ and HF . Bond order, stability and magnetic properties.

S1-I-2. p-Block Elements 1

7 h

Group-13: Structure of diborane and higher Boranes (B_4H_{10} and B_5H_9), Boron nitrogen compounds ($B_3N_3H_6$ and BN), Lewis acid nature of BX_3 .
Group - 14: Carbides-Classification - ionic, covalent, interstitial - Structures and reactivity. Industrial applications. Silicones - Classification - straight chain, cyclic and cross-linked.
Group - 15: Nitrides - Classification - ionic, covalent and interstitial. Reactivity - hydrolysis. Reactions of hydrazine, hydroxyl amine, phosphazenes.

Unit - II (Organic Chemistry)

15h(1 hr/week)

S1-O-1: Structural Theory in Organic Chemistry

5 h

Bond polarization: Factors influencing the polarization of covalent bonds, electro negativity - inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance - Mesomeric effect, application to (a) acidity of phenol. (b) acidity of carboxylic acids and basicity of anilines. Stability of carbo cations, carbanions and free radicals. Hyper conjugation and its application to stability of carbonium ions, free radicals and alkenes.

S1-O-2: Acyclic Hydrocarbons

6 h

Alkanes- Methods of preparation: From Grignard reagent, Kolbe synthesis. Chemical reactivity - inert nature, free radical substitution, Halogenation example- reactivity, selectivity and orientation.

Alkenes - Preparation of alkenes (with mechanism) (a) by dehydration of alcohols (b) dehydrohalogenation of alkyl halides (c) by dehalogenation of 1,2 dihalides, Zaitsev's rule. Properties: Anti-addition of halogen and its mechanism. Addition of HX , Markonikov's rule, addition of H_2O , HOX , H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti - Markonikov's addition). Oxidation (cis - additions) - hydroxylation by $KMnO_4$, OsO_4 ,

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anti addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes – Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Chemical reactivity – electrophilic addition of X_2 , HX, H_2O (tautomerism), Oxidation (formation of enediol, 1,2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation).

Aromatic Hydrocarbons

4h

Introduction to aromaticity: Huckel's rule – Benzene, Naphthalene and Anthracene. Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation and halogenation, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - nitro, nitrile, carbonyl, carboxylic acid, sulphonic acid and halo groups.

Unit – III (Physical Chemistry)

15h(1 hr/week)

S1-P-1: Atomic structure and elementary quantum mechanics

3 h

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect, Limitations of classical mechanics, Compton effect, de Broglie's hypothesis. Heisenberg's uncertainty principle.

S1-P-2: Gaseous State

5 h

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO_2 . The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State and Solutions

4h

Liquid State

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Solutions

3h

Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes: HCl- H_2O and $C_2H_5OH - H_2O$ systems. Fractional distillation. Partially miscible liquids: Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems.

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Unit - IV (General Chemistry)

15h(1 hr/week)

S1-G-1. General Principles of Inorganic Qualitative Analysis

6 h

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions- CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , PO_4^{3-} , BO_3^{3-} , CH_3COO^- , NO_3^- . Interfering ions. Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+} , Ag^+ , Pb^{2+}) with flow chart and chemical equations. Principle involved in separation of group II & IV cations. General discussion for the separation and identification of group II (Hg^{2+} , Pb^{2+} , Bi^{3+} , Cd^{2+} , Sb^{3+}), III (Al^{3+} , Fe^{3+}), IV (Mn^{2+} , Zn^{2+}) individual cations with flow chart and chemical equations. General discussion for the separation and identification of group V individual cations (Ba^{2+} , Sr^{2+} , Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+} , NH_4^+).

S1-G-2. Isomerism

5h

Isomerism: Definition of isomers. Classification of isomers: Constitutional and Stereoisomers - definition and examples. Constitutional isomers: chain, functional and positional isomers. Stereoisomers: enantiomers and diastereomers - definitions and examples. Representation of stereoisomers - Wedge, Fischer projection, Sawhorse, Newmann formulae.

Conformational analysis : Classification of stereoisomers based on energy. Definition and examples Conformational and configurational isomers. Conformational analysis of ethane, n-butane, 1,2-dichloroethane, 2-chloroethanol. Cyclic compounds: Baeyer's strain theory, Conformational analysis of cyclohexane

Cis-trans isomerism: E-Z-Nomenclature

S1-G-3: Solid state Chemistry

4 h

Laws of Crystallography: (i) Law of Constancy of interfacial angles (ii) Law of Symmetry-Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Derivation of Bragg's equation. Determination of structure of NaCl, KCl and CsCl (Bragg's method and Powder method).

References

General reference: B.Sc I Year Chemistry : Semester I, Telugu Academy publication, Hyd
Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem.

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5. Inorganic Chemistry Principles of structure and reactivity by James E. Huhey, E.A. Keiter and R.L. Keiter 4th edn.
6. Chemistry of the elements by N.N. Greenwood and A. Earnshaw Pergamon Press 1989.
7. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press 1999.
9. Textbook of Inorganic Chemistry by R Gopalan.

Unit- II

1. Organic Chemistry by Morrison and Boyd.
2. Organic Chemistry by Graham Solomons.
3. Organic Chemistry by Bruice Yuranis Powla.
4. Organic Chemistry by L. G. Wade Jr.
5. Organic Chemistry by M. Jones, Jr
6. Organic Chemistry by John McMurry.
7. Organic Chemistry by Soni.
8. General Organic chemistry by Sachin Kumar Ghosh.
9. Organic Chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry by Lewis Glasstone.

Unit IV

1. Qualitative analysis by Welcher and Hahn.
2. Vogel's Qualitative Inorganic Analysis by Svehla.
3. Text Book of Organic Chemistry by Morrison And Boyd.
4. Text Book of Organic Chemistry by Graham Solomons.
5. Text Book of Organic Chemistry by Bruice Yuranis Powla.
6. Text Book of Organic Chemistry by Soni.
7. Text Book of Physical Chemistry by Soni And Dharmahara..
8. Text Book of Physical Chemistry by Puri And Sharma.
9. Text Book of Physical Chemistry by K. L. Kapoor.

Laboratory Course

45h (3 h / week)

Paper I - Qualitative Analysis - Semi micro analysis of mixtures

Analysis of two anions (one simple, one interfering) and two cations in the given mixture.

Anions: CO_3^{2-} , SO_3^{2-} , S^{2-} , Cl^- , Br^- , I^- , CH_3COO^- , NO_3^- , PO_4^{3-} , BO_3^{3-} , SO_4^{2-} . .

Cations: Hg_2^{2+} , Ag^+ , Pb^{2+}

Hg^{2+} , Pb^{2+} , Bi^{3+} , Cd^{2+} , Cu^{2+} , $As^{3+/5+}$, $Sb^{3+/5+}$, $Sn^{2+/4+}$

Al^{3+} , Cr^{3+} , Fe^{3+}

Zn^{2+} , Ni^{2+} , Co^{2+} , Mn^{2+}

Ba^{2+} , Sr^{2+} , Ca^{2+}

Mg^{2+} , NH_4^+

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**B.Sc. (Physics) Semester I-Theory Syllabus
Paper – I: Mechanics**

56 hrs

(w. e. from academic year 2019-20)
(CBCS)

Unit – I

1. Vector Analysis (14)

Scalar and vector fields, gradient of a scalar field and its physical significance. Divergence and curl of a vector field and related problems. Vector integration, line, surface and volume integrals. Stokes, Gauss and Greens theorems- simple applications.

Unit – II

2. Mechanics of Particles (07)

Laws of motion, motion of variable mass system, motion of a rocket, multi-stage rocket, conservation of energy and momentum. Collisions in two and three dimensions, concept of impact parameter, scattering cross-section.

3. Mechanics of rigid bodies (07)

Definition of Rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum and inertial tensor. Euler's equation, precession of a top, Gyroscope.

Unit – III

4. Central forces (14)


Central forces – definition and examples, conservative nature of central forces, conservative force as a negative gradient of potential energy, equation of motion under a central force, gravitational potential and gravitational field, motion under inverse square law, derivation of Kepler's laws, Coriolis force and its expressions.

Unit – IV

5. Special theory of relativity (14)

Galilean relativity, absolute frames, Michelson-Morley experiment, Postulates of special theory of relativity. Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation. Concept of four vector formalism.

NOTE: Problems should be solved at the end of every chapter of all units.


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Textbooks

1. Berkeley Physics Course. Vol.1, **Mechanics** by C. Kittel, W. Knight, M.A. Ruderman - *Tata-McGraw hill Company Edition 2008.*
2. **Fundamentals of Physics.** Halliday/Resnick/Walker *Wiley India Edition 2007.*
3. **First Year Physics - Telugu Academy.**
4. **Introduction to Physics for Scientists and Engineers.** F.J. Ruche. *McGraw Hill.*
5. **Sears and Zemansky's University Physics** by Hugh D. Young, Roger A. Freedman *Pearson Education Eleventh Edition.*
6. **Theory of relativity - Resnick**

Reference Books

1. **Fundamentals of Physics** by Alan Giambattista et al *Tata-McGraw Hill Company Edition, 2008.*
2. **University Physics** by Young and Freeman, *Pearson Education, Edition 2005.*
3. **An introduction to Mechanics** by Daniel Kleppner & Robert Kolenkow. *The McGraw Hill Companies.*
4. **Mechanics.** Hans & Puri. *TMH Publications.*


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DEPARTMENT OF PHYSICS

Question paper pattern

FIRST SEMESTER PRACTICALS

36 hrs
(3 hrs / week)

Practical Paper – I : Mechanics

1. Study of a compound pendulum determination of 'g' and 'k'.
2. Y by uniform Bending
3. Y by Non-uniform Bending.
4. Moment of Inertia of a fly wheel.
5. Measurement of errors –simple Pendulum.
6. Rigidity moduli by torsion Pendulum.
7. Determine surface tension of a liquid through capillary rise method.
8. Determination of Surface Tension of a liquid by different methods.
9. Determine of Viscosity of a fluid.
10. Calculation of slope and intercept of a $Y = mX + C$ by theoretical method

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Text and reference books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (PragatiPrakashan, Meerut).
3. "Practical Physics" R.K Shukla, AnchalSrivastava

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WARANGAL (A.P.)

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY I Year
SEMESTER – I

ANIMAL DIVERSITY – INVERTEBRATES
(Core Paper –I)

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Protozoa

- 1.1.1 General Characters and Classification of Protozoa up to Orders with examples
- 1.1.2 Type Study – *Elphidium*
- 1.1.3 Locomotion and Reproduction
- 1.1.4 Epidemiology of Protozoan diseases – Amoebiasis, Giardiasis, Leishmaniasis, Malaria

1.2 Porifera

- 1.2.1 General characters and Classification of Porifera up to Orders with examples
- 1.2.2 Type study - *Sycon*
- 1.2.3 Canal system in Sponges
- 1.2.4 Types of Cells and Spicules in Porifera.

UNIT – II

2.1 Cnidaria

- 2.1.1 General characters and Classification of Cnidaria up to classes with examples
- 2.1.2 Type study - *Obelia*
- 2.1.3 Polymorphism in Cnidarians with examples
- 2.1.4 Corals and Coral Reef formation


2.2 Helminthes


- 2.2.1 General characters and Classification of **Platyhelminthes** up to classes with examples
- 2.2.2 Type study - *Schistosoma*
- 2.2.3 General characters and Classification of **Nemathelminthes** up to classes with examples
- 2.2.4 Type study – *Dracanculus*; Parasitic Adaptations in Helminthes

UNIT– III

3.1 Annelida

- 3.1.1 General characters and Classification of Annelida up to classes with examples
- 3.1.2 Type study – *Hirudinaria granulosa*
- 3.1.3 Evolutionary significance of Coelome and Coelomoducts and Metamerism
- 3.1.4 Economic Importance of Annelida (Polychaeta, Oligochaeta and Hirudinea)


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3.2 Arthropoda

- 3.2.1 General characters; Classification of Arthropoda upto classes with examples
- 3.2.2 Type study – *Palaemon* (Prawn)
- 3.2.3 Crustacean Larvae; Insect metamorphosis; Useful and Harmful Insects
- 3.2.4 *Peripatus*- Structure and affinities

UNIT – IV

4.1 Mollusca

- 4.1.1 General characters; Classification of Mollusca upto classes with examples
- 4.1.2 Type study - *Pila* (Snail)
- 4.1.3 Pearl formation; Torsion and Detorsion in Gastropods
- 4.1.4 Molluscs as Bio-indicators, Vectors and Pests; Economic importance

4.2 Echinodermata

- 4.2.1 General characters and Classification of Echinodermata upto classes with examples
- 4.2.2 Type study- *Star Fish*
- 4.2.3 Echinoderm larvae and their evolutionary significance
- 4.2.4 Autotomy, Regeneration and Symmetry of Echinoderms

Suggested Readings:

1. L.H. Hyman 'The Invertebrates' Vol I, II and V. – M.C. Graw Hill Company Ltd.
2. Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
3. E.L. Jordan and P.S. Verma 'Invertebrate Zoology' S. Chand and Company.
4. R.D. Barnes 'Invertebrate Zoology' by: W.B. Saunders CO., 1986.
5. Barrington. E.J.W., 'Invertebrate structure and Function' by ELBS.
6. P.S. Dhami and J.K. Dhami. Invertebrate Zoology. S. Chand and Co. New Delhi.
7. Parker, T.J. and Haswell 'A text book of Zoology' by, W.A., Mac Millan Co. London.
8. Barnes, R.D. (1982). Invertebrate Zoology, V Edition"



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KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY I Year
SEMESTER – I

ANIMAL DIVERSITY - INVERTEBRATES
(PRACTICAL)

Instruction: 3 hrs per week
No. of Credits: 1

1. Study of museum slides / specimens/models (Classification of animals up to orders)

- i) **Protozoa:** *Amoeba, Paramecium, Paramecium Binary fission and Conjugation, Vorticella, Entamoeba histolytica, Plasmodium vivax*
- ii) **Porifera:** *Sycon, Spongilla, Euspongia, Sycon- T.S & L.S, Spicules, Gemmule*
- iii) **Coelenterata:** *Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula*
- iv) **Platyhelminthes:** *Planaria, Fasciola hepatica, Fasciola larval forms – Miracidium, Redia, Cercaria, Echinococcus granulosus, Taenia solium, Schistosoma haematobium*
- v) **Nemathelminthes:** *Ascaris (Male & Female), Dracunculus, Ancylostoma, Wuchereria*
- vi) **Annelida:** *Nereis, Aphrodite, Chaetopterus, Hirudinaria, Trochophore larva*
- vii) **Arthropoda:** *Cancer, Palaemon, Scorpion, Scolopendra, Sacculina, Limulus, Peripatus, Larvae - Nauplius, Mysis, Zoea, Mouth parts of male & female Anopheles and Culex, Mouthparts of Housefly and Butterfly.*
- viii) **Mollusca:** *Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus, Glochidium larva*
- ix) **Echinodermata:** *Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, Antedon, Bipinnaria larva*

2. Demonstration of dissection / dissected / virtual dissection:

Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst

3. Laboratory Record work shall be submitted at the time of practical examination

4. An "Animal album" containing photographs, cut outs, with appropriate write up about the abovementioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

5. Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals:

1. Practical Zoology- Invertebrates by S.S.Lal
2. Practical Zoology – Invertebrates by P.S.Verma
3. Practical Zoology – Invertebrates by K.P.Kurl


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**DEPARTMENT OF ENGLISH
KAKATIYA UNIVERSITY
SYLLABUS FOR I YEAR (I SEMESTER) GENERAL ENGLISH
AT UNDERGRADUATE LEVEL**

w.e.f (under CBCS from 2019-2020)

Text Book Entitled - *English for Advancement* -for I Year 4 Credits
Published by *Orient BlackSwan* (Sem I & II)

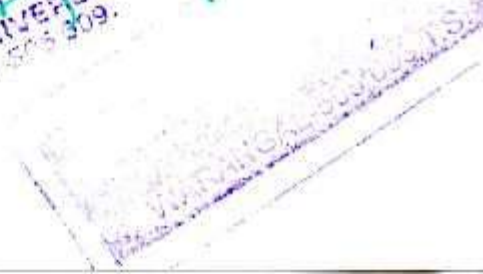
UNIT ONE (SHORT FICTION)	TEXT	AN ASTROLOGER'S DAY by R.K.NARAYAN
	GRAMMAR	NOUNS AND PRONOUNS
	VOCABULARY	WORD ROOTS
	READING COMPREHENSION	HAZARDS OF FOOD COLOURING
	PRONUNCIATION	CONSONANTAL SOUNDS
	LANGUAGE SKILLS	TYPES OF LISTENING
	SOFT SKILLS	MOTIVATION AND GOAL-SETTING
UNIT TWO (PROSE)	TEXT	OF STUDIES by FRANCIS BACON
	GRAMMAR	ADJECTIVES
	VOCABULARY	FUNNY SIDE OF ENGLISH
	READING COMPREHENSION	PLEASURES OF IGNORANCE by ROBERT LYND
	PRONUNCIATION	VOWEL SOUNDS
	LANGUAGE SKILLS	CONVERSATION SKILLS
	SOFT SKILLS	TIME MANAGEMENT
UNIT THREE (POETRY)	TEXT	A POISON TREE by WILLIAM BLAKE
	GRAMMAR	ADVERBS
	SPELLING	COMMONLY MISSPELT WORDS

Kashy

Eng. Malla

HEAD
Department of English
KAKATIYA UNIVERSITY
WARRANGAL-505 309.

P. Nirmal



	READING COMPREHENSION	VALUES IN LIFE by RUDYARD KIPLING
	PRONUNCIATION	PHONETIC TRANSCRIPTION
	SOFT SKILLS	EMOTIONAL INTELLIGENCE & SOCIAL CONSCIOUSNESS
UNIT FOUR (DRAMA)	TEXT	THE RISING OF THE MOON by LADY GREGORY
	GRAMMAR	VERBS
	PRONUNCIATION	INTONATION
	READING COMPREHENSION	HAZRATH URS
	LANGUAGE SKILLS	SPEAKING : JAM
	VALUE ORIENTATION	SELF-DISCOVERY

Alka

Eng

Meha

HEAD
Department of English
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WARANGAL-506 009.

P. Nirmal



KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
CBCS Pattern with Effect from the Academic Year 2019-2020

Structure of Curriculum

Course Title	Hours/Week		Credits
	Theory	Practical	
Semester –I			
Programming in C	4	3	4+1=5
Semester –II			
Programming in C++	4	3	4+1 = 5
Semester –III			
Relational Data Base Management Systems	4	3	4+1 = 5
Semester –IV			
Multi Media Systems	4	3	4+1 = 5
Semester –V			
Mobile Applications	4	3	4+1 = 5
Semester –VI			
Web Technologies	4	3	4+1 = 5

AECC			
Semester -I	Hours/Week		Credits
Fundamentals of Computer	Theory		2
	2		
Semester -II			
Office Automation	Hour/Week		2
	2		
SEC			
Semester -III			
Python - I (Sec –I)	2		2
Sci Lab - I (Sec –II)	2		2
Semester -IV			
Python - II (Sec –III)	2		2
Sci Lab - II (Sec –IV)	2		2
Generic Elective (GE)			
Semester -IV			
Information Technologies	4		4
Project/Optional			
Semester -VI			
Information Security and Cyber Laws	Theory	Practical	3+1=4
	3	3	

D. Ramesh
Chairperson Board of Studies in Computer Science, KU

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
SEMESTER – I
Programming in C

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.

Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.

Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.

Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation–precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,

Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h,

Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.

Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Dynamic Memory Allocation.

Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Structures verses Unions, Enumeration Types.

Files: Introduction, Using Files in C, Working with Text Files and Binary Files, Other File Management Functions.

Textbook: Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

References:

1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How to Program
5. Byron S. Gottfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
SEMESTER – I

Programming in C Lab

Practical 3 Hours/Week 1 Credit Marks: 50

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
 - Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
 - External Vice-Voce is compulsory.
1. Write a program to find the largest two numbers using if and conditional operator.
 2. Write a program to calculate arithmetic operations of two numbers using switch.
 3. Write a program to print the reverse of a given number.
 4. Write a program to print whether the given number is a prime or not.
 5. Write a program to find largest and smallest elements in a given list of numbers
 6. Write a program to find the sum of two matrices
 7. Write a program to find the product of two matrices.
 8. Write a program to print reverse of the string
 9. Write a program to find the factorial of a Positive integer Using iteration and recursion
 10. Write a program to find the GCD of two positive integers using iteration and recursion.
 11. Write a program to demonstrate the call by value and the call by reference concepts.
 12. Write a program to illustrate the use of Enumeration data type.
 13. Write a program to illustrate the use of structure concept.
 14. Write a program to illustrate the use of union concept.
 15. Write a program to write content into a file and display contents of a file
 16. Write a program to copy content of one file into another file and display the content of new file.

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
SEMESTER – II
Programming in C++

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Unit – II

Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading.

Unit – III

Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception.

Templates: Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance.

Textbook: Tony Gaddis, Starting out with C++: from control structures through objects (7e)

References:

1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++
4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++TEXT BOOK:

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
SEMESTER – II

Programming in C++ Lab

Practical 3 Hours/Week 1 Credit Marks: 50

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
 - Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
 - External Vice-Voce is compulsory.
1. Write a program to print the sum of digits of a given number
 2. Write a program to check whether the given number is Armstrong or not
 3. Write a program to check whether the given string is Palindrome or not
 4. Write a program to read student name, roll no, marks and display the same using class and object
 5. Write a program to find area of a rectangle, circle, and square using class and object
 6. Write a program to implement inline function inside and outside of a class for
 - a. Finding the area of a square
 - b. Finding the area of a cube
 7. Write a program to implement friend function and friend class
 8. Write a program to implement constructor and destructor with in a class
 9. Write a program to demonstrate hierarchical inheritance.
 10. Write a program to demonstrate multiple inheritances.
 11. Write a program to demonstrate the constructor overloading.
 12. Write a program to demonstrate static polymorphism
 13. Write a program to demonstrate dynamic polymorphism.
 14. Write a program to implement polymorphism using pure virtual functions
 15. Write a program to demonstrate the function templates and class templates
 16. Write a program to demonstrate exception handling using try, catch and finally.

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)

Model Question Paper

3 Hours

Max Marks -80 Credits -4

PART -A **Answer any eight questions in part –A 8X4 M = 32 Marks**

UNIT- I 1
 2
 3

UNIT- II 4
 5
 6

UNIT- III 7
 8
 9

UNIT- IV 10
 11
 12

Part – B **Answer all Questions 12MX4 = 48 Marks**

UNIT- I 13
 Or
 14

UNIT- II 15
 Or
 16

UNIT- III 17
 Or
 18

UNIT- IV 19
 Or
 20

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)

Practical Question Paper

3 Hours

Max Marks -50

Credits -1

Answer any Two

15MX2 = 30 MARKS

UNIT – I 1 Program

UNIT- II 1 Program

UNIT-III 1 Program

UNIT -IV 1 Program

Viva - 10 Marks

Record – 10 Marks

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)
CBCS Pattern with Effect from the Academic Year 2019-2020

Structure of Curriculum

Course Title	Hours/Week		Credits
	Theory	Practical	
Semester –I			
Programming in C	4	3	4+1 = 5
Semester –II			
Programming in C++	4	3	4+1 = 5
Semester –III			
Data Structures using C++	4	3	4+1 = 5
Semester –IV			
Data Base Management Systems (DBMS)	4	3	4+1 = 5
Semester –V			
Programme in Java	4	3	4+1 = 5
Semester –VI			
Web Technologies	4	3	4+1 = 5

AECC			
Semester -I	Hours/Week		Credits
	Theory		
Fundamentals of Computer	2		2
Semester -II			
Hour/Week			
Office Automation	2		2
SEC			
Semester -III			
Python –I (Sec –I)	2		2
Operating Systems (Sec –II)	2		2
Semester -IV			
Python –II (Sec –III)	2		2
Operating Systems (Sec –IV)	2		2
Generic Elective (GE)			
Semester -IV			
Information Technologies	4		4
Project/Optional			
Semester -VI			
PHP with MY SQL	Theory 3	Practical 3	3+1=4



D. Ramesh

Chairperson Board of Studies in Computer Science, KU

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)
SEMESTER – I
Programming in C

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.

Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.

Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.

Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation–precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,

Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.

Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.

Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures verses Unions, Enumeration Types.

Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

Textbook: Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

References:

1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How to Program
5. Byron S. Gottfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)
SEMESTER – I

Programming in C Lab

Practical

3 Hours/Week

1 Credit Marks: 50

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
- Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
- External Vice-Voce is compulsory.

1. Write a program to find the largest two (three) numbers using if and conditional operator.
2. Write a program to print the reverse of a given number.
3. Write a program to print the prime number from 2 to n where n is given by user.
4. Write a program to find the roots of a quadratic equation using switch statement.
5. Write a program to print a triangle of stars as follows (take number of lines from user):

```
*
 * * *
* * * * *
* * * * * * *
```

6. Write a program to find largest and smallest elements in a given list of numbers.
7. Write a program to find the product of two matrices.
8. Write a program to find the GCD of two numbers using iteration and recursion.
9. Write a program to illustrate the use of storage classes.
10. Write a program to demonstrate the call by value and the call by reference concepts.
11. Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
12. Write a program to illustrate use of data type enum.
13. Write a program to demonstrate use of string functions string.h header file.
14. Write a program that opens a file and counts the number of characters in a file.
15. Write a program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
16. Write a program that opens an existing text file and copies it to a new text file with all lowercase letters changed to capital letters and all other characters unchanged.

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)
SEMESTER – II
Programming in C++

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Unit – II

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading, Object Conversion, Aggregation.

Unit – III

Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Class Hierarchies, Polymorphism-Function Overloading, Function Overriding and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception.

Templates: Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance, , Introduction to the STL.

Textbook: Tony Gaddis, Starting out with C++: from control structures through objects (7e)

References:

1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++
4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++TEXT BOOK:
7. Object Oriented Programming with C++ Sixth edition, E.Balaguruswamy.
8. A Structured Approach Using C++ By B.A.Forouzan & Rf Gilberg (Thomson Business Information India)
9. Herbert Schilbt, C++ - The Complete Reference, TMH 2002
10. J.P. Cohoon and J.W. Davidson, C++ program design – An Introduction To Programming and Object Oriented Design.- MGH 1999.

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)
SEMESTER – II
Programming in C++ Lab

Practical 3 Hours/Week 1 Credit Marks: 50

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
 - Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
 - External Vice-Voce is compulsory.
1. Write a program to.
 - a. Print the sum of digits of a given number.
 - b. Check whether the given number is Armstrong or not
 - c. Print the prime number from 2 to n where n is natural number given.
 2. Write a program to find largest and smallest elements in a given list of numbers and sort the given list.
 3. Write a program to read the student name, roll no, marks and display the same using class and object.
 4. Write a program to implement the dynamic memory allocation and de-allocation using new and delete operators using class and object.
 5. Write a program to find area of a rectangle, circle, and square using constructors.
 6. Write a program to implement copy constructor.
 7. Write a program using friend functions and friend class.
 8. Write a program to implement constructors
 - a. Default Constructor, Parameterized Constructor, Copy Constructor
 - b. Define the constructor inside/outside of the class
 - c. Implement all three constructors within a single class as well as use multiple classes(individual classes)
 9. Write a program to implement the following concepts using class and object
 - a. Function overloading
 - b. Operator overloading (unary/binary(+ and -))
 10. Write a program to demonstrate single inheritance, multilevel inheritance and multiple inheritances.
 11. Write a program to implement the overloaded constructors in inheritance.
 12. Write a program to implement the polymorphism and the following concepts using class and object.
 - a. Virtual functions
 - b. Pure virtual functions
 13. Write a program to implement the virtual concepts for following concepts
 - a. Constructor (not applied)
 - b. Destructor (applied)
 14. Write a program to demonstrate static polymorphism using method overloading.
 15. Write a program to demonstrate dynamic polymorphism using method overriding and dynamic method dispatch.
 16. Write a program to implement the template (generic) concepts
 - a. Without template class and object
 - b. With template class and object

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)

Model Question Paper

3 Hours

Max Marks -80 Credits -4

PART -A **Answer any eight questions in part –A 8X4 M = 32 Marks**

UNIT- I 1
 2
 3

UNIT- II 4
 5
 6

UNIT- III 7
 8
 9

UNIT- IV 10
 11
 12

Part – B **Answer all Questions 12MX4 = 48 Marks**

UNIT- I 13
 Or
 14

UNIT- II 15
 Or
 16

UNIT- III 17
 Or
 18

UNIT- IV 19
 Or
 20

KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Science)

Practical Question Paper

3 Hours

Max Marks -50

Credits -1

Answer any Two

15MX2 = 30 MARKS

UNIT – I	1 Program
UNIT- II	1 Program
UNIT-III	1 Program
UNIT -IV	1 Program

Viva - 10 Marks

Record – 10 Marks

B.Sc., BOTANY
First Year, I -Semester
Paper-I
Microbial Diversity and Lower Plants

DSC - 1A (4 hrs./week)

Credits- 4

Theory Syllabus

(60 hours)

UNIT - I

(15 hours)

- 1) **Bacteria:** Structure, nutrition, reproduction and economic importance. Brief account of Archaeobacteria, Actinomycetes and Mycoplasma with reference to little leaf of Brinjal and Papaya leaf curl
- 2) **Viruses:** Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro.
- 3) An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice.

UNIT-II

(15 hours)

- 1) General characters, structure, reproduction and classification of algae (Fritsch)
- 2) **Cyanobacteria:** General characters, cell structure their significance as biofertilizers with special reference to Oscillatoria, Nostoc and Anabaena.
- 3) Structure and reproduction of the following:
Chlorophyceae- Volvox, Oedogonium and Chara.
Phaeophyceae- Ectocarpus
Rhodophyceae- Polysiphonia.

UNIT-III

(15 hours)

- 1) General characters and classification of fungi (Ainsworth).
- 2) Structure and reproduction of the following:
(a) Mastigomycotina- Albugo
(b) Zygomycotina- Mucor
(c) Ascomycotina- Saccharomyces and Penicillium.
(d) Basidiomycotina- Puccinia
(e) Deuteromycotina- Cercospora.
- 3) Economic importance of lichens

UNIT-IV

(15 hours)

- 1) **Bryophytes:** Structure, reproduction, life cycle and systematic position of Marchantia, Anthoceros and Polytrichum, Evolution of Sporophyte in Bryophytes.
- 2) **Pteridophytes:** Structure, reproduction, life cycle and systematic position of Rhynia, Lycopodium, Equisetum and Marsilea.
- 3) Stelar evolution, heterospory and seed habit in Pteridophytes.

--:oOo:--

Shelva *Abhishek* *Almita* *B.S.* *RPD*
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References:

- 1) Alexopolous, J. and W. M. Charles. 1988. *Introduction to Mycology*. Wiley Eastern, New Delhi.
- 2) Mckane, L. and K. Judy. 1996. *Microbiology – Essentials and Applications*. McGraw Hill, New York.
- 3) Pandey, B. P. 2001. *College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta*. S. Chand & Company Ltd, New Delhi.
- 4) Pandey, B. P. 2007. *Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics*. S. Chand & Company Ltd, New Delhi.
- 5) Sambamurthy, A. V. S. S. 2006. *A Textbook of Plant Pathology*. I. K. International Pvt. Ltd., New Delhi.
- 6) Sambamurthy, A. V. S. S. 2006. *A Textbook of Algae*. I. K. International Pvt. Ltd., New Delhi.
- 7) Sharma, O. P. 1992. *Textbook of Thallophyta*. McGraw Hill Publishing Co., New Delhi.
- 8) Thakur, A. K. and S. K. Bassi. 2008. *A Textbook of Botany: Diversity of Microbes and Cryptogams*. S. Chand & Company Ltd, New Delhi.
- 9) Vashishta, B. R., A. K. Sinha and V. P. Singh. 2008. *Botany for Degree Students: Algae*. S. Chand & Company Ltd, New Delhi.
- 10) Vashishta, B. R. 1990. *Botany for Degree Students: Fungi*, S. Chand & Company Ltd, New Delhi.
- 11) Dutta A.C. 2016. *Botany for Degree Students*. Oxford University Press.
- 12) Watson, E. V. 1974. *The structure and life of Bryophytes*, B. I. Publications, New Delhi.
- 13) Pandey, B. P. 2006. *College Botany, Vol. II: Pteridophyta, Gymnosperms and Palcobotany*. S. Chand & Company Ltd, New Delhi.
- 14) Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. *Botany - Pteridophyta (Vascular Cryptogams)*. . Chand & Company Ltd, New Delhi.
- 15) Pandey, B. P. 2001. *College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta*. S. Chand & Company Ltd, New Delhi.
- 16) Pandey, B. P. 2007. *Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics*. S. Chand & Company Ltd, New Delhi.
- 17) Thakur, A. K. and S. K. Bassi. 2008. *A Textbook of Botany: Diversity of Microbes and Cryptogams*. S. Chand & Company Ltd, New Delhi.
- 18) Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. *Botany for Degree Students: Bryophyta*. S. Chand & Company Ltd, New Delhi.

Steno
B2
Name of
Signature
Accepted for
A. K.


1. Study of viruses and bacteria using electron micrographs (photographs).
2. Gram staining of Bacteria.
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
 - Viruses: Tobacco mosaic
 - Bacteria: Angular leaf spot of cotton and Rice tungro.
 - Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya
 - Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut.
4. Vegetative and reproductive structures of the following taxa:
 - Algae: Oscillatoria, Nostoc, Volvox, Oedogonium, Chara, Ectocarpus and Polysiphonia.
 - Fungi: Albugo, Mucor, Saccharomyces, Penicillium, Puccinia and Cercospora
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut.
6. Lichens: Different types of thalli and their external morphology
7. Examination of important microbial, fungal and algal products: Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc.
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies).
9. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Bryophytes: Marchantia, Anthoceros and Polytrichum.
10. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Pteridophytes: Lycopodium, Equisetum and Marsilea.
11. Study of Anatomical features of Lycopodium stem, Equisetum stem and Marsilea petiole & rhizome by preparing double stained permanent mounts.

Practical Model Paper

Max. Marks: 25

Time : 3 hrs

1. Identify the given components 'A' & 'B' in the algal mixture .
Describe with neat labeled diagrams & give reasons for the classifications. 2 X 2 = 4M
2. Classify the given bacterial culture 'D' using Gram – staining technique. 3M
3. Take a thin transverse section of given diseased material 'E'.
Identify & describe the symptoms caused by the pathogen. 4M
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons .
(Fungal-1, Bacteria-1 & Viral-1) 3 X 1 = 3M
5. Comment on the given slides 'I' & 'J' (Algae-1, Fungi-1) 2 X 2 = 4M
6. Identify the given specimen 'K' & slide 'L' (Bryophytes & Pteridophytes) 2 X 2 = 4M
7. Record 3M



 3 | Page

Syllabus Structure for UG Ist year Urdu (Second Language)

Prescribed text book for Semester I and II : Urdu Second Language.

Title of the book is "MUTALA-E-ADAB" Part-I & Part -II
Compiled by Department of Urdu Osmania University, Hyd.

Semester-I Urdu Prose & Poetry.

Unit-I:-

Two ghazals selected of every poet like Quli Qutub Shah Wali Deccani, Siraj Aurangabadi, Meer taqi meer.

1. Quli Qutub Shah:-

- (i) Suno Aaqilan Sab ke Duniya hai Faani
- (ii) Meri Sanwli Mann ki Pyari disea

2. Wali Deccani:-

- (i) Pee ke hote na kar Tun meh ki sana
- (ii) Sajjan ke baaj aalam mein dagar nain

3. Siraj Aurangabadi:-

- (i) Mujhkun ek dam kharar nain hargiz
- (ii) Jo tere gham ki tamanna na kiya.

4. Meer taqi Meer:-

- (i) Koiee nahin jahan mein jo andhogein nahin
- (ii) Hamm se tuk aage zamane main huwa kya kya kuch.

Poems are as follows:

Unit-II :- (Nazmein)

- | | | |
|--------------------|----|---------------------|
| 1. Tawheed | by | Nazeer Akbar Aabadi |
| 2. Mustaqbil | by | Akbar Allahabadi |
| 3. Funoon-E-Latifa | by | Allama Iqbal |


Unit-III :- Prose (Hikayaat & Drama)

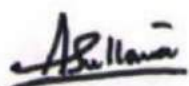
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|---------------------------|----|---------------------------------------|
| 1. Chand Muntaqab Hikayat | by | Mazhar Ali Khan |
| 2. Talaash | by | Imtiyaz Ali Taj & Begum Qudsiya Zaidi |

Unit-IV :- (Safar Naama)

- | | | |
|----------------------------|----|---------------------|
| 1. Hindustan Jannat Nishan | by | Saleha Abid Hussain |
|----------------------------|----|---------------------|

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Head & Inc. Ch. B.
Department of Urdu
Osmania University
HYDERABAD - 500 007 (TS)


HEAD
Chairman Board of Studies
Dept. of Urdu
TELANGANA UNIVERSITY
NIZAMABAD-503 322. (A.P.)


Chairman B.S.
Satev chana university
K.N.R.

Programming in C Semester -I

Theory	4 Hours/Week	4 credit
Practical	3 Hours/Week	1 credit

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation—precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements—while, for, do-while; Special Control Statement—goto, break, continue, return, exit.
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.

Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

Unit – IV


User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures verses Unions, Enumeration Types.
Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

Text Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

References BOOKS

Ivor Horton, Beginning C
Ashok Kamthane, Programming in C
Herbert Schildt, The Complete Reference C
Paul Deitel, Harvey Deitel, C How To Program
Byron S. Gottfried, Theory and Problems of Programming with C
Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C




2019
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Board of Studies
Department of Computer Science
KAKATIYA UNIVERSITY
WARRANGAL-506002 (TS)

C Lab Semester -I

Practical

3 Hours/Week

1 credit

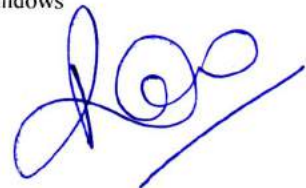
- 1 Write a program to find the largest two (three) numbers using if and conditional operator.
- 2 Write a program to print the reverse of a given number.
- 3 Write a program to print the prime number from 2 to n where n is given by user.
- 4 Write a program to find the roots of a quadratic equation using switch statement.
- 5 Write a program to print a triangle of stars as follows (take number of lines from user):

```
      *
     ***
    *****
   *****
  *****
```
- 6 Write a program to find largest and smallest elements in a given list of numbers.
- 7 Write a program to find the product of two matrices..
- 8 Write a program to find the GCD of two numbers using iteration and recursion.
- 9 Write a program to illustrate use of storage classes.
- 10 Write a program to demonstrate the call by value and the call by reference concepts.
- 11 Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
- 12 Write a program to illustrate use of data type enum.
- 13 Write a program to demonstrate use of string functions string.h header file.
- 14 Write a program that opens a file and counts the number of characters in a file.
- 15 Write a program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
- 16 Write a program that opens an existing text file and copies it to a new text file with all lowercase letters changed to capital letters and all other characters unchanged.

Note Write the Pseudo Code and draw Flow Chart for the above programs.
Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.




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C.B.C.S Pattern Syllabus from 2019-2010 onwards
B.A., B.Sc., B.Com. & B.BA
1st Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) శకుంతలోపాఖ్యానం- నన్నయ
- 2) గోదగూచి కథ - పాల్కురికి సోమనాథుడు
- 3) సంవరణుడి తపస్సు-అద్దంకి గంగాధరుడు

Unit-II ఆధునిక కవిత్వం

- 1) కాసులు-గురజాడ అప్పారావు
- 2) రాజు-కవి-డా.గుణ్ణం జాషువా
- 3) గంగిరెద్దు-డా. పల్లా దుర్గయ్య
- 4) జయభేరి-శ్రీ శ్రీ

Unit-III వచన కవిత్వం

రుద్రమదేవి (నవల) - ఒద్దిరాజు సోదరులు

Unit-IV భాషా భాగాలు-వ్యాకరణం

పర్యాయ పదాలు, నానార్థాలు, సంధులు, సమాసాలు, తెలుగు వాక్యం



Handwritten signatures and dates in green ink. The signatures are: "V. K. S.", "K. S. S.", "S. S. S.", and "S. S. S.". The date "20/1/19" is written below the first signature.

**DEPARTMENT OF ENGLISH
KAKATIYA UNIVERSITY
SYLLABUS FOR I YEAR (II SEMESTER) GENERAL ENGLISH
AT UNDERGRADUATE LEVEL
(under CBCS from 2019-2020)**

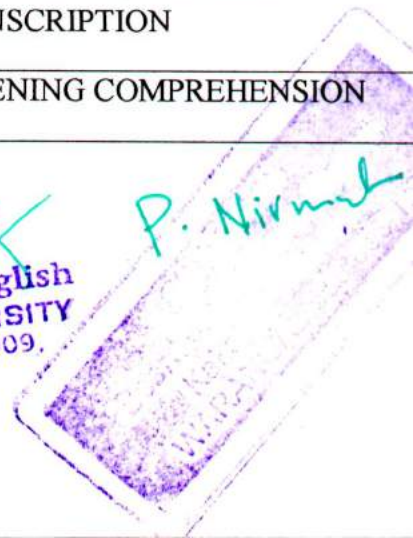
UNIT ONE (SHORT FICTION)	TEXT	WITH THE PHOTOGRAPHER by STEPHEN LEACOCK
	GRAMMAR	PREPOSITIONS
	VOCABULARY	PREFIXES AND SUFFIXES
	READING COMPREHENSION	SPORTS, POLITICS AND DEMOCRACY by ARIO BIMO UTOMO
	PRONUNCIATION	STRESS
	LANGUAGE SKILLS	INTRODUCING ONSELF IN FORMAL AND INFORMAL SITUATIONS
	SOFT SKILLS	LATERAL THINKING
UNIT TWO (PROSE)	TEXT	A TREATISE ON GOOD MANNERS AND GOOD BREEDING by JONATHAN SWIFT
	GRAMMAR	CONJUNCTIONS
	VOCABULARY	SYNONYMS
	READING COMPREHENSION	THE ECONOMIC POWER OF LANGUAGE by GABRIELLE HOGAN-BRUN
	PRONUNCIATION	STRESS AND PRACTICE IN PHONETIC TRANSCRIPTION
	LANGUAGE SKILLS	LISTENING COMPREHENSION

Kath

Eng. Mella

HEAD
Department of English
KAKATIYA UNIVERSITY
WARANGAL-506 009.

P. Nirmal



	SOFT SKILLS	ATTITUDE
UNIT THREE (POETRY)	TEXT	ODE ON SOLITUDE by ALEXANDER POPE
	GRAMMAR	KINDS OF SENTENCE
	SPELLING	PLURALS
	READING COMPREHENSION	JADAV PAYENG: THE FOREST MAN OF INDIA
	PRONUNCIATION	ASSIMILATION
	SOFT SKILLS	TEAM WORK
UNIT FOUR (DRAMA)	TEXT	A MARRIAGE PROPOSAL by ANTON CHEKOV
	GRAMMAR	COMMON MISTAKES
	PRONUNCIATION	ELISON
	READING COMPREHENSION	HOW I BECAME A PUBLIC SPEAKER? by GEORGE BERNARD SHAW
	LANGUAGE SKILLS	PRESENTATIONS
	VALUE ORIENTATION	SELF-CONFIDENCE

Ala

Eng. M. S. S.

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Department of English
KAKATIYA UNIVERSITY
WARANGAL-506 009.

P. Nirmal

KAKATIYA UNIVERSITY
B.Sc. I YEAR SEMESTER-II
Ability Enhancement Compulsory Course (AECC)
Basic Computer Skills

FUNDAMENTALS OF COMPUTERS

Unit-I:

Introduction to Computers: what is a computer, characteristics of Computers, Generations of Computers, Classifications of Computers, Basic Computer organization, Applications of Computers. Input and Output Devices: Input devices, Output devices, Softcopy devices, Hard copy devices. Computer Memory and Processors: Introduction, Memory Hierarchy, Processor, Registers, Cache memory, primary memory, secondary storage devices, magnetic tapes, floppy disks, hard disks, optical drives, USB flash drivers, Memory cards, Mass storage devices, Basic processors architecture.

Unit-II:

Number System and Computer Codes: Binary number system, working with binary numbers, octal number system, hexadecimal number system, working with fractions, signed number representation in binary form, BCD code, and other codes. Boolean algebra and logic gates: Boolean algebra, Venn diagrams, representation of Boolean functions, logic gates, logic diagrams and Boolean expressions using karnaugh map. Computer Software: Introduction to computer software, classification of computer software, system software, application software, firmware, middleware, acquiring computer software, design and implementation of correct, efficient and maintainable programs.

Text: ReemaThareja, Fundamentals of Computers.

References

1. V.Rajaraman, 6th Edition Fundamentals of Computers, NeeharikaAdabala.
2. Anita Goel, Computer Fundamentals.

B.Sc I Yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER II
Paper – II
Chemistry – II

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S2-I-1 p-block Elements -II

7 h

Oxides: Types of oxides (a) Normal- acidic, basic amphoteric and neutral (b) Mixed (c) sub oxide d) peroxide e) superoxide. Structure of oxides of C, N, P, S and Cl - reactivity, thermal stability, hydrolysis.

Oxy acids: Structure and acidic nature of oxyacids of B, C, N, P, S, Cl and I. Redox properties of oxyacids of Nitrogen: HNO_2 (reaction with FeSO_4 , KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$), HNO_3 (reaction with H_2S , Cu), HNO_4 (reaction with KBr, Aniline), $\text{H}_2\text{N}_2\text{O}_2$ (reaction with KMnO_4). Redox properties of oxyacids of Phosphorus: H_3PO_2 (reaction with HgCl_2), H_3PO_3 (reaction with AgNO_3 , CuSO_4). Redox properties of oxyacids of Sulphur: H_2SO_3 (reaction with Cu, Au), H_2SO_5 (reaction with KI, FeSO_4), $\text{H}_2\text{S}_2\text{O}_8$ (reaction with FeSO_4 , KI). Redox properties of oxy acids of Chlorine.

Interhalogens- Classification- general preparation- structures of AB, AB₃, AB₅ and AB₇ type and reactivity.

Poly halides- Definition and structure of ICl_2^- , ICl_4^- and I_3 .

Pseudohalogens: Comparison with halogens.

S2-I-2: Chemistry of Zero group elements

2 h

Isolation of noble gases, Structure, bonding and reactivity of Xenon compounds – Oxides, Halides and Oxy-halides. Clathrate compounds and Anomalous behavior of He (II)

S2-I-3: Chemistry of d-block elements

6 h

Characteristics of d-block elements with special reference to electronic configuration, variable valence, ability to form complexes, magnetic properties & catalytic properties. Stability of various oxidation states and standard reduction potentials. Comparative treatment of second and third transition series with their 3d analogues. Study of Ti, Cr and Cu triads. Titanium triad – electronic configuration and reactivity of +3 and +4 states – oxides and halides. Chromium triad – reactivity of +3 and +6 states. Copper triad – reactivity of +1, +2 and +3 states.

Unit - II (Organic Chemistry)

15h(1 hr/week)

S2-O-1: Halogen compounds

4 hrs

Classification: alkyl (primary, secondary, tertiary), aryl, aralkyl, allyl, vinyl, benzyl. Chemical reactivity - reduction, formation of RMgX , Nucleophilic substitution reactions – classification into $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$. Mechanism and energy profile diagrams of $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions. Stereochemistry of $\text{S}_{\text{N}}2$ (Walden Inversion) 2-bromobutane, $\text{S}_{\text{N}}1$ (Racemisation) 1-bromo-1-phenylpropane Structure and reactivity – Ease of hydrolysis - comparison of alkyl, vinyl, allyl, aryl, and benzyl halides.

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26/06/19

G. H. Thakur
26/06/19

R. H. Thakur
26/6/19

R. H. Thakur
26/6/19

J. H. Thakur
26/6

Unit - IV (General Chemistry)

15h(1 hr/week)

S1-G-1. General Principles of Inorganic Qualitative Analysis

6 h

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions- CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , PO_4^{3-} , BO_3^{3-} , CH_3COO^- , NO_3^- . Interfering ions. Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+} , Ag^+ , Pb^{2+}) with flow chart and chemical equations. Principle involved in separation of group II & IV cations. General discussion for the separation and identification of group II (Hg^{2+} , Pb^{2+} , Bi^{3+} , Cd^{2+} , Sb^{3+}), III (Al^{3+} , Fe^{3+}), IV (Mn^{2+} , Zn^{2+}) individual cations with flow chart and chemical equations. General discussion for the separation and identification of group V individual cations (Ba^{2+} , Sr^{2+} , Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+} , NH_4^+).

S1-G-2. Isomerism

5h

Isomerism: Definition of isomers. Classification of isomers: Constitutional and Stereoisomers - definition and examples. Constitutional isomers: chain, functional and positional isomers. Stereoisomers: enantiomers and diastereomers - definitions and examples. Representation of stereoisomers - Wedge, Fischer projection, Sawhorse, Newmann formulae.

Conformational analysis : Classification of stereoisomers based on energy. Definition and examples Conformational and configurational isomers. Conformational analysis of ethane, n-butane, 1,2-dichloroethane, 2-chloroethanol. Cyclic compounds: Baeyer's strain theory, Conformational analysis of cyclohexane

Cis-trans isomerism: E-Z-Nomenclature

S1-G-3: Solid state Chemistry

4 h

Laws of Crystallography: (i) Law of Constancy of interfacial angles (ii) Law of Symmetry-Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Derivation of Bragg's equation. Determination of structure of NaCl, KCl and CsCl (Bragg's method and Powder method).

References

General reference: B.Sc I Year Chemistry : Semester I, Telugu Academy publication, Hyd

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem.

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anti addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes – Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Chemical reactivity – electrophilic addition of X_2 , HX, H_2O (tautomerism), Oxidation (formation of enediol, 1,2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation).

Aromatic Hydrocarbons

4h

Introduction to aromaticity: Huckel's rule – Benzene, Naphthalene and Anthracene. Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation and halogenation, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - nitro, nitrile, carbonyl, carboxylic acid, sulphonic acid and halo groups.

Unit – III (Physical Chemistry)

15h(1 hr/week)

S1-P-1: Atomic structure and elementary quantum mechanics

3 h

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect, Limitations of classical mechanics, Compton effect, de Broglie's hypothesis. Heisenberg's uncertainty principle.

S1-P-2: Gaseous State

5 h

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO_2 . The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State and Solutions

4h

Liquid State

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Solutions

3h

Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes: HCl- H_2O and $C_2H_5OH - H_2O$ systems. Fractional distillation. Partially miscible liquids: Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems.

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S2-O-2: Hydroxy compounds and ethers

6 hrs

Alcohols: Preparation: 1°, 2° and 3° alcohols using Grignard reagent, Reduction of Carbonyl compounds, carboxylic acids and esters. Physical properties: H-bonding, Boiling point and Solubility. Reactions with Sodium, HX/ZnCl₂ (Lucas reagent), esterification, oxidation with PCC, alk. KMnO₄, acidic dichromates, conc. HNO₃ and Oppenauer oxidation (Mechanism).

Phenols: Preparation: (i) from diazonium salts of anilines, (ii) from benzene sulphonic acids and (iii) Cumene hydroperoxide.

Properties: Acidic nature, formation of phenoxide and reaction with R-X, electrophilic substitution; halogenations, Reimer Tiemann reaction (Mechanism), Kolbe reaction (Mechanism), Gattermann-Koch reaction, Azo-coupling reaction, Schotten-Boumann reaction, Houben-Hoesch condensation, .

Ethers : Nomenclature, preparation by (a) Williamson's synthesis (b) from alkenes by the action of conc. H₂SO₄. Physical properties – Absence of Hydrogen bonding, insoluble in water, low boiling point. Chemical properties – inert nature, action of conc. H₂SO₄ and HI.

S2-O-3 Carbonyl compounds

5h

Preparation of aldehydes & ketones from acid chloride, 1,3-dithianes, nitriles and from carboxylic acids. Special methods of preparing aromatic aldehydes and ketones by (a) Oxidation of arenes (b) Hydrolysis of benzal halides Physical properties – absence of Hydrogen bonding. Reactivity of the carbonyl groups in aldehydes and ketones. Chemical reactivity: Addition of (a) NaHSO₃ (b) HCN (c) RMgX (d) NH₃ (e) RNH₂ (f) NH₂OH (g) PhNHNH₂ (h) 2,4-DNP (Schiff bases). Addition of H₂O to form hydrate, chloral hydrate (stable), addition of alcohols - hemiacetal and acetal formation. Cannizzaro reaction. Oxidation reactions – KMnO₄ oxidation and auto oxidation, reduction – catalytic hydrogenation, mechanism of Clemmenson's reduction, Wolf-kishner reduction, Meerwein Ponnoff Verly reduction. Reduction with LAH, NaBH₄.

Unit - III (Physical Chemistry)

15h(1 hr/week)

S2-P-1: Electrochemistry

15 h

Electrical transport – conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of specific and equivalent conductance with dilution. Migration of ions and Kohlrausch's law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law - its uses and limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number, definition and determination by Hittorf's method for attackable electrodes. Applications of conductivity measurements: Determination of degree of dissociation, determination of K_a of acids, determination of solubility product of a sparingly soluble salt, conductometric titrations.

Electrolytic and Galvanic cells – reversible and irreversible cells, conventional representation of electrochemical cells. Electro motive force (EMF) of a cell and its measurement. Computation of EMF. Types of reversible electrodes- the gas electrode, metal-metal ion, metal-insoluble

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Shyhu
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M. D. S. S.
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J. G. S.
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salt and redox electrodes. Electrode reactions, Nernst equation, cell EMF and Single electrode potential, Standard Hydrogen electrode – reference electrodes (calomel electrode) – standard electrode potential, sign conventions, electrochemical series and its significance. Applications of EMF measurements. Calculation of thermodynamic quantities of cell reactions (Gibbs free energy G , Helmholtz free energy and Equilibrium constant K). Determination of pH using hydrogen electrode, glass electrode and quinhydrone electrode. Solubility product of AgCl. Potentiometric titrations.

Unit – IV (General Chemistry)

15 h (1 hr/week)

S2-G-1: Theory of Quantitative Analysis

6 hours

Volumetric Analysis: Introduction, standard solutions, indicators, end point, titration curves, Types of titrations: i) neutralization titration- principle, theory of acid base indicators, titration curves and selection of indicators- strong acid - strong base, strong acid –weak base, weak acid-strong base and weak acid –weak base. Theory of redox titrations - internal(KMnO₄) and external indicators – use of diphenylamine and ferroin indicators. Theory of complexometric titrations – use of EBT, Murexide and Fast sulphone black indicators. Role of pH in complexometric titrations. Precipitation titrations – theory of adsorption indicators.

Gravimetric analysis- Introduction, nucleation, precipitation, growth of precipitate, filtration and washing, drying and incineration of precipitate, coprecipitation and post precipitation. Determination of Ni²⁺

S2-G-2: Stereoisomerism

5h

Optical activity: Definition, wave nature of light, plane polarised light, optical rotation and specific rotation, chiral centers. Chiral molecules: definition and criteria - absence of plane, center and S_n axis of symmetry – asymmetric and dissymmetric molecules. Examples of asymmetric molecules (Glyceraldehyde, Lactic acid, Alanine) and dissymmetric molecules (trans-1,2-dichlorocyclopropane). Molecules with constitutionally symmetrical chiral carbons (Tartaric acid) Molecules with constitutionally unsymmetrical chiral carbons (2,3dibromopentane). D, L configuration – examples. R, S – configuration: Cahn-Ingold-Prelog rules, examples for asymmetric and dissymmetric molecules.

S2-G-3: Dilute Solutions & Colligative Properties

4 h

Dilute Solutions, Colligative Properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis - laws of osmotic pressure, its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point.

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References

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2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A. Cotton, G. Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001.
4. Chemistry of the elements by N.N. Greenwood and A. Earnshaw Pergamon Press 1989.
5. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press 1999.
6. Inorganic Chemistry Principles of structure and reactivity by James E. Huhey, E.A. Keiter and R.L. Keiter 4th Edn.
7. Textbook of inorganic chemistry by R Gopalan.

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6. Organic Chemistry by John McMurry.
7. Organic Chemistry by Soni.
8. General Organic chemistry by Sachin Kumar Ghosh.
9. Organic Chemistry by C N pillai

Unit III

1. Physical chemistry by P W Atkins
2. Principles of physical chemistry by Prutton and Marron.
3. Text Book of Physical Chemistry by Soni and Dharmahara.
4. Text Book of Physical Chemistry by Puri and Sharma
5. Text Book of Physical Chemistry by K. L. Kapoor
6. Physical Chemistry through problems by S.K. Dogra.
7. Elements of Physical Chemistry by Lewis and Glasstone.
8. Material science by Kakani & Kakani

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1. Vogel's Text Book of Quantitative Analysis by G.H. Jeffery, J. Bassett, J. Mendham and R.C. Denney 5th edn Addison Wesley Longman Inc. 1999.
2. Quantitative Analysis by Day and Underwood Prentice Hall (India) VI Edn..
3. Nano: The Essentials by T. Pradeep, McGraw-Hill Education.
4. Chemistry of nanomaterials: Synthesis, Properties and applications by CNR Rao et.al.
5. Nanostructured Materials and Nanotechnology, edited by Hari Singh Nalwa, Academic Press
6. Practical chemistry by V K Ahluwalia, Sunitha Dhingra and Adarsh Gulati.

Laboratory Course

45hrs (3 h / week)

Paper II- Quantitative Analysis

Acid - Base titrations

1. Estimation of Carbonate in Washing Soda.
2. Estimation of Bicarbonate in Baking Soda.
3. Estimation of Carbonate and Bicarbonate in the Mixture.

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B.Sc I Yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER II
Paper – II
Chemistry – II

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S2-I-1 p-block Elements -II

7 h

Oxides: Types of oxides (a) Normal- acidic, basic amphoteric and neutral (b) Mixed (c) sub oxide d) peroxide e) superoxide. Structure of oxides of C, N, P, S and Cl - reactivity, thermal stability, hydrolysis.

Oxy acids: Structure and acidic nature of oxyacids of B, C, N, P, S, Cl and I. Redox properties of oxyacids of Nitrogen: HNO_2 (reaction with FeSO_4 , KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$), HNO_3 (reaction with H_2S , Cu), HNO_4 (reaction with KBr, Aniline), $\text{H}_2\text{N}_2\text{O}_2$ (reaction with KMnO_4). Redox properties of oxyacids of Phosphorus: H_3PO_2 (reaction with HgCl_2), H_3PO_3 (reaction with AgNO_3 , CuSO_4). Redox properties of oxyacids of Sulphur: H_2SO_3 (reaction with Cu, Au), H_2SO_5 (reaction with KI, FeSO_4), $\text{H}_2\text{S}_2\text{O}_8$ (reaction with FeSO_4 , KI). Redox properties of oxy acids of Chlorine.

Interhalogens- Classification- general preparation- structures of AB, AB₃, AB₅ and AB₇ type and reactivity.

Poly halides- Definition and structure of ICl_2^- , ICl_4^- and I_3 .

Pseudohalogens: Comparison with halogens.

S2-I-2: Chemistry of Zero group elements

2 h

Isolation of noble gases, Structure, bonding and reactivity of Xenon compounds – Oxides, Halides and Oxy-halides. Clathrate compounds and Anomalous behavior of He (II)

S2-I-3: Chemistry of d-block elements

6 h

Characteristics of d-block elements with special reference to electronic configuration, variable valence, ability to form complexes, magnetic properties & catalytic properties. Stability of various oxidation states and standard reduction potentials. Comparative treatment of second and third transition series with their 3d analogues. Study of Ti, Cr and Cu triads. Titanium triad – electronic configuration and reactivity of +3 and +4 states – oxides and halides. Chromium triad – reactivity of +3 and +6 states. Copper triad – reactivity of +1, +2 and +3 states.

Unit - II (Organic Chemistry)

15h(1 hr/week)

S2-O-1: Halogen compounds

4 hrs

Classification: alkyl (primary, secondary, tertiary), aryl, aralkyl, allyl, vinyl, benzyl. Chemical reactivity - reduction, formation of RMgX , Nucleophilic substitution reactions – classification into $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$. Mechanism and energy profile diagrams of $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions. Stereochemistry of $\text{S}_{\text{N}}2$ (Walden Inversion) 2-bromobutane, $\text{S}_{\text{N}}1$ (Racemisation) 1-bromo-1-phenylpropane Structure and reactivity – Ease of hydrolysis - comparison of alkyl, vinyl, allyl, aryl, and benzyl halides.

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J. H. Thakur
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Unit - IV (General Chemistry)

15h(1 hr/week)

S1-G-1. General Principles of Inorganic Qualitative Analysis

6 h

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions- CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , PO_4^{3-} , BO_3^{3-} , CH_3COO^- , NO_3^- . Interfering ions. Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+} , Ag^+ , Pb^{2+}) with flow chart and chemical equations. Principle involved in separation of group II & IV cations. General discussion for the separation and identification of group II (Hg^{2+} , Pb^{2+} , Bi^{3+} , Cd^{2+} , Sb^{3+}), III (Al^{3+} , Fe^{3+}), IV (Mn^{2+} , Zn^{2+}) individual cations with flow chart and chemical equations. General discussion for the separation and identification of group V individual cations (Ba^{2+} , Sr^{2+} , Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+} , NH_4^+).

S1-G-2. Isomerism

5h

Isomerism: Definition of isomers. Classification of isomers: Constitutional and Stereoisomers - definition and examples. Constitutional isomers: chain, functional and positional isomers. Stereoisomers: enantiomers and diastereomers - definitions and examples. Representation of stereoisomers - Wedge, Fischer projection, Sawhorse, Newmann formulae.

Conformational analysis : Classification of stereoisomers based on energy. Definition and examples Conformational and configurational isomers. Conformational analysis of ethane, n-butane, 1,2- dichloroethane, 2-chloroethanol .Cyclic compounds: Baeyer's strain theory, Conformational analysis of cyclohexane

Cis-trans isomerism: E-Z-Nomenclature

S1-G-3: Solid state Chemistry

4 h

Laws of Crystallography: (i) Law of Constancy of interfacial angles (ii) Law of Symmetry- Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Derivation of Bragg's equation. Determination of structure of NaCl, KCl and CsCl (Bragg's method and Powder method).

References

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Unit- I

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anti addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes – Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Chemical reactivity – electrophilic addition of X_2 , HX, H_2O (tautomerism), Oxidation (formation of enediol, 1,2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation).

Aromatic Hydrocarbons

4h

Introduction to aromaticity: Huckel's rule – Benzene, Naphthalene and Anthracene. Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation and halogenation, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - nitro, nitrile, carbonyl, carboxylic acid, sulphonic acid and halo groups.

Unit – III (Physical Chemistry)

15h(1 hr/week)

S1-P-1: Atomic structure and elementary quantum mechanics

3 h

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect, Limitations of classical mechanics, Compton effect, de Broglie's hypothesis. Heisenberg's uncertainty principle.

S1-P-2: Gaseous State

5 h

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO_2 . The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State and Solutions

4h

Liquid State

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Solutions

3h

Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes: HCl- H_2O and $C_2H_5OH - H_2O$ systems. Fractional distillation. Partially miscible liquids: Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems.

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S2-O-2: Hydroxy compounds and ethers

6 hrs

Alcohols: Preparation: 1°, 2° and 3° alcohols using Grignard reagent, Reduction of Carbonyl compounds, carboxylic acids and esters. Physical properties: H-bonding, Boiling point and Solubility. Reactions with Sodium, HX/ZnCl₂ (Lucas reagent), esterification, oxidation with PCC, alk. KMnO₄, acidic dichromates, conc. HNO₃ and Oppenauer oxidation (Mechanism).

Phenols: Preparation: (i) from diazonium salts of anilines, (ii) from benzene sulphonic acids and (iii) Cumene hydroperoxide.

Properties: Acidic nature, formation of phenoxide and reaction with R-X, electrophilic substitution; halogenations, Reimer Tiemann reaction (Mechanism), Kolbe reaction (Mechanism), Gattermann-Koch reaction, Azo-coupling reaction, Schotten-Boumann reaction, Houben-Hoesch condensation, .

Ethers : Nomenclature, preparation by (a) Williamson's synthesis (b) from alkenes by the action of conc. H₂SO₄. Physical properties – Absence of Hydrogen bonding, insoluble in water, low boiling point. Chemical properties – inert nature, action of conc. H₂SO₄ and HI.

S2-O-3 Carbonyl compounds

5h

Preparation of aldehydes & ketones from acid chloride, 1,3-dithianes, nitriles and from carboxylic acids. Special methods of preparing aromatic aldehydes and ketones by (a) Oxidation of arenes (b) Hydrolysis of benzal halides Physical properties – absence of Hydrogen bonding. Reactivity of the carbonyl groups in aldehydes and ketones. Chemical reactivity: Addition of (a) NaHSO₃ (b) HCN (c) RMgX (d) NH₃ (e) RNH₂ (f) NH₂OH (g) PhNHNH₂ (h) 2,4-DNP (Schiff bases). Addition of H₂O to form hydrate, chloral hydrate (stable), addition of alcohols - hemiacetal and acetal formation. Cannizzaro reaction. Oxidation reactions – KMnO₄ oxidation and auto oxidation, reduction – catalytic hydrogenation, mechanism of Clemmenson's reduction, Wolf-kishner reduction, Meerwein Ponnoff Verly reduction. Reduction with LAH, NaBH₄.

Unit - III (Physical Chemistry)

15h(1 hr/week)

S2-P-1: Electrochemistry

15 h

Electrical transport – conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of specific and equivalent conductance with dilution. Migration of ions and Kohlrausch's law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law - its uses and limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number, definition and determination by Hittorf's method for attackable electrodes. Applications of conductivity measurements: Determination of degree of dissociation, determination of K_a of acids, determination of solubility product of a sparingly soluble salt, conductometric titrations.

Electrolytic and Galvanic cells – reversible and irreversible cells, conventional representation of electrochemical cells. Electro motive force (EMF) of a cell and its measurement. Computation of EMF. Types of reversible electrodes- the gas electrode, metal-metal ion, metal-insoluble

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salt and redox electrodes. Electrode reactions, Nernst equation, cell EMF and Single electrode potential, Standard Hydrogen electrode – reference electrodes (calomel electrode) – standard electrode potential, sign conventions, electrochemical series and its significance. Applications of EMF measurements. Calculation of thermodynamic quantities of cell reactions (Gibbs free energy G , Helmholtz free energy and Equilibrium constant K). Determination of pH using hydrogen electrode, glass electrode and quinhydrone electrode. Solubility product of AgCl. Potentiometric titrations.

Unit – IV (General Chemistry)

15 h (1 hr/week)

S2-G-1: Theory of Quantitative Analysis

6 hours

Volumetric Analysis: Introduction, standard solutions, indicators, end point, titration curves, Types of titrations: i) neutralization titration- principle, theory of acid base indicators, titration curves and selection of indicators- strong acid - strong base, strong acid –weak base, weak acid-strong base and weak acid –weak base. Theory of redox titrations - internal(KMnO₄) and external indicators – use of diphenylamine and ferroin indicators. Theory of complexometric titrations – use of EBT, Murexide and Fast sulphone black indicators. Role of pH in complexometric titrations. Precipitation titrations – theory of adsorption indicators.

Gravimetric analysis- Introduction, nucleation, precipitation, growth of precipitate, filtration and washing, drying and incineration of precipitate, coprecipitation and post precipitation. Determination of Ni²⁺

S2-G-2: Stereoisomerism

5h

Optical activity: Definition, wave nature of light, plane polarised light, optical rotation and specific rotation, chiral centers. Chiral molecules: definition and criteria - absence of plane, center and S_n axis of symmetry – asymmetric and dissymmetric molecules. Examples of asymmetric molecules (Glyceraldehyde, Lactic acid, Alanine) and dissymmetric molecules (trans-1,2-dichlorocyclopropane). Molecules with constitutionally symmetrical chiral carbons (Tartaric acid) Molecules with constitutionally unsymmetrical chiral carbons (2,3dibromopentane). D, L configuration – examples. R, S – configuration: Cahn-Ingold-Prelog rules, examples for asymmetric and dissymmetric molecules.

S2-G-3: Dilute Solutions & Colligative Properties

4 h

Dilute Solutions, Colligative Properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis - laws of osmotic pressure, its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point.

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Laboratory Course

45hrs (3 h / week)

Paper II- Quantitative Analysis

Acid - Base titrations

1. Estimation of Carbonate in Washing Soda.
2. Estimation of Bicarbonate in Baking Soda.
3. Estimation of Carbonate and Bicarbonate in the Mixture.

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B.Sc., BOTANY

First Year, II -Semester

Paper-II

Gymnosperms, Taxonomy of Angiosperms and Ecology

DSC-1B

Credits-4

Theory Syllabus

UNIT-I

- 1) Gymnosperms: General characters, structure, reproduction and classification (Sporne's). Distribution and economic importance of Gymnosperms.
- 2) Morphology of vegetative and reproductive parts, systematic position and life cycle of Pinus and Gnetum,
- 3) Geological time scale Introduction to Palaeobotany, Types of fossils and fossilization, Importance of fossils.

UNIT-II

(15 hours)

- 1) Introduction: Principles of plant systematics, Types of classification: Artificial, Natural and Phylogenetic; Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantl classification systems. An introduction to Angiosperm Phylogeny Group (APG).
- 2) Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy.
- 3) Nomenclature and Taxonomic resources: An introduction to ICN, Shenzhen code – a brief account. Herbarium: Concept, techniques and applications.

UNIT-III

(15 hours)

- 1) Systematic study and economic importance of plants belonging to the following families: Polypetalae Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/Papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae
- 2) Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae, Monochalmydeae: Amaranthaceae, Euphorbiaceae
- 3) Monocotyledons: Orchidaceae, Poaceae and Zingiberaceae.

UNIT-IV

(15 hours)

1. Component of eco system, energy flow, food chain and food webs.
2. Plants and environment, ecological adaptations of plants, Hydrophytes, Xerophytes and Mesophytes
3. Plant Succession serial stages, modification of environment, climax formation with reference to Hydrosere and Xerosere.

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Shelley

A. Kumar

Ravi J

Dr

Prof

Shelley

Practical Syllabus

(45 hours)

1. Study of viruses and bacteria using electron micrographs (photographs).
2. Gram staining of Bacteria.
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
Viruses: Tobacco mosaic
Bacteria: Angular leaf spot of cotton and Rice tungro.
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut.
4. Vegetative and reproductive structures of the following taxa:
Algae: Oscillatoria, Nostoc, Volvox, Oedogonium, Chara, Ectocarpus and Polysiphonia.
Fungi: Albugo, Mucor, Saccharomyces, Penicillium, Puccinia and Cercospora
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut.
6. Lichens: Different types of thalli and their external morphology
7. Examination of important microbial, fungal and algal products:
Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc.
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies).
9. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Bryophytes: Marchantia, Anthoceros and Polytrichum.
10. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Pteridophytes: Lycopodium, Equisetum and Marsilea.
11. Study of Anatomical features of Lycopodium stem, Equisetum stem and Marsilea petiole & rhizome by preparing double stained permanent mounts.

Practical Model Paper

Max. Marks: 25

Time : 3 hrs

1. Identify the given components 'A' & 'B' in the algal mixture .
Describe with neat labeled diagrams & give reasons for the classifications. 2 X 2 = 4M
2. Classify the given bacterial culture 'D' using Gram – staining technique. 3M
3. Take a thin transverse section of given diseased material 'E'.
Identify & describe the symptoms caused by the pathogen. 4M
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons .
(Fungal-1, Bacteria-1 & Viral-1) 3 X 1 = 3M
5. Comment on the given slides 'I' & 'J' (Algae-1, Fungi-1) 2 X 2 = 4M
6. Identify the given specimen 'K' & slide 'L' (Bryophytes & Pteridophytes) 2 X 2 = 4M
7. Record 3M

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References:

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
2. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
3. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
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5. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
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19. Michael, S. 1996, Ecology, Oxford University Press, London
20. Odum, E.P. 1983. Basics of Ecology, Saunder's International Students Edition, Philadelphia.
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Practical Syllabus

(45 hours)

1. Study of Morphology (vegetative and reproductive structures) of the following taxa:
Gymnosperms - Pinus and Gnetum.
2. Study of Anatomical features of Pinus needle and Gnetum stem by preparing double stained permanent mounts.
3. Fossil forms using permanent slides / photographs: Cycadeoidea.
Systematic study of locally available plants belonging to the families prescribed in theory Syllabus (Minimum of one plant representative for each family)
4. Study of morphological and anatomical characteristics of locally available plant species (Eichhorinia, Hydrilla, Pistia, Nymphaea, Asparagus, Opuntia, Euphorbia melii)
5. Demonstration of herbarium techniques.
6. Candidate has to submit at least 30 herbarium sheets.

Practical Model Paper

Time : 3 hrs

Max. Marks: 60

1. Prepare a mount of the given material ' A ' (Hydrophytes /Xerophytes)
Draw diagram & give reasons for identification. 8M
2. Prepare a double stained permanent mount of the given material ' B ' (Gymnosperms)
Draw diagram & give reasons for identification. 10M
3. Identify the given specimens C & D (Gymnosperms /Xerophytes) 2 X 4 = 8M
4. Identify the given slides E&F (Gymnosperms /Xerophytes) 2 X 4 = 8M
5. Technical description of the given plant twig ' A '
6. Herbarium 3M
7. Record 3M

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B.Sc., BOTANY

First Year, II -Semester

Paper-II

Gymnosperms, Taxonomy of Angiosperms and Ecology

DSC-1B

Credits-4

Theory Syllabus

UNIT-I

- 1) Gymnosperms: General characters, structure, reproduction and classification (Sporne's). Distribution and economic importance of Gymnosperms.
- 2) Morphology of vegetative and reproductive parts, systematic position and life cycle of Pinus and Gnetum,
- 3) Geological time scale Introduction to Palaeobotany, Types of fossils and fossilization, Importance of fossils.

UNIT-II

(15 hours)

- 1) Introduction: Principles of plant systematics, Types of classification: Artificial, Natural and Phylogenetic; Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantl classification systems. An introduction to Angiosperm Phylogeny Group (APG).
- 2) Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy.
- 3) Nomenclature and Taxonomic resources: An introduction to ICN, Shenzhen code – a brief account. Herbarium: Concept, techniques and applications.

UNIT-III

(15 hours)

- 1) Systematic study and economic importance of plants belonging to the following families: Polypetalae Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/Papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae
- 2) Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae, Monochalmydeae: Amaranthaceae, Euphorbiaceae
- 3) Monocotyledons: Orchidaceae, Poaceae and Zingiberaceae.

UNIT-IV

(15 hours)

1. Component of eco system, energy flow, food chain and food webs.
2. Plants and environment, ecological adaptations of plants, Hydrophytes, Xerophytes and Mesophytes
3. Plant Succession serial stages, modification of environment, climax formation with reference to Hydrosere and Xerosere.

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Prof

Shelley

Practical Syllabus

(45 hours)

1. Study of viruses and bacteria using electron micrographs (photographs).
2. Gram staining of Bacteria.
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
Viruses: Tobacco mosaic
Bacteria: Angular leaf spot of cotton and Rice tungro.
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut.
4. Vegetative and reproductive structures of the following taxa:
Algae: Oscillatoria, Nostoc, Volvox, Oedogonium, Chara, Ectocarpus and Polysiphonia.
Fungi: Albugo, Mucor, Saccharomyces, Penicillium, Puccinia and Cercospora
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut.
6. Lichens: Different types of thalli and their external morphology
7. Examination of important microbial, fungal and algal products:
Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc.
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies).
9. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Bryophytes: Marchantia, Anthoceros and Polytrichum.
10. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Pteridophytes: Lycopodium, Equisetum and Marsilea.
11. Study of Anatomical features of Lycopodium stem, Equisetum stem and Marsilea petiole & rhizome by preparing double stained permanent mounts.

Practical Model Paper

Max. Marks: 25

Time : 3 hrs

1. Identify the given components 'A' & 'B' in the algal mixture .
Describe with neat labeled diagrams & give reasons for the classifications. 2 X 2 = 4M
2. Classify the given bacterial culture 'D' using Gram – staining technique. 3M
3. Take a thin transverse section of given diseased material 'E' .
Identify & describe the symptoms caused by the pathogen. 4M
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons .
(Fungal-1, Bacteria-1 & Viral-1) 3 X 1 = 3M
5. Comment on the given slides 'I' & 'J' (Algae-1, Fungi-1) 2 X 2 = 4M
6. Identify the given specimen 'K' & slide 'L' (Bryophytes & Pteridophytes) 2 X 2 = 4M
7. Record 3M

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References:

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
2. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
3. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
4. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany - Pteridophyta (Vascular Cryptogams). . Chand & Company Ltd, New Delhi.
5. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
7. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
8. Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. Botany for Degree Students: Bryophyta. S. Chand & Company Ltd, New Delhi.
9. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany for Degree Students: Gymnosperms. Chand & Company Ltd, New Delhi.
10. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.
11. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Seed Plants and their Systematics, Structure, Development and Reproduction in Flowering Plants. S. Chand & Company Ltd, New Delhi
12. Stace, C. A. 1989. Plant Taxonomy and Biostatistics (2nd Ed.). Edward Arnold, London.
13. Singh, G. 1999. Plant Systematics: Theory and Practice. Oxford and IBH, New Delhi.
14. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.
15. Davis, P. H. and V. H. Heywood. 1963. Principles of Angiosperm Taxonomy. Oliver and Boyd, London.
16. Heywood, V. H. 1965 . Plant Taxonomy. ELBS , London.
17. Heywood, V. H. and D. M. Moore (Eds). 1984. Current Concepts in Plant Taxonomy. Academic Press, London.
18. Jeffrey, C. 1982. An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge. London.
19. Michael, S. 1996, Ecology, Oxford University Press, London
20. Odum, E.P. 1983. Basics of Ecology, Saunder's International Students Edition, Philadelphia.
21. Sharma P.D. 1989. Elements of Ecology, Rastogi Publications, Meerut

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Practical Syllabus

(45 hours)

1. Study of Morphology (vegetative and reproductive structures) of the following taxa:
Gymnosperms - Pinus and Gnetum.
2. Study of Anatomical features of Pinus needle and Gnetum stem by preparing double stained permanent mounts.
3. Fossil forms using permanent slides / photographs: Cycadeoidea.
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5. Demonstration of herbarium techniques.
6. Candidate has to submit at least 30 herbarium sheets.

Practical Model Paper

Time : 3 hrs

Max. Marks: 60

1. Prepare a mount of the given material ' A ' (Hydrophytes /Xerophytes)
Draw diagram & give reasons for identification. 8M
2. Prepare a double stained permanent mount of the given material ' B ' (Gymnosperms)
Draw diagram & give reasons for identification. 10M
3. Identify the given specimens C & D (Gymnosperms /Xerophytes) 2 X 4 = 8M
4. Identify the given slides E&F (Gymnosperms /Xerophytes) 2 X 4 = 8M
5. Technical description of the given plant twig ' A '
6. Herbarium 3M
7. Record 3M

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Subject: Physics

**B.Sc. Semester II-Theory Syllabus
Paper – II : Thermal Physics
(W.E.F the academic year 2019-2020)**

56 hrs

Unit – I

1. Kinetic theory of gases: (6)

Introduction – Deduction of Maxwell's law of distribution of molecular speeds, Transport Phenomena – Viscosity of gases – thermal conductivity – diffusion of gases.

2. Thermodynamics: (8)

Basics of thermodynamics-Kelvin's and Clausius statements – Thermodynamic scale of temperature – Entropy, physical significance – Change in entropy in reversible and irreversible processes – Entropy and disorder – Entropy of universe – Temperature-Entropy (T-S) diagram – Change of entropy of a perfect gas-change of entropy when ice changes into steam.

Unit – II

3. Thermodynamic potentials and Maxwell's equations: (7)

Thermodynamic potentials – Derivation of Maxwell's thermodynamic relations – Clausius-Clayperon's equation – Derivation for ratio of specific heats – Derivation for difference of two specific heats for perfect gas. Joule Kelvin effect – expression for Joule Kelvin coefficient for perfect and Vanderwaal's gas.

4. Low temperature Physics: (7)

Joule Kelvin effect – liquefaction of gas using porous plug experiment. Joule expansion – Distinction between adiabatic and Joule Thomson expansion – Expression for Joule Thomson cooling – Liquefaction of helium, Kapitza's method – Adiabatic demagnetization – Production of low temperatures – Principle of refrigeration, vapour compression type.

Unit – III

5. Quantum theory of radiation: (14)

Black body-Ferry's black body – distribution of energy in the spectrum of Black body – Wein's displacement law, Wein's law, Rayleigh-Jean's law – Quantum theory of

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radiation - Planck's law – deduction of Wein's distribution law, Rayleigh-Jeans law, Stefan's law from Planck's law.

Measurement of radiation using pyrometers – Disappearing filament optical pyrometer – experimental determination – Angstrom pyroheliometer - determination of solar constant, effective temperature of sun.

Unit – IV

6. Statistical Mechanics: (14)

Introduction, postulates of statistical mechanics. Phase space, concept of ensembles and some known ensembles, classical and quantum statistics and their differences, concept of probability, Maxwell-Boltzmann's distribution law -Molecular energies in an ideal gas- Maxwell-Boltzmann's velocity distribution law, Bose-Einstein Distribution law, Fermi-Dirac Distribution law, comparison of three distribution laws, Application of B-E distribution to Photons-planks radiation formula, Application of Fermi-Dirac statistics to white dwarfs and Neutron stars.

Textbooks

1. **Fundamentals of Physics.** Halliday/Resnick/Walker.C. *Wiley India Edition 2007.*
2. **Second Year Physics – Telugu Academy.**
3. **Modern Physics** by R. Murugesan and Kiruthiga Siva Prasath (for statistical Mechanics) *S. Chand & Co.*
4. **Heat and Thermodynamics** by Mark W.Zemansky 5th edition McGraw - Hill
5. **Heat and Thermodynamics** by D.S. Mathur.

Reference Books

1. **Modern Physics** by G. Aruldas and P. Rajagopal, *Eastern Economy Education.*
2. B.B. Laud "Introduction to statistics Mechanics"(Macmillan 1981)
3. F.Reif: "Statistical Physics "(Mcgraw-Hill,1998)
4. K.Haug: "Statistical Physics "(Wiley Eastern 1988)

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KARAVATI UNIVERSITY
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42 hrs
(3 hrs / week)

II SEMESTER Practicals Paper – II :
Thermal Physics

1. Co-efficient of thermal conductivity of a bad conductor by Lee's method.
2. Measurement of Stefan's constant.
3. Specific heat of a liquid by applying Newton's law of cooling correction.
4. Heating efficiency of electrical kettle with varying voltages.
5. Determination of Thermo emf
6. Cooling Curve of a metallic body (Null method)
7. Resistance thermometer. To Determine temp coeff resistance
8. Thermal expansion of solids
9. Study of conversion of mechanical energy into heat.
10. Determine the Specific of a solid (graphite rod)
11. Thermistor Characteristics. Calculation of A and B

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Text and reference books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastava


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SEMESTER-II

2.2 Differential Equations

DSC-1B

BS:201

Theory: 5 credits and Tutorials: 0 credits
Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

Outcome: After learning the course the students will be equipped with the various tools to solve few types differential equations that arise in several branches of science.

Unit- I

Differential Equations of first order and first degree: Introduction - Equations in which Variables are Separable - Homogeneous Differential Equations - Differential Equations Reducible to Homogeneous Form - Linear Differential Equations - Differential Equations Reducible to Linear Form - Exact differential equations - Integrating Factors - Change in variables - Total Differential Equations - Simultaneous Total Differential Equations - Equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.

Unit- II

Differential Equations first order but not of first degree: Equations Solvable for p - Equations Solvable for y - Equations Solvable for x - Equations that do not contain x (or y) - Equations Homogeneous in x and y - Equations of the First Degree in x and y - Clairaut's equation.
Applications of First Order Differential Equations : Growth and Decay - Dynamics of Tumour Growth - Radioactivity and Carbon Dating - Compound Interest - Orthogonal Trajectories

Unit- III

Higher order Linear Differential Equations: Solution of homogeneous linear differential equations with constant coefficients - Solution of non-homogeneous differential equations $P(D)y = Q(x)$ with constant coefficients by means of polynomial operators when $Q(x) = be^{ax}, b \sin ax/b \cos ax, bx^k, Ve^{ax}$ - Method of undetermined coefficients.

Unit- IV

Method of variation of parameters - Linear differential equations with non constant coefficients - The Cauchy - Euler Equation - Legendre's Linear Equations - Miscellaneous Differential Equations.
Partial Differential Equations: Formation and solution- Equations easily integrable - Linear equations of first order.

Text:

- Zafar Ahsan, *Differential Equations and Their Applications*

References:

- Frank Ayres Jr, *Theory and Problems of Differential Equations.*

[Handwritten signatures and marks in blue ink, including names like 'Zafar Ahsan', 'Frank Ayres Jr', and various initials and dates.]

- Ford, L.R ; *Differential Equations*.
 - Daniel Murray, *Differential Equations*.
 - S. Balachandra Rao, *Differential Equations with Applications and Programs*.
 - Stuart P Hastings, J Bryce McLeod; *Classical Methods in Ordinary Differential Equations*.
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Programming in C++ Semester -II

Theory	4 Hours/Week	4 credits
Practical	3 Hours/Week	1 credit

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.
Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.
Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Unit – II

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading, Object Conversion, Aggregation.

Unit – III

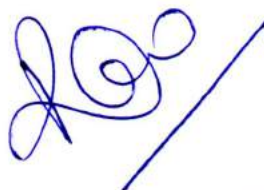
Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Class Hierarchies, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.
C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception, Handling the bad_alloc Exception.
Templates: Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance, Introduction to the STL.

Text Tony Gaddis, Starting out with C++: from control structures through objects (7e)

References B. Lippman, C++ Primer
Bruce Eckel, Thinking in C++
K.R. Venugopal, Mastering C++
Herbert Schildt, C++: The Complete Reference
Bjame Stroustrup, The C++ Programming Language
Sourav Sahay, Object Oriented Programming with C++



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C++ Lab Semester -II

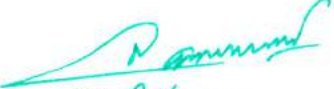
Practical

3 Hours/Week

1 credit

- 1 Write a program to.
 - a. Print the sum of digits of a given number.
 - b. Check whether the given number is Armstrong or not
 - c. Print the prime number from 2 to n where n is natural number given.
- 2 Write a program to find largest and smallest elements in a given list of numbers and sort the given list.
- 3 Write a program to read the student name, roll no, marks and display the same using class and object.
- 4 Write a program to implement the dynamic memory allocation and de-allocation using new and delete operators using class and object.
- 5 Write a program to find area of a rectangle, circle, and square using constructors.
- 6 Write a program to implement copy constructor.
- 7 Write a program using friend functions and friend class.
- 8 Write a program to implement constructors
 - § Default Constructor, Parameterized Constructor, Copy Constructor
 - § Define the constructor inside/outside of the class
 - § Implement all three constructors within a single class as well as use multiple classes(individual classes)Write a program to implement the following concepts using class and object
 - § Function overloading
 - § Operator overloading (unary/binary(+ and -))Write a program to demonstrate single inheritance, multilevel inheritance and multiple inheritances.
Write a program to implement the overloaded constructors in inheritance.
Write a program to implement the polymorphism and the following concepts using class and object.
 - § Virtual functions
 - § Pure virtual functionsWrite a program to implement the virtual concepts for following concepts
 - § Constructor (not applied)
 - § Destructor (applied)Write a program to demonstrate static polymorphism using method overloading.
Write a program to demonstrate dynamic polymorphism using method overriding and dynamic method dispatch.
Write a program to implement the template (generic) concepts
 - § Without template class and object
 - § With template class and objectWrite the Pseudo Code and draw Flow Chart for the above programs.

Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows.


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KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY I Year
SEMESTER – II

ANIMAL DIVERSITY – VERTEBRATES
(Core Paper – II)

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Hemichordata

- 1.1.1 General characters and Classification of Hemichordates upto classes with examples
- 1.1.2 *Balanoglossus*- Structure and affinities
- 1.1.3. Larval Significance (Tomaria)

1.2. Protochordata

- 1.2.1 General Characters and Classification of Chordates up to orders with examples
- 1.2.2 Salient features of Urochordata; Retrogressive metamorphosis in Urochordata
- 1.2.3 Salient features and affinities of Cephalochordata
- 1.2.4 General Characters of Cyclostomata; Comparison of *Petromyzon* and *Myxine*

UNIT – II

2.1 Pisces

- 2.1.1 General characters of and Classification of Pisces up to orders with examples
- 2.1.3 *Scoliodon*- Digestive, Respiratory, Circulatory and Nervous system
- 2.1.4 Types of Scales, Types of Fins
- 2.1.5 Migration in Fishes

2.2 Amphibia


- 2.2.1 General characters and Classification of Amphibians up to orders with examples.
- 2.2.2 *Rana tigrina*- Respiratory, Circulatory and Nervous systems
- 2.2.3 Parental care in Amphibians; Neoteny and Paedogenesis
- 2.2.4 Metamorphosis in Amphibians and its hormonal control

Unit – III

3.1 Reptilia

- 3.1.1 General characters and Classification of Reptilia up to orders with examples
- 3.1.2 *Calotes*- Digestive, Respiratory, Circulatory and Nervous systems
- 3.1.3 Temporal fossa in Reptiles and its evolutionary importance
- 3.1.4 Distinguished characters of Poisonous and Non-poisonous snakes


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Board of Studies
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3.2 Aves

- 3.2.1 General characters and Classification of Aves upto orders with examples.
- 3.2.2 *Columba livia*- Digestive, Respiratory, Circulatory and Nervous systems
- 3.2.3 Migration in Birds
- 3.2.4 Flight adaptation in Birds


Unit – IV

4.1 Mammalia

- 4.1.1 General characters and Classification of Mammalia upto orders with examples
- 4.1.2 *Rabbit*- Digestive, Respiratory, Circulatory and Nervous systems
- 4.1.3 Dentition in Mammals
- 4.1.4 Aquatic adaptations in Mammals

Suggested Readings:

1. E.L. Jordan and P.S. Verma 'Chordate Zoology' - S. Chand Publications.
2. Mohan P. Arora. 'Chordata - I, Himalaya Publishing House Pvt. Ltd.
3. Marshal, Parker and Haswell 'Text book of Vertebrates'. ELBS and McMillan, England.
4. Alfred Sherwood Romer. Thomas S. Pearson 'The Vertebrate Body, Sixth edition, CBS College Publishing, Saunders College Publishing
5. George C. Kent, Robert K. Carr. *Comparative Anatomy of the Vertebrates*, 9th ed. McGrawHill.
6. Kenneth Kardong *Vertebrates: Comparative Anatomy, Function and Evolution*, 4th ed, McGraw Hill.
7. J.W. Young, *The Life of Vertebrates*, 3rd ed, Oxford University press.
8. Harvey Pough F, Christine M. Janis, B. Heiser, *Vertebrate Life*, Pearson, 6th ed, Pearson Education Inc. 2002.


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KAKATIYA UNIVERSITY - WGL-506009 (T.S)

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY I Year
SEMESTER – II

ANIMAL DIVERSITY - VERTEBRATES
(PRACTICAL)

Instruction: 3 hrs per week

No. of Credits: 1

I. Study of museum slides / specimens / models (Classification of animals up to orders)

1. **Hemichordata:** *Balanoglossus, Tornmaria larva*
2. **Protochordata:** *Amphioxus, Amphioxus T.S. through pharynx*
3. **Cyclostomata:** *Petromyzon, Myxine, Ammocoetus larva*
4. **Pisces:** *Sphyrna, Pristis, Torpedo, Channa, Pleuronectes, Hippocampus, Exocoetus, Echieneis, Labeo, Catla, Clarius, Auguilla, Protopterus, Scales: Placoid, Cycloid, Ctenoid*
5. **Amphibia:** *Ichthyophis, Amblystoma, Siren, Hyla, Rachophous, Bufo, Rana, Axolotal larva*
6. **Reptilia :** *Draco, Chamaeleon, Gecko, Uromastix, Vipera russeli, Naja, Bungarus, Enhydrina, Typhlops, Ptyas, Testudo, Trionyx, Crocodilus*
7. **Aves:** *Archaeopteryx, Passer, Psittacula, Bubo, Alcedo, Columba, Corvus, Pavo*, Collection and study of different types of feathers: Quill, Contour, Filoplume, Down
8. **Mammalia:** *Ornithorhynchus, Tachyglossus, Pteropus, Funambulus, Manis, Loris, Hedgehog;*
9. **Histology:** T.S. of Liver, Pancreas, Kidney, Stomach, Intestine, Lung, Artery, Vein, Bone T.S, Spinal Cord. T.S.

II. Osteology:

Rabbit – Axial Skeleton (Bones of Skull and Vertebral Column),

Varanus, Pigeon and Rabbit - Appendicular skeleton (Bones of Limbs and Girdles)

III. Demonstration of dissection / dissected / virtual dissection: Labeo / Tilapia

1. Digestive system 2. Brain, Weberian Oscicles 3. V, VII, IX, X cranial nerves

IV. Laboratory Record work shall be submitted at the time of practical examination

V. An “**Animal album**” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

VI. Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals:

1. S.S.Lal, Practical Zoology – Vertebrata

2. P.S.Verma, A manual of Practical Zoology– Chordata


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Kakatiya University,
WARANGAL.-506009(T.S)


DR. G. SHAMITHA
Chairperson
Board of Studies
Department of Zoology & Sericulture Unit
KAKATIYA UNIVERSITY - WGL-506009 (T.S)

Programming in C++ Semester -II

Theory	4 Hours/Week	4 credits
Practical	3 Hours/Week	1 credit

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.
Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.
Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Unit – II

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading, Object Conversion, Aggregation.

Unit – III

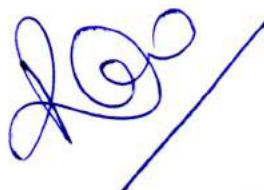
Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Class Hierarchies, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.
C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception, Handling the bad_alloc Exception.
Templates: Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance, Introduction to the STL.

Text Tony Gaddis, Starting out with C++: from control structures through objects (7e)

References B. Lippman, C++ Primer
Bruce Eckel, Thinking in C++
K.R. Venugopal, Mastering C++
Herbert Schildt, C++: The Complete Reference
Bjame Stroustrup, The C++ Programming Language
Sourav Sahay, Object Oriented Programming with C++



CHAIRMAN
Board of Studies
Department of Computer Science
KAKATIYA UNIVERSITY
VARIANASI - 221002 (U.S.)

C++ Lab Semester -II

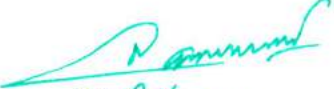
Practical

3 Hours/Week

1 credit

- 1 Write a program to.
 - a. Print the sum of digits of a given number.
 - b. Check whether the given number is Armstrong or not
 - c. Print the prime number from 2 to n where n is natural number given.
- 2 Write a program to find largest and smallest elements in a given list of numbers and sort the given list.
- 3 Write a program to read the student name, roll no, marks and display the same using class and object.
- 4 Write a program to implement the dynamic memory allocation and de-allocation using new and delete operators using class and object.
- 5 Write a program to find area of a rectangle, circle, and square using constructors.
- 6 Write a program to implement copy constructor.
- 7 Write a program using friend functions and friend class.
- 8 Write a program to implement constructors
 - § Default Constructor, Parameterized Constructor, Copy Constructor
 - § Define the constructor inside/outside of the class
 - § Implement all three constructors within a single class as well as use multiple classes(individual classes)Write a program to implement the following concepts using class and object
 - § Function overloading
 - § Operator overloading (unary/binary(+ and -))Write a program to demonstrate single inheritance, multilevel inheritance and multiple inheritances.
Write a program to implement the overloaded constructors in inheritance.
Write a program to implement the polymorphism and the following concepts using class and object.
 - § Virtual functions
 - § Pure virtual functionsWrite a program to implement the virtual concepts for following concepts
 - § Constructor (not applied)
 - § Destructor (applied)Write a program to demonstrate static polymorphism using method overloading.
Write a program to demonstrate dynamic polymorphism using method overriding and dynamic method dispatch.
Write a program to implement the template (generic) concepts
 - § Without template class and object
 - § With template class and objectWrite the Pseudo Code and draw Flow Chart for the above programs.

Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows.


CHAIRMAN
Board of Studies
Department of Computer Science
KAKATIYA UNIVERSITY
VARANASI (INDIA)

C.B.C.S Pattern Syllabus from 2019-2010 onwards
B.A., B.Sc., B.Com. & B.B.A.
2nd Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) గజేంద్ర మోక్షం-పోతన
- 2) హనుమత్ సందేశం-మొల్ల
- 3) సుభాషితాలు-ఎనుగు లక్ష్మణ కవి

Unit-II ఆధునిక కవిత్వం

- 1) స్నేహలత లేఖ-రాయప్రోలు సుబ్బారావు
- 2) అంతర్నాదం-దాశరథి కృష్ణమాచార్యులు
- 3) ప్రపంచపదులు-డా॥ సి.నారాయణరెడ్డి
- 4) అల్విదా-కౌముది

Unit-III వచన విభాగం

- 1) యుగాంతం-నెల్లూరి కేశవ స్వామి
- 2) ఎంకన్న - ఆచార్య పాకాల యశోదారెడ్డి
- 3) మామిడి పండు - సురవరం ప్రతాపరెడ్డి
- 4) మా ఊరుపోయింది-దేవులపల్లి వేంకట కృష్ణశాస్త్రి

Unit-IV ఛందస్సు

ఉత్పలమాల, చంపకమాల, శార్దూలం, మత్తేభం, ఆటవెలది, తేటగీతి, ద్విపద, సీసం, కందం, ఉత్సాహం, తరళం, స్రగ్ధర, మహాస్రగ్ధర, ముత్యాలసరం



KAKATIYA UNIVERSITY, WARANGAL

B.A., B.Sc., B.Com. & B.B.A (CBCS)

Syllabus - 2020

Telugu (Second Language)

3rd Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) ధర్మజుని వాక్యాతుర్యం - తిక్కన
- 2) విభీషణ శరణాగతి - గోన బుద్ధారెడ్డి
- 3) గుణనిధి కథ - శ్రీనాథుడు

Unit -II ఆధునిక పద్యభాగం

- 1) రైతు ప్రశస్తి - వానమామలై జగన్నాథాచార్యులు
- 2) గురుదక్షిణ - అంబటి లక్ష్మీనరసింహరాజు
- 3) గుడిసెలు కాలిపోతున్నై - డా॥ బోయి భీమన్న

Unit -III అలంకారాలు

శబ్దాలంకారాలు: వృత్త్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస,
అంత్యానుప్రాస, యమకం, ముక్తపదగ్రస్తాలంకారాలు

అర్థాలంకారాలు: ఉపమ, ఉత్పేక్ష, రూపక, స్వభావోక్తి, ఉల్లేఖ,
అర్థాంతరవ్యాస, శ్లేష, దృష్టాంతాలంకారాలు

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం


29/8/2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL-506 002, T.S.P.





Head
Department of Telugu
Kakatiya University
Warangal-506 09(T.S.).

B.A, BSc & B Com SECOND YEAR - 2019-2020 -

URDU - SECOND LANGUAGE:

"MUTALA-E-ADAB" (Part - II)

(Compiled by Department of Urdu O.U. Hyderabad)

published in August-2008 by Urdu Academy-HYA.

SEMISTER - III

PAPER - III

URDU POETRY & PROSE

UNIT: I.

MASNAVI :- Amn Nama by Jaan Nisar Akhtar.

UNIT: II.

QASIDA :- Dar Shaan-e-Hameedud Dawla
— by —
Zauq Dahelvi.

UNIT: III

1. NOVEL :- Nasook ki Saleem Se Guftagu
— by —

Deputy Nazim Ahmed (Selected from
"Taubatun Nasook")

2. INSHAIYA :- Zaqq-e-Chai Noshi - By Moulana Az
(Selected from "GHUBAR-E-KHATIR).

[Signature]
2020.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A/B.COM/BBA/B.SC ENGLISH II YEAR
SEMESTER – III

PAPER – III: ENGLISH

Theory: 3 Hours/Week; Credits: 3 Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence
Published by Orient BlackSwan

UNIT I: GENDER EQUALITY

1. “Achieving Gender Equality in India: What Works, and What Doesn’t” by Smriti Sharma
2. “They Shut me up in Prose” by Emily Dickinson
3. Prepositions
4. Phrasal Verbs

UNIT II: GENDER ROLES

1. “The Wonder Story of Kalpana Saroj” by Rakhi Chakraborty
2. “The Kitchen” by Vimala
3. Voice
4. Technical Vocabulary

UNIT III: ENDING VIOLENCE AGAINST WOMEN

1. “What is my Name?” by P.Sathyavathi
2. “Voice of the Unwanted Girl” by Sujatha Bhatt
3. Connectives
4. Idioms

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit-I

Basic Concepts: Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models: Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

Unit-II

Database Integrity And Normalization: Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalization, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

File Organization: Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

Unit-III

Structures Query Language (SQL): Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit-IV

Transactions and Concurrency Management: Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

Text Book: Database Systems: R.Elmasri & S.B. Navathe, Pearson.

References:

1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

Library Books (Accession number, Title, Author, Department, Purchase Date, Price),

Issued Books (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled “Database System Concepts”.
- c) Change the Department of the book titled “Discrete Maths” to “CS”.
- d) List all books that belong to “CS” department.
- e) List all books that belong to “CS” department and are written by author “Navathe”.
- f) List all computer (Department=“CS”) that have been issued.
- g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks (rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
- c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (Cust ID, email, Name, Phone, Referrer ID)

Bicycle (Bicycle ID, Date Purchased, Color, Cust ID, Model No)

Bicycle Model (Model No, Manufacturer, Style) Service

(Start Date, Bicycle ID, End Date)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
- c) List the bicycles purchased by the customers who have been referred by Customer "C1".
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column "email" of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
- f) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Hyderabad.
- j) Get part numbers for part supplied by a supplier in Warangal to a project in

Chennai.

- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.Sc. BOTANY II Year
SEMESTER – III

PLANT ANATOMY AND EMBRYOLOGY

Theory:	4 Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical:	3 Hours/Week	Credits: 1	Marks: 25

UNIT – I

Meristems: Types, histological organization of shoot and root apices and theories.

1. Tissues and Tissue Systems: Simple, complex and special tissues.
2. Leaf: Ontogeny, diversity of internal structure; stomata and epidermal outgrowths.

UNIT –II

4. Stem and root anatomy: Vascular cambium - Formation and function.
5. Anomalous secondary growth of Stem -*Achyranthes*, *Boerhaavia*, *Bignonia*, *Dracaena*; Root— *Beta vulgaris*.
6. Wood structure: General account. Study of local timbers — Teak (*Tectona grandis*), Rosewood, (*Dalbergia latefolia*), Red sanders, (*Pterocarpus santalinus*) Nallamaddi (*Terminalia tomentosa*) and Neem (*Azadirachta indica*).

UNIT-III

7. History and importance of Embryology.
8. Another structure, Microsporogenesis and development of male gametophyte.
9. Ovule structure and types; Megasporogenesis; types and development of female gametophyte.

UNIT- IV

10. Pollen morphology, pollination and fertilization, Pollination Types, Pollen - pistil interaction, Double fertilization.
11. Seed - structure appendages and dispersal mechanisms.
12. Endosperm - Development and types. Embryo - development and types; Polyembryony and Apomixis -- an outline.

References:

1. Bhattacharya et. al. 2007. A textbook of Palynology, Central, New Delhi.
2. Bhojwani, S. S. and S. P. Bhatnagar. 2000. The Embryology of Angiosperms (4th Ed.), Vikas Publishing House, Delhi.
3. M.R.Saxena- A textbook of Palynology.
4. Vashista- A textbook of Anatomy.
5. P.K.K.Nair- A textbook of Palynology.
6. Esau, K. 1971. Anatomy of Seed Plants. John Wiley and Son, USA.
7. Johri, B. M. 1984. Embryology of Angiosperms. Springer-Verleg, Berlin.
8. Kapil, R. P. 1986. Pollination Biology. Inter India Publishers, New Delhi.
9. Maheswari, P. 1971. An Introduction to Embryology of Angiosperms. McGraw Hill Book Co., London.
10. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.Sc. BOTANY II Year
SEMESTER – III

PLANT ANATOMY AND EMBRYOLOGY
PRACTICAL

1. Demonstration of double stain technique.
2. Preparation of double stained Permanent slides
Primary structure: Root - *Cicer, Canna*; Stem — *Tridax, Sorghum*
Secondary structure: Root — *Tridax* sp.; Stem — *Pongarnia*
Anomalous secondary structure:
Stem: *Achyranthes, Boerhavia, Bignonia, Dracaena*
Root: *Beta vulgaris*
3. Stomatal types using epidermal peels (Dicots).
4. Structure of anther and microsporogenesis using permanent slides.
5. Structure of pollen grains using whole mounts - *Hibiscus, Acacia* and Grass).
6. Pollen viability test using Evans Blue — *Hibiscus*
7. Study of ovule types and developmental stages of embryo sac.
8. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot embryos using permanent slides.
9. Isolation and mounting of embryo (using *Cymopsis / Senna / Crotalaria*)

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (w.e.f. academic year 2019-20 batch onwards)
B.Sc. MATHEMATICS II Year
SEMESTER – III

REAL ANALYSIS

Theory: 5 credits and Tutorials: 0 credits Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The course is aimed at exposing the students to the foundations of analysis which will be useful in understanding various physical phenomena.

Outcome: After the completion of the course students will be in a position to appreciate beauty and applicability of the course.

UNIT- I

Sequences: Limits of Sequences- A Discussion about Proofs-Limit Theorems for Sequences- Monotone Sequences and Cauchy Sequences -Subsequences-Limit sup's and Limit inf's - Series- Alternating Series and Integral Tests.

UNIT- II

Continuity: Continuous Functions -Properties of Continuous Functions -Uniform Continuity - Limits of Functions

UNIT- III

Differentiation: Basic Properties of the Derivative - The Mean Value Theorem - L'Hospital Rule - Taylor's Theorem.

UNIT- IV

Integration: The Riemann Integral - Properties of Riemann Integral-Fundamental Theorem of Calculus.

Text:

Kenneth A Ross, Elementary Analysis-The Theory of Calculus

References:

- 1] S.C. Malik and Savita Arora, Mathematical Analysis, Second Edition, Wiley Eastern Limited, New Age International (P) Limited, New Delhi, 1994.
- 2] William F. Trench, Introduction to Real Analysis
- 3] Lee Larson , Introduction to Real Analysis I
- 4] Shanti Narayan and Mittal, Mathematical Analysis
- 5] Brian S. Thomson, Judith B. Bruckner, Andrew M. Bruckner; Elementary Real analysis
- 6] Sudhir R., Ghorpade, Balmohan V., Limaye; A Course in Calculus and Real Analysis

PAPER – III: ELECTROMAGNETIC THEORY

Theory:	4 Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical:	3 Hours/Week	Credits: 1	Marks: 25

UNIT I

Electrostatics

Electric Field:- Concept of electric field lines and electric flux, Gauss's law (Integral and differential forms), application to linear, plane and spherical charge distributions, Conservative nature of electric field 'E', Irrotational field. Electric potential: Concept of electric potential, relation between electric potential and electric field, potential energy of a system of charges, Energy density in an electric field, Calculation of potential from electric field for a spherical charge distribution.

UNIT II

Magnetostatics

Concept of magnetic field 'B' and magnetic flux, Biot-Savart's law, 'B' due to a straight current carrying conductor, Force on a point charge in a magnetic field, Properties of B, curl and divergence of B, solenoidal field, Integral form of Ampere's law, Applications of Ampere's law: field due to straight, circular and solenoidal currents. Energy stored in magnetic field. Magnetic energy in terms of current and inductance, Magnetic force between two current carrying conductors, Magnetic field intensity, Ballistic Galvanometer: Torque on a current loop in a uniform magnetic field, working principle of B.G., current and charge sensitivity, electromagnetic damping, critical damping resistance.

UNIT III:

Electromagnetic Induction and Electromagnetic waves

Faraday's laws of induction (differential and integral form), Lenz's law, self and mutual Induction, Continuity equation, modification of Ampere's law, displacement current, Maxwell equations, Maxwell's equations in vacuum and dielectric medium, boundary conditions, plane wave equation: transverse nature of EM waves, velocity of light in vacuum and in medium, Poynting's theorem.

UNIT IV:

Varying and alternating currents

Growth and decay of currents in LR, CR and LCR circuits - Critical damping, Alternating current, relation between current and voltage in pure R, C and L-vector diagrams - Power in ac circuits. LCR series and parallel resonant circuit-Q-factor, AC & DC motors-single phase, three phase (basics only).

Network Theorems

Passive elements, Power sources, Active elements, Network models: T and π Transformations, Superposition theorem, Thevenin's theorem, Norton's theorem. Reciprocity theorem and Maximum power transfer theorem (Simple problems).

Suggested Books:

1. Fundamentals of electricity and magnetism By Arthur F. Kip (McGraw-Hill, 1968)
2. Electricity and magnetism by J. H. Fewkes & John Yarwood. Vol. I (Oxford Univ. Press, 1991).
3. Introduction to Electrodynamics, 3rd edition, by David J. Griffiths, (Benjamin Cummings, 1998).
4. Electricity and magnetism By Edward M. Purcell (McGraw-Hill Education, 1986)
5. Electricity and magnetism. By D C Tayal (Himalaya Publishing House, 1988)
6. Electromagnetics by Joseph A. Edminister 2nd ed. (New Delhi: Tata McGraw Hill, 2006).





**PAPER – III: ELECTROMAGNETIC THEORY
PRACTICALS**

1. To verify the Thevenin's Theorem
2. To verify Norton Theorem
3. To verify Superposition Theorem
4. To verify maximum power transfer theorem.
5. To determine a small resistance by Carey Foster's bridge.
6. To determine the (a) current sensitivity, (b) charge sensitivity, and (c) CDR of a B.G.
7. To determine high resistance by leakage method.
8. To determine the ratio of two capacitances by De Sauty's bridge.
9. To determine self-inductance of a coil by Anderson's bridge using AC.
10. To determine self-inductance of a coil by Rayleigh's method.
11. To determine coefficient of Mutual inductance by absolute method.

Note: Minimum of eight experiments should be performed.

Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books:

1. B. L. Worsnop and H. T. Flint Advanced Practical Physics, Asia Publishing House, New Delhi.
2. Indu Prakash and Ramakrishna, A Text Book of Practical Physics, Kitab Mahal



KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY II Year
SEMESTER – III

ANIMAL PHYSIOLOGY AND ANIMAL BEHAVIOUR

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Digestion

- 1.1.1 **Enzymes:** Definition, Classification, Inhibition, Regulation
- 1.1.2 Digestion of Carbohydrates, Proteins, Lipids and Cellulose
- 1.1.3 Absorption and Assimilation of digested food
- 1.1.4 Role of Gastrointestinal hormones in digestion

1.2 Excretion, Homeostasis and Osmoregulation

- 1.2.1 Classification of Animals on the basis of excretory products: Ammonotelic, Ureotelic, and Uricotelic; Structure and function of Nephron
- 1.2.2 Urine formation and Counter current mechanism
- 1.2.3 Concept and Mechanism of Homeostasis
 - a) Hormone regulation of Blood Glucose levels in Human being
 - b) Water and Ionic Regulation by Marine and Fresh water Animals
 - c) Thermo regulation in Human being
- 1.2.4 Osmoregulation in Marine, Fresh and Brackish water Animals

UNIT – II

2.1 Respiration

- 2.1.1 Definition of Respiration, Respiration mechanism, External, Internal and Cellular Respiration.
- 2.1.2 Respiratory Pigments; Transport of Oxygen, Oxygen dissociation curves, and Bohr's Effect;
- 2.1.3 Transport of Carbon dioxide, Chloride shift
- 2.1.4 Regulation of Respiration; Nervous and Chemical Mechanism

2.2 Circulation

- 2.2.1 Types of Circulation Open and Closed; Structure of Mammalian Heart
- 2.2.2 Types of Hearts: Myogenic and Neurogenic
- 2.2.3 Heart functions - Conduction and Regulation of Heart beat, Regulation of Heart rate; ECG
- 2.2.4 Tachycardia and Bradycardia; Blood Clotting mechanism

UNIT – III

3.1 Muscle Contraction

- 3.1.1 Types of Muscles
- 3.1.2 Ultra structure of skeletal muscle fibre
- 3.1.3 Mechanism and Chemical changes during Muscle Contraction (Sliding filament theory)
- 3.1.4 Twitch Tetanus summation and Treppe fatigue

3.2 Nerve Impulse

3.2.1 Structure of Neuron

3.2.2 Nerve impulse - Resting potential, Threshold potential and Action potential, Conduction of Nerve impulse

3.2.3 Transmission of Nerve impulse

3.2.4 Synapse and Synaptic transmission; Neurotransmitters-EPSP, IPSP

3.3 Endocrine System

3.3.1 Endocrine glands - Structure, secretions and functions of Pituitary gland

3.3.2 Thyroid, Parathyroid, Adrenal glands and Pancreas

3.3.3 Hormone action and Concept of Secondary messengers

3.3.4 Male and Female Hormones; Hormonal control of Menstrual cycle in human beings

UNIT – IV

4.1 Animal Behaviour

4.1.1 Types of Behaviour- Innate and Acquired; Instinctive and Motivated behaviour

4.1.2 Taxes, Reflexes, Tropisms

4.2 Learning and Memory

4.2.1 **Types of Learning:** Trial and Error Learning, Imprinting, Habituation

4.2.2 **Conditioning:** Classical Conditioning; Instrumental conditioning, Examples of Conditioning, Pavlov's Experiment

4.3 Social Behaviour and Communication

4.3.1 Social behaviour of insects (Dance language of honey bees) Colonial Existence of Bees and Termites; Pheromones

4.4 Biological Rhythms

4.4.1 Biological Clocks, Circadian Rhythms; solar and lunar Rhythms; Circannual Rhythms

Suggested Readings:

1. **Gerard J. Tortora and Sandra Reynolds Garbowski** *Principles of Anatomy and Physiology*, Tenth Ed., John Wiley & Sons
2. **Arthur C. Guyton MD**, *A Text Book of Medical Physiology*, Eleventh ed., John E. Hall, Harcourt Asia Ltd.
3. **William F. Ganong**, *A Review of Medical Physiology*, 22 ed, McGraw Hill, 2005
4. **Sherwood, Klandrof, Yanc**, *Animal Physiology*, Thompson Brooks/Coole, 2005.
5. **Sherwood, Klandrof, Yanc**, *Human Physiology*, Thompson Brooks/Coole, 2005.
6. **Knut Schmidt-Nielson**, *Animal Physiology*, 5th edition, Cambridge Low Price Edition.
7. **Roger Eckert and Randal**, *Animal Physiology*, 4th ed, Freeman Co, New York.
8. **Singh. H.R**, *Text Book of Animal Physiology and Biochemistry*
9. **Nagabhushanam**, *Comparative Animal Physiology*
10. **Veer Bal Rastogi**, *Text Book of Animal Physiology*
11. **Dasmann**, "Wild Life Biology"
12. **Reena Mathur**, "Animal Behaviour"
13. **Alocock**, "Animal Behaviour- an Evolutionary Approach"

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY II Year
SEMESTER – III

ANIMAL PHYSIOLOGY AND ANIMAL BEHAVIOUR
(PRACTICAL)

Instruction: 3 hrs per week

No. of Credits: 1

1. Qualitative tests for identification of carbohydrates, proteins and fats
2. Qualitative tests for identification of ammonia, urea and uric acid
(Nitrogenous excretory products)
3. Zonation of gut in Cockroaches
4. Study on effect of pH and Temperature on salivary amylase activity
5. Study of permanent histological sections of mammalian endocrinal glands: Pituitary, Thyroid, Pancreas, Adrenal gland
6. Estimation of Haemoglobin by Sahli's method
7. Estimation of Blood Clotting time
8. Estimation of total protein by Biuret's method
9. Estimation of unit metabolism of fish

- **Laboratory Record work shall be submitted at the time of practical examination**
- **Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

Tortora, G.J. and Derrickson, B.H. (2009).*Principles of Anatomy and Physiology*, XII Edition, John Wiley & Sons, Inc.

Widmaier, E.P., Raff, H. and Strang, K.T. (2008) *Vander's Human Physiology*, XI Edition., McGraw Hill

Guyton, A.C. and Hall, J.E. (2011). *Textbook of Medical Physiology*, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company

Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006).*Biochemistry*.VI Edition. W.H Freeman and Co.

Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009).*Principles of Biochemistry*. IV Edition. W.H. Freeman and Co.

Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009).

Harper's Illustrated Biochemistry. XXVIII Edition. Lange Medical Books/Mc Graw3Hill.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2019–2022)
B.Sc. CHEMISTRY II Year
SEMESTER – III

Paper-III
Chemistry - III

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S3-I-1: Chemistry of f-block elements:

5 h

Chemistry of Lanthanides: Position in periodic table, Electronic structure, oxidation state, ionic and atomic radii- lanthanide contraction- cause and consequences, anomalous behavior of post lanthanides-complexation- type of donor ligands preferred. Magnetic properties- paramagnetism. Colour and spectra, f-f transitions –occurrence and separation– ion exchange method, solvent extraction.

Chemistry of actinides- general features – electronic configuration, oxidation state, actinide contraction, colour and complex formation. Comparison with lanthanides.

S3-I-2: Coordination Compounds-I

6 h

Simple inorganic molecules and coordination complexes. Nomenclature – IUPAC rules, 1. Coordination number, coordination geometries of metal ions, types of ligands. 2. Brief review of Werner's theory, Sidgwick's electronic interpretation and EAN rule and their limitations. (Valence bond theory (VBT) – postulates and application to (a) tetrahedral complexes $[\text{Ni}(\text{NH}_3)_4]^{2+}$, $[\text{NiCl}_4]^{2-}$ and $[\text{Ni}(\text{CO})_4]$ (b) Square planar complexes $[\text{Ni}(\text{CN})_4]^{2-}$, $[\text{Cu}(\text{NH}_3)_4]^{2+}$, $[\text{PtCl}_4]^{2-}$ (c) Octahedral complexes $[\text{Fe}(\text{CN})_6]^{4-}$, $[\text{Fe}(\text{CN})_6]^{3-}$, $[\text{FeF}_6]^{4-}$, $[\text{Co}(\text{NH}_3)_6]^{3+}$, $[\text{CoF}_6]^{3-}$. Limitations of VBT. 3. Isomerism in coordination compounds, stereo isomerism – (a) geometrical isomerism in (i) square planar meta l complexes of the type $[\text{MA}_2\text{B}_2]$, $[\text{MA}_2\text{BC}]$, $[\text{M}(\text{AB})_2]$, $[\text{MABCD}]$. (ii) Octahedral metal complexes of the type $[\text{MA}_4\text{B}_2]$, $[\text{M}(\text{AA})_2\text{B}_2]$, $[\text{MA}_3\text{B}_3]$ using suitable examples, (b) Optical isomerism in (i). tetrahedral complexes $[\text{MABCD}]$, (ii). Octahedral complexes $[\text{M}(\text{AA})_2\text{B}_2]$, $[\text{M}(\text{AA})_3]$ using suitable examples. Structural isomerism: ionization, linkage, coordination ligand isomerism using suitable examples.

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S3-I-3: Metal carbonyls and Organometallic Chemistry**4 h**

Metal carbonyls: Preparation and properties of $\text{Ni}(\text{CO})_4$. Structural features of $\text{Ni}(\text{CO})_4$, $\text{Fe}(\text{CO})_5$, $\text{Fe}_2(\text{CO})_9$, $\text{Fe}_3(\text{CO})_{12}$ and $\text{Cr}(\text{CO})_6$ - 18 valence electron rule.

Definition, nomenclature and classification of organometallic compounds. Methods of preparation, properties and applications of alkyl and aryl compounds of Li, Mg & Al.

Unit - II (Organic Chemistry)**15h(1 hr/week)****S3-O-1: Carboxylic acids and derivatives****5 h**

Preparation: a) Hydrolysis of Nitriles, amides and esters. b) Carbonation of Grignard reagents. Special methods of preparation of Aromatic Acids - Oxidation of Arenes. Physical properties - hydrogen bonding, dimeric association. Chemical properties - Reactions involving H, OH and COOH groups - salt formation, anhydride formation, Acid halide formation, Esterification (mechanism) & Amide formation. Reduction of acid to the corresponding primary alcohol - via ester or acid chloride. Degradation of carboxylic acids by Huns Diecker reaction, Schmidt reaction (Decarboxylation). Arndt - Eistert synthesis, Halogenation by Hell - Volhard - Zelensky reaction. Carboxylic acid Derivatives - Hydrolysis and Amonolysis of acid halides, Acid anhydrides and esters (mechanism of ester hydrolysis by base and acid). Hydrolysis and dehydration of amides.

S3-O-2: Nitrohydrocarbons**3 h**

Preparation of Nitroalkanes. Reactivity - halogenation, reaction with HNO_2 (Nitrous acid), Nef reaction, reduction. Aromatic Nitrohydrocarbons: Preparation of Nitrobenzene by Nitration. Physical properties, chemical reactivity - Reduction of Nitrobenzenes in different media.

S3-O-3: Amines, Cyanides and Isocyanides**7 h**

Amines: classification into 1° , 2° , 3° Amines and Quarternary ammonium compounds. Preparative methods - Ammonolysis of alkyl halides, Gabriel synthesis, Hoffman's bromamide reaction (mechanism). Reduction of Amides and Schmidt reaction. Physical properties. Use of amine salts as phase transfer catalysts. Chemical Properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation. Reaction with Nitrous acid of 1° , 2° , 3° (Aliphatic and aromatic amines). Electrophilic substitutions of Aromatic amines - Bromination and Nitration, oxidation of aryl and 3° Amines, diazotisation. Diazonium salts: Preparation with mechanism. Synthetic importance - a) Replacement of diazonium group by - OH, X (Cl) - Sandmeyer and Gatterman reaction, by fluorine (Schiemann's reaction), by iodine, CN, NO_2 , H and aryl groups. Coupling Reaction of diazonium salts. i) with phenols ii) with anilines. Reduction to phenyl hydrazines.

Cyanides and isocyanides: Structure. Preparation of cyanides from a) Alkyl halides b) from amides c) from aldoximes. Preparation of isocyanides from Alkyl halides and Amines. Properties of cyanides and isocyanides, a) hydrolysis b) addition of Grignard reagent iii)

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reduction iv) oxidation.

Unit III (Physical Chemistry)

15 h (1 hr/week)

S3-P-1: Thermodynamics -I

10 h

A brief review of - Energy, work and heat units, mechanical equivalent of heat, definition of system, surroundings. First law of thermodynamics statement- various forms mathematical expression. Thermodynamic quantities- extensive properties and intensive properties, state function and path functions. Energy as a state function and exact differential. Work of expansion and heat absorbed as path function.

Expression for work of expansion, sign convention problems on first law. Heat changes at constant pressure and heat changes at constant volume. Enthalpy. Heat capacities at constant pressure and constant volume. Derivation of $C_p - C_v = R$. Isothermal adiabatic processes. Reversible and irreversible processes. Reversible change and maximum work. Derivation of expression for maximum work for isothermal reversible process. Problems. Internal energy of an ideal gas. Joules experiment. Joule-Thompson coefficient. Adiabatic changes in ideal gas, derivation of equation, $PV^\gamma = \text{constant}$. P-V curves for isothermal and adiabatic processes. Heat of a reaction at constant volume and at constant pressure, relation between ΔH and ΔV .

Variation of heat of reaction with temperature. Kirchhoff's equation and problems. Limitations of first law and need for second law. Statement of second law of thermodynamics. Cyclic process. Heat engine, Carnot's theorem, Carnot's cycle. Derivation of efficiency of heat engine. Problems. Thermodynamic scale of temperature.

S3-P-2: Thermodynamics-II

5 h

Entropy: Definition from Carnot's cycle. Entropy as a state function. Entropy as a measure of disorder. Sign of entropy change for spontaneous and non-spontaneous processes & equilibrium processes. Entropy changes in i). Reversible isothermal process, ii). Reversible adiabatic process, iii). Phase change, iv). Reversible change of state of an ideal gas. Problems. Entropy of mixing of ideal gases. Free energy Gibbs function (G) and Helmholtz's function (A) as thermodynamic quantities. Concept of maximum work and maximum ΔG as Criteria for spontaneity. Derivation of equation $\Delta G = \Delta H - T\Delta S$. Significance of the equation. Gibbs equations and Maxwell relations. Variation of G with P, V and T.

Unit - IV (General Chemistry)

15 h (1 hr/week)

S3-G-1 Evaluation of analytical data

4 h

Significant figures, accuracy and precision. Errors-classification of errors- determinate and indeterminate errors, absolute and relative errors. Problems based on mean, median, range, standard deviation

S3-G-2: Carbanions-I

5 h

Introduction, acidic nature of α -hydrogens and tautomerism in carbonyl compounds, nitro hydrocarbons, ethyl acetoacetate, diethyl malonate. Terminal alkynes. Stability of carbanions Reactions : Aldol reaction, Perkin reaction, Benzoin condensation, haloform reaction, conversion of smaller alkynes to higher alkynes.

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S3-G-3: Phase Rule

6 h

Statement and meaning of the terms – Phase, Component and Degrees of freedom, Gibb's Phase rule, phase equilibria of one component system – water system. Phase equilibria of two-component system – Solid-Liquid equilibria, simple eutectic –Pb-Ag system, desilverisation of lead. Solid solutions – compound with congruent melting point – Mg-Zn system and incongruent melting point – NaCl-H₂O system.

References

General reference: B.Sc II Year Chemistry : Semester III, Telugu Academy publication, Hyd
Unit- I

1. Analytical chemistry by G. L. David Krupadanam, D. Vijaya Prasad, K. Varaprasada Rao, K.L.N. Reddy and C. Sudhakar
2. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications(1996).
3. Concise Inorganic Chemistry by J.D. Lee 3rd edn Van Nostrand Reinhold Company(1977)
4. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers (2001).
5. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4th edn. (2006)
6. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press(1989).
7. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press (1999).
8. Textbook of Inorganic Chemistry by R Gopalan(Universities Press(2012)
9. College Practical chemistry by V K Ahluwalia, Sunitha Dhingra and Adarsh Gulati Universities Press (India) Limited(2012)

Unit- II

1. Text book of organic chemistry by Soni. Sultan Chand & Sons; Twenty Ninth edition (2012)
2. General Organic chemistry by Sachin Kumar Ghosh. New Age Publishers Pvt Ltd (2008).
3. Text book of organic chemistry by Morrison and Boyd. Person(2009)
4. Text book of organic chemistry by Graham Solomons. Wiley(2015)
5. Text book of organic chemistry by Bruice Yuranis Powla. (2012)
6. Text book of organic chemistry by C N pillai CRC Press (2012)
7. Organic Chemistry by L. G. Wade Jr.
8. Organic Chemistry by M. Jones, Jr
9. Organic Chemistry by John McMurry.

Unit III

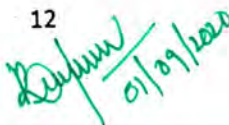
1. Principles of physical chemistry by Prutton and Marron. The MacmillanCompany; 4th Edn.(1970)
2. Text Book of Physical Chemistry by Soni and Dharmahara. Sulthan Chand and Sons.(2011)
3. Text Book of Physical Chemistry by Puri and Sharma. S. Nagin chand and Co.(2017)
4. Text Book of Physical Chemistry by K. L. Kapoor. (2012)
5. Colloidal and surface chemistry , M. Satake, Y. Hayashi, Y.Mido, S.A.Iqbal and M.S.sethi, Discovery Publishing Pvt.Ltd (2014)
7. Material science by Kakani & Kakani, New Age International(2016)
8. Physical Chemistry by Ira Levine (Author) McGraw-Hill Education; 6 edition (May 9, 2008)

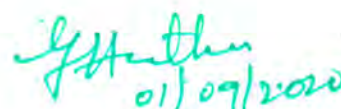
Unit IV

1. Text book of organic chemistry by Morrison and Boyd, Person(2009)


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2. Text book of organic chemistry by Graham solomons, Wiley(2015)
3. Text book of organic chemistry by Sony, Sultan Chand & Sons; 29th edition (2012)
4. Text book of organic chemistry by Bruice yuranis Powla, (2012)
5. General Organic chemistry by Sachin kumar Ghosh, New Age Publishers Pvt Ltd (2008)

Laboratory Course

Paper III (Organic Synthesis)

45 h (3h/week)

1. Synthesis of Organic compounds:

Acetylation: Acetylation of salicylic acid, Benzoylation of Aniline.

Aromatic electrophilic substitution: Nitration: Preparation of nitro benzene and m-dinitro benzene.

Halogenation: Preparation of p-bromo acetanilide, Preparation of 2,4,6-tribromo phenol

Oxidation: Preparation of benzoic acid from benzyl chloride.

Esterification: Preparation of n-butyl acetate from acetic acid.

Methylation: Preparation of - naphthyl methyl ether.

Condensation: Preparation of benzilidene aniline and Benzaldehyde and aniline.

Diazotisation: Azocoupling of β -Naphthol.

2. Microwave assisted synthesis of Asprin – DEMO (demonstration only)

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KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit-I

Basic Concepts: Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models: Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

Unit-II

Database Integrity And Normalization: Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalization, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

File Organization: Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

Unit-III

Structures Query Language (SQL): Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit-IV

Transactions and Concurrency Management: Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

Text Book: Database Systems: R.Elmasri & S.B. Navathe, Pearson.

References:

1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

Library Books (Accession number, Title, Author, Department, Purchase Date, Price),

Issued Books (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled “Database System Concepts”.
- c) Change the Department of the book titled “Discrete Maths” to “CS”.
- d) List all books that belong to “CS” department.
- e) List all books that belong to “CS” department and are written by author “Navathe”.
- f) List all computer (Department=“CS”) that have been issued.
- g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks (rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
- c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (Cust ID, email, Name, Phone, Referrer ID)

Bicycle (Bicycle ID, Date Purchased, Color, Cust ID, Model No)

Bicycle Model (Model No, Manufacturer, Style) Service

(Start Date, Bicycle ID, End Date)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
- c) List the bicycles purchased by the customers who have been referred by Customer "C1".
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column "email" of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
- f) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Hyderabad.
- j) Get part numbers for part supplied by a supplier in Warangal to a project in

Chennai.

- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit-I

Basic Concepts: Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models: Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

Unit-II

Database Integrity And Normalization: Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalization, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

File Organization: Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

Unit-III

Structures Query Language (SQL): Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit-IV

Transactions and Concurrency Management: Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

Text Book: Database Systems: R.Elmasri & S.B. Navathe, Pearson.

References:

1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

Library Books (Accession number, Title, Author, Department, Purchase Date, Price),

Issued Books (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled “Database System Concepts”.
- c) Change the Department of the book titled “Discrete Maths” to “CS”.
- d) List all books that belong to “CS” department.
- e) List all books that belong to “CS” department and are written by author “Navathe”.
- f) List all computer (Department=“CS”) that have been issued.
- g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks (rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
- c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (Cust ID, email, Name, Phone, Referrer ID)

Bicycle (Bicycle ID, Date Purchased, Color, Cust ID, Model No)

Bicycle Model (Model No, Manufacturer, Style) Service

(Start Date, Bicycle ID, End Date)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
- c) List the bicycles purchased by the customers who have been referred by Customer "C1".
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column "email" of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
- f) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Hyderabad.
- j) Get part numbers for part supplied by a supplier in Warangal to a project in

Chennai.

- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020–2021 onwards)

B.Sc. Computer Science II Year SEMESTER – III

DATA STRUCTURES USING C++

Theory: 4 Hours/Week; **Credits:** 4 **Marks:** 100 (Internal: 20; External: 80)
Practical: 3 Hours/Week **Credits:** 1 **Marks:** 25

Unit - I

Basic data Structure: Introduction to Data Structures, Types of Data Structures, and Introduction to Algorithms, Pseudo code, and Relationship among data, data structures, and algorithms, Implementation of data structures, Analysis of Algorithms.

Stacks: Concept of Stacks and Queues, Stacks, Stack Abstract Data Type, Representation of Stacks Using Sequential Organization (Arrays), Multiple Stacks, Applications of Stack, Expression Evaluation and Conversion, Polish notation and expression conversion, Processing of Function Calls, Reversing a String with a Stack, Recursion.

Unit - II

Recursion: Introduction, Recurrence, Use of Stack in Recursion, Variants of Recursion, Recursive Functions, Iteration versus Recursion.

Queues: Concept of Queues, Queue as Abstract Data Type, Realization of Queues Using Arrays, Circular Queue, Multi-queues, Dequeue, Priority Queue, Applications of Queues,

Linked Lists: Introduction, Linked List, Linked List Abstract Data Type, Linked List Variants, Doubly Linked List, Circular Linked List, Representation of Sparse Matrix Using Linked List, Linked Stack, Linked Queue.

Unit - III

Trees: Introduction, Types of Trees, Binary Tree, Binary Tree Abstract Data Type, Realization of a Binary Tree, Insertion of a Node in Binary Tree, Binary Tree Traversal, Other Tree Operations, Binary Search Tree, Threaded Binary Tree, Applications of Binary Trees.

Searching and Sorting: Search Techniques-Linear Search, Binary Search, Sorting Techniques- Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort, Comparison of All Sorting Methods, Search Trees: Symbol Table, Optimal Binary Search Tree, AVL Tree (Height-balanced Tree).

Unit - IV

Graphs: Introduction, Representation of Graphs, Graph Traversal – Depth First Search, Breadth First Search, Spanning Tree, Prim's Algorithm, Kruskal's Algorithm.

Hashing: Introduction, Key Terms and Issues, Hash Functions, Collision Resolution Strategies, Hash Table Overflow, Extendible Hashing

Heaps: Basic Concepts, Implementation of Heap, Heap as Abstract Data Type, Heap Sort, Heap Applications.

Text books:

1. Varsha H. Patil "Data structures using C++" Oxford University press, 2012
2. M.T. Goodrich, R. Tamassia and D. Mount, Data Structures and Algorithms in C++, John Wiley and Sons, Inc., 2011.

References:

1. Adam Drozdek "Data structures and algorithm in C++" Second edition, 2001
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, Introduction to Algorithms, 2nd Ed., Prentice-Hall of India, 2006.
3. Robert L. Kruse and A.J. Ryba, Data Structures and Program Design in C++, PrenticeHall, Inc., NJ, 1998.
4. B. Stroustrup, The C++ Programming Language, Addison Wesley, 2004
5. D.E. Knuth, Fundamental Algorithms (Vol. I), Addison Wesley, 1997

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2020–2021 onwards)
B.Sc. Computer Science II Year
SEMESTER – III

DATA STRUCTURES USING C++ LAB
Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
 - External Vice-Voce is compulsory.
1. Write C++ programs to implement the following using an array
 - a) Stack ADT
 - b) Queue ADT
 2. Write a C++ program to implement Circular queue using array.
 3. Write C++ programs to implement the following using a single linked list.
 - a) Stack ADT
 - b) Queue ADT
 4. Write a C++ program to implement Circular queue using Single linked list.
 5. Write a C++ program to implement the double ended queue ADT using double linked list.
 6. Write a C++ program to solve tower of Hanoi problem recursively
 7. Write C++ program to perform the following operations:
 - a) Insert an element into a binary search tree.
 - b) Delete an element from binary search tree.
 - c) Search for a key in a binary search tree.
 8. Write C++ programs for the implementation tree traversal technique BFS.
 9. Write a C++ program that uses recursive functions to traverse a binary search tree.
 - a) Pre-order
 - b) In-order
 - c) Post-order
 10. Write a C++ program to find height of a tree.
 - 11 Write a C++ program to find MIN and MAX element of a BST.
 - 12 Write a C++ program to find Inorder Successor of a given node.
 13. Write C++ programs to perform the following operations on B-Trees and AVL Trees.
 - a) Insertion
 - b) Deletion
 - 14 Write C++ programs for sorting a given list of elements in ascending order using the following sorting methods.
 - a) Quick sort
 - b) Merge sort
 15. Write a C++ program to find optimal ordering of matrix multiplication.
 16. Write a C++ program that uses dynamic programming algorithm to solve the optimal binary search tree problem
 17. Write a C++ program to implement Hash Table
 18. Write C++ programs to perform the following on Heap
 - a) Build Heap
 - b) Insertion
 - c) Deletion
 19. Write C++ programs to perform following operations on Skip List
 - a) Insertion
 - b) Deletion
 20. Write a C++ Program to Create a Graph using Adjacency Matrix Representation.
 21. Write a C++ program to implement graph traversal techniques
 - a) BFS
 - b) DFS
 22. Write a C++ program to Heap sort using tree structure.

KAKATIYA UNIVERSITY, WARANGAL
B.A., B.Sc., B.Com. & B.B.A (CBCS)
Syllabus - 2020
Telugu (Second Language)
4th Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) నారద గానమాత్యర్యం - పింగలి సూరన
- 2) వాగ్దాన భంగం - అసూరి మరింగంటి వేంకట నరసింహాచార్యులు
- 3) నారసింహ శతకం - ధర్మపురి శేషప్ప

Unit -II ఆధునిక పద్యభాగం

- 1) నరుడ నేను, నరుడ నేను - కాళోజీ
- 2) ఆత్మగీతం - దేవరకొండ బాలగంగాధర తిలక్
- 3) దేవరకొండ దుర్గం - డా॥ ముకురాల రామారెడ్డి

Unit -III వచన విభాగం

- 1) అర్థరాత్రి అరుణోదయం - దాశరథి రంగాచార్య
- 2) సి.పి బ్రౌన్ సాహిత్య సేవ - జానమద్ది హనుమచ్ఛాస్త్రి
- 3) మన గ్రామ నామాలు - డా॥ కపిలవాయి లింగమూర్తి
- 4) నివురు తొలగిన నిప్పు - పోల్కంపల్లి శాంతాదేవి
- 5) కొండమల్లెలు - ఇల్లిందల సరస్వతీదేవి

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం


29-8-2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL(A.P.)





Head
Department of Telugu
Kakatiya University
Warangal-506 09(T.S.).

B.A, B.Sc & B.Com SECOND YEAR.

URDU SECOND LANGUAGE

"MUTALA-E-ADAB" (Part - II)

(Compiled by Urdu Department - Osmania University - Hyderabad)
published in August 2008 by Urdu Academy - Hyderabad.

SEMISTER - IV

PAPER - IV

POETRY & PROSE

UNIT: I

MARSIA: "GARM KA SAMAN" by Meen Anees.

UNIT: II:

1. RUBAIYAT: a) ANEES - Pурсan koi kab Jawher - e -
Zaati ka hai.

ANEES - Duniya bhi jab Sataye - e -
Fani Dekhi.

b) HALI - Duniya - e - Demi ko Naqsh - e
Fani Samjha.

HALI - Yaro Nahi waqt Alam ka yeh.

c) AMJAD - Koshish hai apni tamam
Satayash ke liye.

AMJAD - Kam Zarf Ager Daulat - o -
Zar pata hai.

2. QITAAT: a) AKBAR ILAHRADI - Chod Literature
ko Apni History Bhoal Ja.

b) ALLAM IQBAL - Andaz - e - Bayan

Ger - che - Bahut Shookh nahi
hai.

PAPER – IV:: WAVES AND OPTICS

Theory:	4 Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical:	3 Hours/Week	Credits: 1	Marks: 25

UNIT-I:

Waves

Fundamentals of Waves -Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at ends, overtones, energy transport, transverse impedance.

Longitudinal vibrations in bars- wave equation and its general solution, Special cases: (i) bar fixed at both ends, ii) bar fixed at the midpoint, iii) bar free at both ends, iv) bar fixed at one end, Transverse vibrations in a bar - wave equation and its general solution. Boundary conditions, clamped free bar, free-free bar, bar supported at both ends, Tuning fork.

UNIT II:

Interference

Principle of superposition – coherence – temporal coherence and spatial coherence – conditions for Interference of light.

Interference by division of wave front: Fresnel's biprism – determination of wave length of light. Determination of thickness of a transparent material using biprism – change of phase on reflection – Lloyd's mirror experiment.

Interference by division of amplitude: Oblique incidence of a plane wave on a thin film due to reflected and transmitted light (Cosine law) – Colours of thin films – Non-reflecting films – interference by a plane parallel film illuminated by a point source – Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film) – Determination of diameter of wire-Newton's rings in reflected light with and without contact between lens and glass plate, Newton's rings in transmitted light (Haidinger Fringes) – Determination of wave length of monochromatic light – Michelson Interferometer – types of fringes – Determination of wavelength of monochromatic light, Difference in wavelength of sodium D_1, D_2 lines and thickness of a thin transparent plate.

UNIT III:

Diffraction:

Introduction – Distinction between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction:- Diffraction due to single slit and circular aperture – Limit of resolution – Fraunhofer diffraction due to double slit – Fraunhofer diffraction pattern with N slits (diffraction grating).

Resolving Power of grating – Determination of wave length of light in normal and oblique incidence methods using diffraction grating.

Fresnel diffraction-Fresnel's half period zones – area of the half period zones –zone plate – Comparison of zone plate with convex lens – Phase reversal zone plate – diffraction at a straight edge – difference between interference and diffraction.





UNIT IV:

Polarization

Polarized light : Methods of Polarization, Polarization by reflection, refraction, Double refraction, selective absorption , scattering of light – Brewster’s law – Malus law – Nicol prism polarizer and analyzer – Refraction of plane wave incident on negative and positive crystals (Huygen’s explanation) – Quarter wave plate, Half wave plate – Babinet’s compensator – Optical activity, analysis of light by Laurent’s half shade polarimeter.

NOTE: Problems should be solved at the end of every chapter of all units.

Suggested books

1. **Optics** by Ajoy Ghatak. *The McGraw-Hill companies.*
2. **Optics** by Subramaniyam and Brijlal. *S. Chand & Co.*
3. **Fundamentals of Physics.** Halliday/Resnick/Walker.C. *Wiley India Edition 2007.*
4. **Optics and Spectroscopy.** R. Murugesan and Kiruthiga Siva Prasath. *S. Chand & Co.*
5. **Second Year Physics – Telugu Academy.**
1. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand & Co. Publications.*
2. **Feynman’s Lectures on Physics** Vol. 1, 2, 3 & 4. *Narosa Publications.*
3. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*
4. K. Ghatak, **Physical Optics’**
5. D.P. Khandelwal, **Optical and Atomic Physics’** (Himalaya Publishing House, Bombay, 1988)
11. Jenkins and White: **‘Fundamental of Optics’** (McGraw-Hill)
12. Smith and Thomson: **‘Optics’** (John Wiley and sons).



PAPER – IV:: WAVES AND OPTICS
PRACTICALS

1. Thickness of a wire using wedge method.
2. Determination of wavelength of light using Biprism.
3. Determination of Radius of curvature of a given convex lens by forming Newton's rings.
4. Resolving power of grating.
5. Study of optical rotation- polarimeter.
6. Dispersive power of a prism
7. Determination of wavelength of light using diffraction grating minimum deviation method.
8. Wavelength of light using diffraction grating – normal incidence method.
9. Resolving power of a telescope.
10. Refractive index of a liquid and glass (Boys Method).
11. Pulfrich refractometer – determination of refractive index of liquid.
12. Wavelength of Laser light using diffraction grating.
13. Verification of Laws of a stretched string (Three Laws).
14. Velocity of Transverse wave along a stretched string
15. Determination of frequency of a bar- Melde's experiment

Note: Minimum of eight experiments should be performed Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastav.





KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2019 - 2022)

B.A. / B.Sc. Life Science (Computer Applications) II Year

SEMESTER – IV

MULTI MEDIA SYSTEMS

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit - I

Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality; Delivering Multimedia.

Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

Images: Before You Start to Create, Making Still Images, Color.

Unit - II

Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats, Adding Sound to Your Multimedia Project.

Animation: The Power of Motion, Principles of Animation, Animation by Computer, Making Animations.

Video: Using Video, How Video Works and Is Displayed, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video.

Unit - III

Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems

Designing and producing: designing the structure, designing the user interface, a multimedia design case history, producing.

Unit - IV

The Internet and Multimedia: Internet History, Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web, Video for the Web.

Delivering: Testing, Preparing for Delivery, Delivering on CD-ROM, DVD and World Wide Web, Wrapping.

Text Book:

1. Tay Vaughan, "Multimedia: Making it work", TMH, Eighth edition.

References:

1. Ralf Steinmetz and KlaraNaharstedt, "Multimedia: Computing, Communications Applications", Pearson.
2. Keyes, "Multimedia Handbook", TMH.
3. K. Andleigh and K. Thakkar, "Multimedia System Design", PHI.
4. Spoken Tutorial on "GIMP" as E-resource for Learning:-<http://spoken-tutorial.org>
5. Spoken Tutorial on "Blender" as E-resource for Learning:-<http://spoken-tutorial.org>

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.A. / B.Sc. Life Science (Computer Applications) II Year
SEMESTER – IV

MULTI MEDIA SYSTEMS -LAB

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, Pen, oval, circle, rectangle, square, pencil, brush, lasso tool
2. Create an animation using text tool to set the font, size, colour etc.
3. Create an animation using Free transform tool that should use followings-
 - Move Objects
 - Skew Objects
 - Stretch Objects
 - Rotate Objects
 - Stretch Objects while maintaining proportion
 - Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background colour etc.) Using the following tools
 - Eraser tool
 - Hand tool
 - Ink bottle tool
 - Zoom tool
 - Paint Bucket tool
 - Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.A. / B.Sc. Life Science (Computer Applications) II Year
SEMESTER – IV

PYTHON – II

(Skill Enhancement Course – III)

Theory

2Hours/Week

2Credits

Unit – I

Functions: Introduction, Defining and Calling a Void Function, Designing a Program to Use Functions, Local Variables, Passing Arguments to Functions, Global Variables and Global Constants, Value-Returning Functions

Unit - II

Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions in Modules. Recursion: Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms. Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings.

Text Book:

Tony Gaddis, Starting Out With Python (3e)

References:

1. Kenneth A. Lambert, Fundamentals of Python
2. Clinton W. Brownley, Foundations for Analytics with Python
3. James Payne, Beginning Python using Python 2.6 and Python 3
4. Charles Dierach, Introduction to Computer Science using Python
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3.

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.A. / B.Sc. Life Science (Computer Applications) II Year
SEMESTER – IV

SCI LAB – II

(Skill Enhancement Course –IV)

Theory

2Hours/Week

2Credits

Unit – I

Programming in scilab – introduction, variables & variable names, assignment statements, arithmetic, relational, logical operators, input & output, flow control/branching/conditional statements, break and continue, handling matrices with loops.

Menus and Dialog Boxes – introduction, a simple menu example, scilab window with greetings menu added, executing submenus from command line, linking menus to scilab code from external files, entering data through dialog boxes

Unit – II

Graphic Output – introduction, 2d plotting, function versions for graphic commands, 3d plotting, other graphic primitives.

String Handling Functions – symbolic processing in scilab, creation of a linear combination of arguments, string to ASCII conversion, creation of a string of blank characters, conversion of a string to uppercase and lowercase, string matching, string concatenation, reversing a string, replacement of a string by another, length of a string, type checking.

Text Book:

1. Er. Hema Ramachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB
2. Sci lab a Beginners Approach by Anil kumar Varma

References:

1. Digite, Introduction to ScilabDigite, Optimization in ScilabScilab Enterprises, Scilab for Very Beginners Digite, Introduction to Discrete Probabilities with Scilab

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020–2021 onwards)

B.Sc. BOTANY II Year

SEMESTER – IV

CELL BIOLOGY AND PLANT PHYSIOLOGY

Theory: 4 Hours/Week Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

UNIT I: Plant cell envelopes: Ultra structure of cell wall, molecular organization of cell membranes.

1. Models of membrane structure, Functions, fluidity and Selective permeability of the membranes.
2. Cell Organelles: Structure and semiautonomous nature of Mitochondria and Chloroplast.
3. Structure and role of endoplasmic reticulum, ribosomes, golgi complex, lysosomes, peroxisomes and glyoxisomes.

UNIT-II

Nucleus: Ultra structure, types and functions of DNA & RNA.

4. Chromosomes: Morphology, organization of DNA in a chromosome, Euchromatin and Heterochromatin, Karyotype. Special types of chromosomes: Lampbrush and Polytene chromosomes.
5. Extra nuclear genome: Mitochondrial DNA and Plastid DNA.. Plasmids.
8. Cell division: Cell and its regulation; mitosis, meiosis and their significance

UNIT- III

9. Plant -Water Relations: Physical properties of water, diffusion, imbibitions, osmosis; osmotic and pressure Potential, absorption and transport of water.
10. Mineral Nutrition: Essential macro and micro mineral nutrients, and symptoms of mineral deficiency.
11. Transpiration; Stomatal structure and movement. Mechanism of phloem transport. Mechanism of phloem transport.
12. Enzymes: Nomenclature, Characteristics, Classification and factors regulating enzyme activity.

UNIT- IV

13. Photosynthesis: Photosynthetic pigments, Mechanism of photosynthetic electron transport and evolution of oxygen, Photophosphorylation . Carbon assimilation pathways: C3, C4 and CAM.
14. Respiration: Aerobic and Anaerobic; Glycolysis, Krebs cycle and electron transport system.
15. Nitrogen Metabolism: Biological nitrogen fixation
16. Physiological effects of Phytohormones: Auxins, gibberellins, cytokinins, ABA, ethylene and Brassinosteroids

References:

1. Sharma, A. K. and A. Sharma. 1999. Plant Chromosomes: Analysis, Manipulation and Engineering. Harward Academic Publishers, Australia.
2. Shukla, R. S. and P. S. Chandel. 2007. Cytogenetics, Evolution, Biostatistics and Plant Breeding. S.Chand & Company Ltd., New Delhi.
3. Verma, P. S. and V. K. Agrawal. 2004. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S. Chand & Company Ltd., New Delhi. 1. Hopkins, W. G. 1995.
4. Introduction to Plant Physiology. John Wiley & Sons Inc., New York, USA
5. Jain, J.L., S. Jain and Nitin Jain. 2008. Fundamentals of Biochemistry. S. Chand & Company Ltd., New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Plant Physiology, Biochemistry, Biotechnology, Ecology and Utilization of Plants. S. Chand & Company Ltd., New Delhi.
7. Salisbury, F. B. and C. W. Ross. 1992. Plant Physiology. 4th edn. (India Edition), Wordsworth, Thomson Learning Inc.,USA.
8. Taiz, L. and E. Zeiger. 1998. Plant Physiology (2nd Ed.). Sinauer Associates, Inc., Publishers, Massachusetts, USA.
9. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020–2021 onwards)

B.Sc. BOTANY II Year

SEMESTER – IV

**CELL BIOLOGY AND PLANT PHYSIOLOGY
PRACTICAL**

1. Demonstration of cytochemical methods: Fixation of plant material and nuclear staining for mitotic and meiotic studies.
2. Study of various stages of mitosis using cytological preparation of Onion root tips.
3. Study of various stages of meiosis using cytological preparation of onion flower buds.
4. Study of ultra structure of cell organelles using photographs. Chloroplast, Mitochondria, Nucleus, Ribosomes, Endoplasmic reticulum and Golgi complex.
5. Study of Special types of Chromosomes (Polytene chromosome and Lampbrush chromosomes-Permanent slide) ✓
6. Determination of osmotic potential of vacuolar sap by Plasmolytic method using leaves of *Rheodiscolor / Tradescantia*.
7. Determination of rate of transpiration using Cobalt chloride method
8. Determination of stomatal frequency using leaf epidermal peelings / impressions
9. Determination of catalase activity using potato tubers by titration method
10. Separation of chloroplast pigments using paper chromatography technique
11. Estimation of protein by Biurette method
12. Mineral deficiency- Detail study of Micronutrients and Macro nutrients
13. Identification of C₃, C₄ and CAM plants.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (w.e.f. academic year 2019-20 batch onwards)
B.Sc. MATHEMATICS II Year
SEMESTER – IV

ALGEBRA

Theory: 5 credits and Tutorials: 0 credits Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The course is aimed at exposing the students to learn some basic algebraic structures like groups, rings etc.

Outcome: On successful completion of the course students will be able to recognize algebraic structures that arise in matrix algebra, linear algebra and will be able to apply the skills learnt in understanding various such subjects.

UNIT- I

Groups: Definition and Examples of Groups- Elementary Properties of Groups-Finite Groups - Subgroups -Terminology and Notation -Subgroup Tests - Examples of Subgroups.

Cyclic Groups: Properties of Cyclic Groups - Classification of Subgroups Cyclic Groups.

UNIT- II

Permutation Groups: Definition and Notation -Cycle Notation-Properties of Permutations -A Check Digit Scheme Based on D5. Isomorphisms ; Motivation- Definition and Examples - Cayley's Theorem Properties of Isomorphisms -Automorphisms-Cosets and Lagrange's Theorem Properties of Cosets 138 - Lagrange's Theorem and Consequences-An Application of Cosets to Permutation Groups -The Rotation Group of a Cube and a Soccer Ball.

UNIT- III

Normal Subgroups and Factor Groups: Normal Subgroups-Factor Groups -Applications of Factor Groups -Group Homomorphisms - Definition and Examples -Properties of Homomorphisms -The First Isomorphism Theorem.

Introduction to Rings: Motivation and Definition -Examples of Rings -Properties of Rings - Subrings.

Integral Domains: Definition and Examples - Fields Characteristics of a Ring.

UNIT- IV

Ideals and Factor Rings: Ideals -Factor Rings -Prime Ideals and Maximal Ideals.

Ring Homomorphisms: Definition and Examples-Properties of Ring-Homomorphisms.

Text:

Joseph A Gallian, Contemporary Abstract algebra (9th edition)

References:

- 1] Bhattacharya, P.B Jain, S.K.; and Nagpaul, S.R, Basic Abstract Algebra 2]
- Frleigh, J.B, A First Course in Abstract Algebra.
- 3] Herstein, I.N, Topics in Algebra
- 4] Robert B. Ash, Basic Abstract Algebra
- 5] I Martin Isaacs, Finite Group Theory
- 6] Joseph J Rotman, Advanced Modern Algebra

PAPER – IV:: WAVES AND OPTICS

Theory:	4 Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical:	3 Hours/Week	Credits: 1	Marks: 25

UNIT-I:

Waves

Fundamentals of Waves -Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at ends, overtones, energy transport, transverse impedance.

Longitudinal vibrations in bars- wave equation and its general solution, Special cases: (i) bar fixed at both ends, ii) bar fixed at the midpoint, iii) bar free at both ends, iv) bar fixed at one end, Transverse vibrations in a bar - wave equation and its general solution. Boundary conditions, clamped free bar, free-free bar, bar supported at both ends, Tuning fork.

UNIT II:

Interference

Principle of superposition – coherence – temporal coherence and spatial coherence – conditions for Interference of light.

Interference by division of wave front: Fresnel's biprism – determination of wave length of light. Determination of thickness of a transparent material using biprism – change of phase on reflection – Lloyd's mirror experiment.

Interference by division of amplitude: Oblique incidence of a plane wave on a thin film due to reflected and transmitted light (Cosine law) – Colours of thin films – Non-reflecting films – interference by a plane parallel film illuminated by a point source – Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film) – Determination of diameter of wire-Newton's rings in reflected light with and without contact between lens and glass plate, Newton's rings in transmitted light (Haidinger Fringes) – Determination of wave length of monochromatic light – Michelson Interferometer – types of fringes – Determination of wavelength of monochromatic light, Difference in wavelength of sodium D_1, D_2 lines and thickness of a thin transparent plate.

UNIT III:

Diffraction:

Introduction – Distinction between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction:- Diffraction due to single slit and circular aperture – Limit of resolution – Fraunhofer diffraction due to double slit – Fraunhofer diffraction pattern with N slits (diffraction grating).

Resolving Power of grating – Determination of wave length of light in normal and oblique incidence methods using diffraction grating.

Fresnel diffraction-Fresnel's half period zones – area of the half period zones –zone plate – Comparison of zone plate with convex lens – Phase reversal zone plate – diffraction at a straight edge – difference between interference and diffraction.





UNIT IV:

Polarization

Polarized light : Methods of Polarization, Polarization by reflection, refraction, Double refraction, selective absorption , scattering of light – Brewster’s law – Malus law – Nicol prism polarizer and analyzer – Refraction of plane wave incident on negative and positive crystals (Huygen’s explanation) – Quarter wave plate, Half wave plate – Babinet’s compensator – Optical activity, analysis of light by Laurent’s half shade polarimeter.

NOTE: Problems should be solved at the end of every chapter of all units.

Suggested books

1. **Optics** by Ajoy Ghatak. *The McGraw-Hill companies.*
2. **Optics** by Subramaniyam and Brijlal. *S. Chand & Co.*
3. **Fundamentals of Physics.** Halliday/Resnick/Walker.C. *Wiley India Edition 2007.*
4. **Optics and Spectroscopy.** R. Murugesan and Kiruthiga Siva Prasath. *S. Chand & Co.*
5. **Second Year Physics – Telugu Academy.**
1. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand & Co. Publications.*
2. **Feynman’s Lectures on Physics** Vol. 1, 2, 3 & 4. *Narosa Publications.*
3. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*
4. K. Ghatak, **Physical Optics’**
5. D.P. Khandelwal, **Optical and Atomic Physics’** (Himalaya Publishing House, Bombay, 1988)
11. Jenkins and White: **‘Fundamental of Optics’** (McGraw-Hill)
12. Smith and Thomson: **‘Optics’** (John Wiley and sons).



PAPER – IV:: WAVES AND OPTICS
PRACTICALS

1. Thickness of a wire using wedge method.
2. Determination of wavelength of light using Biprism.
3. Determination of Radius of curvature of a given convex lens by forming Newton's rings.
4. Resolving power of grating.
5. Study of optical rotation- polarimeter.
6. Dispersive power of a prism
7. Determination of wavelength of light using diffraction grating minimum deviation method.
8. Wavelength of light using diffraction grating – normal incidence method.
9. Resolving power of a telescope.
10. Refractive index of a liquid and glass (Boys Method).
11. Pulfrich refractometer – determination of refractive index of liquid.
12. Wavelength of Laser light using diffraction grating.
13. Verification of Laws of a stretched string (Three Laws).
14. Velocity of Transverse wave along a stretched string
15. Determination of frequency of a bar- Melde's experiment

Note: Minimum of eight experiments should be performed Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastav.





KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY II Year
SEMESTER – IV

CELL BIOLOGY, GENETICS & DEVELOPMENTAL BIOLOGY

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Cell Biology

- 1.1.1 Ultra structure of Animal cell
- 1.1.2 Structure (Fluid mosaic model) and Functions of Plasma membrane
- 1.1.3 Structure and functions of cell organelles – Endoplasmic reticulum, Golgi complex, Ribosomes, Lysosomes, Mitochondria and Nucleus
- 1.1.4 Chromosomes - Structure, types, Cell Division- Mitosis, Meiosis, Cell Cycle and its regulation.

UNIT – II

2.1 Molecular Biology

- 2.1.1 DNA (Deoxyribo Nucleic Acid) –Structure-RNA (Ribo Nucleic Acid)-Structure, types, DNA Replication
- 2.1.2 Protein Synthesis – Transcription, Translation.
- 2.1.3 Gene Expression - Genetic Code, Operon concept.
- 2.1.4 Molecular Biology Techniques – Polymerase Chain Reaction (PCR), Electrophoresis.

UNIT – III


3.1 Genetics


- 3.1.1 Mendel's laws of Inheritance and Non-Mendelian Inheritance , Linkage and Crossing over.
- 3.1.2 .Sex determination and Sex-linked inheritance.
- 3.1.3 Chromosomal Mutations- Deletion, Duplication, Inversion, Translocation; Aneuploidy and Polyploidy; Gene mutations- Induced versus Spontaneous mutations
- 3.1.4 Inborn errors of metabolism.

UNIT – IV

4.1 Developmental Biology

- 4.1.1 Gametogenesis (Spermatogenesis and Oogenesis), Fertilization, Types of eggs, Types of cleavages
- 4.1.2 Development of Frog upto the formation of primary germ layers
- 4.1.3 Formation of Foetal membrane in chick embryo and their functions
- 4.1.4 Types and functions of Placenta in Mammals, Regeneration in Turbellarians and Lizards


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Chairperson
Board of Studies
Department of Zoology & Sericulture Unit
KAKATIYA UNIVERSITY - WGL-506009 (T.S)

Suggested Readings:

1. **Lodish, Berk, Zipursky, Matsudaria, Baltimore, Darnell** '*Molecular Cell Biology*'
W.H. Free man and company New York.
2. **Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008).** *Principles of Genetics*. VIII Edition.
Wiley India.
- 3 **Snustad, D.P., Simmons, M.J. (2009).** *Principles of Genetics*. V Edition. John Wiley and
Sons Inc.
- 4 **Klug, W.S., Cummings, M.R., Spencer, C.A. (2012).** *Concepts of Genetics*. X Edition.
Benjamin Cummings.
5. **Russell, P. J. (2009).** *Genetics- A Molecular Approach*. III Edition. Benjamin Cummings.
6. **Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B.** *Introduction to Genetic
Analysis*. IX Edition. W. H. Freeman and Co.
7. **Ridley, M. (2004).** *Evolution*. III Edition. Blackwell Publishing
8. **Campbell, N. A. and Reece J. B. (2011).** *Biology*. IX Edition, Pearson, Benjamin,
Cummings.
9. **James D. Watson, Nancy H. Hopkins** '*Molecular Biology of the Gene*'
10. **Gupta P.K.,** 'Genetics'



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Dr. G. SHAMITHA
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KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY II Year
SEMESTER – IV

CELL BIOLOGY, GENETICS & DEVELOPMENTAL BIOLOGY
PRACTICAL

Instruction: 3 hrs per week

No. of Credits: 1

I. Cytology

1. Preparation and Identification of slides of Mitotic divisions with onion root tips
2. Preparation and Identification of different stages of Meiosis in Grasshopper Testes
3. Identification and study of the following slides
 - i). Different stages of Mitosis and Meiosis
 - ii) Lamp brush and polytene chromosomes

II. Genetics

1. Problems on Genetics - Mendelian inheritance, Linkage and Crossing over, Sex linked inheritance

III. Embryology

1. Study of T.S. of Testis and Ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8, 16 cell stages); Morula, Blastula
3. Study of chick embryos of 18 hours, 24 hours, 33 hours and 48 hours of incubation


IV. Laboratory Record work shall be submitted at the time of practical examination

V. An "Album" containing photographs, cut outs, with appropriate write-up about Genetics and Embryology

- **Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

1. Manual of laboratory experiments in Cell Biology by **Edward, G.**
2. Freeman and Bracegirdle – An Atlas of Embryology.


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B.Sc. II yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER IV
Paper-IV
Chemistry - IV

Unit-I (Inorganic Chemistry)

15h (1 h/week)

S4-I-1: Coordination Compounds –II

11 h

Crystal field theory (CFT)- Postulates of CFT, splitting patterns of d-orbitals in octahedral, tetrahedral, square planar with suitable examples. Crystalfield stabilization energies and its calculations for various dn configurations in octahedral complexes. High Spin Low Spin complexes. Colour and Magnetic properties of transition metal complexes. Calculations of magnetic moments spin only formula. Detection of complex formation - basic principles of various methods- change in chemical properties, solubility, colour, pH, conductivity, magnetic susceptibility.

Hard and soft acids bases (HSAB) - Classification, Pearson's concept of hardness and softness, application of HSAB principles - Stability of compounds / complexes, predicting the feasibility of reaction. Thermodynamic and kinetic stability of transition of metal complexes. Stability of metal complexes -stepwise and overall stability constant and their relationship and chelate effect determination of composition of complex by Job's method and mole ratio method.

Applications of coordination compounds: Applications of coordination compounds a) in quantitative and qualitative analysis with suitable examples b) in medicine for removal of toxic metal ions and cancer therapy c) in industry as catalysts polymerization - Ziegler Natta catalyst d) water softening.

S4-I-2: Bioinorganic Chemistry

4 h

Essential elements, biological significance of Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn and chloride (Cl⁻). Toxic metal ions As, Hg & Pb Oxygen transport and storage - structure of hemoglobin, binding and transport of oxygen. Fixation of CO₂ in photosynthesis- overview of light and dark reactions in photosynthesis. Structure of chlorophyll and coordination of magnesium. Electron transport in light reactions from water to NADP⁺ (Z - scheme).

Semester-IV

Unit - II (Organic Chemistry)

15h(1 hr/week)

S4-O-1: Carbohydrates

6 h

Introduction: Classification and nomenclature. Monosaccharides: All discussion to be confined to (+) glucose as an example of aldo hexoses and (-) fructose as example of ketohexoses. Chemical properties and structural elucidation: Evidences for straight chain pentahydroxy aldehyde structure. Number of optically active, isomers possible for the structure, configuration

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of glucose based on D-glyceraldehyde as primary standard (No proof for configuration is required). Evidence for cyclic structure of glucose (Pyranose structure, anomeric Carbon and anomers). Proof for the ring size (methylation, hydrolysis and oxidation reactions). (Haworth formula and chair conformational formula). Structure of fructose: Evidence of 2 – ketohexose structure. Same osazone formation from glucose and fructose, Hydrogen bonding in osazones, cyclic structure for fructose (Furanose structure, Haworth formula).

Inter Conversion of Monosaccharides: : Arabinose to D-glucose, D- mannose (kiliani – Fischer method). Epimers, Epimerisation- Lobry de bruyn van Ekenstein rearrangement. D-glucose to D-arabinose by Ruff's degradation. Aldohexose(+) (glucose) to ketohexose (-) (fructose) and Ketohexose(Fructose) to aldohexose (Glucose).

S4-O-2: Amino acids and proteins

5 h

Classification. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples – Glycine, Alanine, Valine and Leucine) by following methods: a) From halogenated Carboxylic acid b) Malonic ester synthesis c) strecker's synthesis. Physical properties: Optical activity of naturally occurring amino acids. Zwitter ion structure – salt like character, definition of isoelectric point. Chemical properties: General reactions due to amino and carboxyl groups – Lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides. Primary structure of proteins, di peptide synthesis

S4-O-3: Heterocyclic Compounds

4 h

Introduction and definition: 5 membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole. Importance of ring systems – Numbering. Aromatic character

Resonance structures: Explanation of feebly acidic character of pyrrole, electrophilic substitution, Halogenation, Nitration and Sulphonation. Reactivity of furan as 1,3-diene, Diels Alder reactions (one example). Sulphonation of thiophene purification of Benzene obtained from coal tar). Preparation of furan, Pyrrole and thiophene Paul-Knorr synthesis. Structure of pyridine, Basicity – Aromaticity – Comparison with pyrrole – preparation by Hantsch method and properties – Reactivity towards Nucleophilic substitution reaction – chichibabin reaction.

Unit III (Physical Chemistry)

15h (1 hr/week)

S4-P-1: Chemical Kinetics

11 h

Introduction to chemical kinetics, rate of reaction, variation of concentration with time, rate laws and rate constant. Specific reaction rate. Factors influencing reaction rates: effect of concentration of reactants, effect of temperature, effect of pressure, effect of reaction medium, effect of radiation, effect of catalyst with simple examples. Order of a reaction.

First order reaction, derivation of equation for rate constant. Characteristics of first order reaction. Units for rate constant. Half- life period, graph of first order reaction, Examples- Decomposition of H_2O_2 and decomposition of oxalic acid, Problems.

Pseudo first order reaction, Hydrolysis of methyl acetate, inversion of cane sugar, problems. Second order reaction, derivation of expression for second order rate constant, examples-

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Saponification of ester, $2O_3 \rightarrow 3O_2$, $C_2H_4 + H_2 \rightarrow C_2H_6$. Characteristics of second order reaction, units for rate constants, half- life period and second order plots. Problems

S4-P-2: Photochemistry

4 h

Introduction to photochemical reactions, Difference between thermal and photochemical reactions, Laws of photo chemistry- Grotthus Draper law, Stark-Einstein's Law of photochemical equivalence. Quantum yield. Examples of photo chemical reactions with different quantum yields. Photo chemical combinations of H_2-Cl_2 and H_2-Br_2 reactions, reasons for the high and low quantum yield. Problems based on quantum efficiency. Consequences of light absorption. Singlet and triplet states. Jablonski diagram. Explanation of internal conversion, inter- system crossing, phosphorescence, fluorescence.

Unit III (General Chemistry)

15h (1 hr/week)

S4-G-1: Theories of bonding in metals

4 h

Valence bond theory, Explanation of metallic properties and its limitations, Free electron theory, thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors n-type and p-type, extrinsic & intrinsic semiconductors, and insulators.

S4-G-2: Carbanions-II

5 h

Mannich reaction , Michael addition and Knoevengel condensation Synthetic applications of Aceto acetic ester. Acid hydrolysis and ketonic hydrolysis: Preparation of ketones, monocarboxylic acids and dicarboxylic acids Malonic ester- synthetic applications. Preparation of (i) substituted mono carboxylic acids and (ii) substituted dicarboxylic acids.

S4-G-3: Colloids & Surface Chemistry

6 h

Definition of colloids. Classification of colloids. Solids in liquids (sols): preparations and properties - Kinetic, Optical and Electrical stability of colloids. Protective action. Hardy-Schultz law, Gold number. Liquids in liquids (emulsions): Types of emulsions, preparation and emulsifier. Liquids in solids(gels): Classification, preparations and properties, General applications of colloids.

Adsorption:Types of adsorption. Factors influencing adsorption. Freundlich adsorption isotherm. Langmuir theory of unilayer adsorption isotherm. Applications.

References

General reference: B.Sc II Year Chemistry : Semester IV, Telugu Academy publication, Hyd

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications (1996).
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn. Van Nostrand Reinhold Company(1977)
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers (2001).
4. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4th edn. (2006)
5. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press(1989).
6. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press (1999).
7. Textbook of Inorganic Chemistry by R Gopalan, Universities Press,(2012)

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Unit- II

1. Text book of organic chemistry by Soni. Sultan Chand & Sons; Twenty Ninth edition (2012)
2. General Organic chemistry by Sachin Kumar Ghosh. New Age Publishers Pvt Ltd (2008)
3. Text book of organic chemistry by Morrison and Boyd. Person (2009)
4. Text book of organic chemistry by Graham Solomons. Wiley (2015)
5. Text book of organic chemistry by Bruice Yuranis Powla. (2012)
6. Text book of organic chemistry by C N pillai CRC Press (2012)
8. Organic Chemistry by L. G. Wade Jr.
9. Organic Chemistry by M. Jones, Jr
10. Organic Chemistry by John McMurry.

Unit III

1. Principles of physical chemistry by Prutton and Marron. The Macmillan Company; 4th edn. (1970)
2. Text Book of Physical Chemistry by Soni and Dharmahara. Sulthan Chand & sons. (2011)
3. Text Book of Physical Chemistry by Puri and Sharma. S. Nagin chand and Co. (2017)
4. Text Book of Physical Chemistry by K. L. Kapoor. (2012)
5. Physical Chemistry through problems by S.K. Dogra. (2015)
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry by Lewis Glasstone. Macmillan (1966)
8. Industrial Electrochemistry, D. Pletcher, Chapman & Hall, London, 1990

Unit IV

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications (1996).
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn. Van Nostrand Reinhold Company (1977)
3. Basic Inorganic Chemistry by F.A. Cotton, G. Wilkinson and Paul. L. Gaus 3rd edn Wiley Publishers (2001).
4. Inorganic Chemistry Principles of structure and reactivity by James E. Huhey, E.A. Keiter and R.L. Keiter 4th edn. (2006)
5. Text book of organic chemistry by Morrison and Boyd, Person (2009)
6. Text book of organic chemistry by Graham solomons, Wiley (2015)
7. Fundamentals of organic synthesis and retrosynthetic analysis by Ratna Kumar Kar, CBA, (2014)
8. Organic synthesis by Dr. Jagadamba Singh and Dr. L.D.S. Yadav, Pragati Prakashan, 2010
7. Stereochemistry of organic compounds by D. Nasipuri, New Academic Science Limited, 2012
8. Organic chemistry by Clayden, Greeves, Warren and Wothers, Oxford University Press, 2001
9. Fundamentals of Asymmetric Synthesis by G. L. David Krupadanam, Universities, Press 2014

Laboratory Course

Paper IV-

Qualitative Analysis of Organic Compounds:

45hrs (3 h/week)

Qualitative analysis: Identification of organic compounds through the functional group analysis - ignition test, determination of melting points/boiling points, solubility test, functional group tests and preparation of suitable derivatives of the following: Carboxylic acids, phenols, amines, urea, thiourea, carbohydrates, aldehydes, ketones, amides, nitro hydrocarbons, ester and naphthalene.

Geep
01/09/2020

W

17
Rupam
01/09/2020

S. S. S.
01/09/2020

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020-2021 onwards)

B.A. / B.Sc. Life Science (Computer Applications) II Year

SEMESTER – IV

MULTI MEDIA SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)
Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit - I

Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality; Delivering Multimedia.

Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

Images: Before You Start to Create, Making Still Images, Color.

Unit - II

Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats, Adding Sound to Your Multimedia Project.

Animation: The Power of Motion, Principles of Animation, Animation by Computer, Making Animations.

Video: Using Video, How Video Works and Is Displayed, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video.

Unit - III

Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems

Designing and producing: designing the structure, designing the user interface, a multimedia design case history, producing.

Unit - IV

The Internet and Multimedia: Internet History, Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web, Video for the Web.

Delivering: Testing, Preparing for Delivery, Delivering on CD-ROM, DVD and World Wide Web, Wrapping.

Text Book:

1. Tay Vaughan, "Multimedia: Making it work", TMH, Eighth edition.

References:

1. Ralf Steinmetz and KlaraNaharstedt, "Multimedia: Computing, Communications Applications", Pearson.
2. Keyes, "Multimedia Handbook", TMH.
3. K. Andleigh and K. Thakkar, "Multimedia System Design", PHI.
4. Spoken Tutorial on "GIMP" as E-resource for Learning:-<http://spoken-tutorial.org>
5. Spoken Tutorial on "Blender" as E-resource for Learning:-<http://spoken-tutorial.org>

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020- 2021 onwards)

B.A. / B.Sc. Life Science (Computer Applications) II Year

SEMESTER – IV

MULTI MEDIA SYSTEMS -LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, Pen, oval, circle, rectangle, square, pencil,brush, lasso tool
2. Create an animation using text tool to set the font, size, colour etc.
3. Create an animation using Free transform tool that should use followings-
 - Move Objects
 - Skew Objects
 - Stretch Objects
 - Rotate Objects
 - Stretch Objects while maintaining proportion
 - Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background colour etc.)Using the following tools
 - Eraser tool
 - Hand tool
 - Ink bottle tool
 - Zoom tool
 - Paint Bucket tool
 - Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.Sc. Computer Science II Year

SEMESTER – IV

DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit - I

Introduction: Database-System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Database Users and Administrators.

Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.

Unit - II

Database Design and the E-R Model: Overview of the Design Process, The Entity- Relationship Model, Constraints, Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features, Alternative Notations for Modeling Data, Other Aspects of Database Design.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional- Dependency Theory, Decomposition Using Multivalued Dependencies, Normal Forms-2 NF, 3 NF, BCNF, The Database Design Methodology for Relational Databases.

Unit - III

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Modification of the Database.

Intermediate SQL: Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit - IV

Transaction Management: Transaction Support–Properties of Transactions, Database Architecture, Concurrency Control–The Need for Concurrency Control, Serializability and Recoverability, Locking Methods, Deadlock, Time Stamping Methods, Multi-version Timestamp Ordering, Optimistic Techniques, Granularity of Data Items, Database Recovery–The Need for Recovery, Transactions and Recovery, Recovery Facilities, Recovery Techniques, Nested Transaction Model. Security: Database Security–Threats, Computer-Based Controls–Authorization, Access Controls, Views, Backup and Recovery, Integrity, Encryption, RAID.

Text book:

1. Silberschatz, H. Korth and S. Sudarshan, Database System Concepts, 6th Ed., Tata McGraw Hill, 2011
2. Thomas M. Connolly, Carolyn E. Begg, Database Systems–A Practical Approach to Design, Implementation, and Management (6e)

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.Sc. Computer Science II Year

SEMESTER – IV

DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

LibraryBooks (Accession number, Title, Author, Department, PurchaseDate, Price),

IssuedBooks (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled “Database System Concepts”.
- c) Change the Department of the book titled “Discrete Maths” to “CS”.
- d) List all books that belong to “CS” department.
- e) List all books that belong to “CS” department and are written by author “Navathe”.
- f) List all computer (Department=“CS”) that have been issued.
- g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
- c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (CustID, email, Name, Phone, ReferrerID)

Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)

BicycleModel(ModelNo, Manufacturer, Style) Service

(StartDate, BicycleID, EndDate)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
- c) List the bicycles purchased by the customers who have been referred by Customer "C1".
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person_Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column "email" of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
- e) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Hyderabad.

- j) Get part numbers for part supplied by a supplier in Warangal to a project in Chennai.
 - k) Get the total number of project supplied by a supplier (say, S1).
 - l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).
-
- 6. Write a PL/SQL Program to demonstrate Procedure.
 - 7. Write a PL/SQL Program to demonstrate Function.
 - 8. Write a PL/SQL program to Handle Exceptions.
 - 9. Write a PL/SQL Program to perform a set of DML Operations.
 - 10. Create a View using PL/SQL program.
 - 11. Write a PL/SQL Program on Statement Level Trigger.
 - 12. Write a PL/SQL Program on Row Level Trigger.

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – V

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Basics of Immune system

- 1.1.1 Cells of the Immune system and the Lymphoid organs (Primary and Secondary)
- 1.1.2 First line of defences-physical and chemical barriers; second line of defences – inflammation and phagocytosis.
- 1.1.3 Types of Immunity- Inherent (Active and Passive) and Acquired Immunity (Active and Passive) Humoral and Cell mediated immunity.
- 1.1.4 Major Histocompatibility complex (MHC)- structure and function of class I and Class II proteins. Significance of MHC in organ transplantation; MHC restriction

UNIT – II

2.1 Antibodies and Antigens and Immune system diseases

- 2.1.1 Antibodies(Immunoglobulins) – Structure, functions and classification, antibody diversity, Monoclonal antibodies and applications
- 2.1.2 Antigens structure, antigenic determinants/epitopes, haptens, adjuvants and antigenicity.
- 2.1.3 Antigen-antibody reactions; Agglutination; Precipitation, Opsonization, Cytotoxicity
- 2.1.4 Hypersensitivity reactions.
Autoimmunity and Immunodeficiency diseases.

Unit – III

3.1 Animal Biotechnology and Genetically modified organisms

- 3.1.1 Concept and Scope of Animal Biotechnology
- 3.1.2 Recombinant DNA Technology and its applications.
- 3.1.3 Cloning Vectors- Plasmids, Cosmids and shuttle vectors, Cloning methods(Cell, Animal and Gene cloning); Restriction enzymes and Ligases
- 3.1.4 Transgenesis – Methods of Transgenesis
Production of Transgenic animals- Sheep and Fish

Unit – IV

4.1 Applications of Biotechnology


- 4.1.1 In vitro fertilization and embryo transfer
- 4.1.2 Hybridoma technology – concepts and applications
- 4.1.3 Stem cells- Types and their applications
- 4.1.4 Recombinant insulin and human growth hormone; Polymerase Chain Reaction (PCR)
Animal Bioreactors- Concepts and Applications.


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Suggested Readings:

1. Text Book of Immunology – Ivan Riott
2. Text Book of Immunology – C.V.Rao
3. Text Book of Immunology – Nandinin Shetty
4. Text Book of Immunology – Kubey
5. Culture of Animal Cells – R. Ian Freshney, Wiley Liss
6. Biotechnology – S. Mitra
7. Animal Cell Culture - Practical Approach – Ed. John. RW. Masters, Oxford
8. Biotechnology – B.D.Singh
9. Brown, T.A. (1998). *Molecular Biology Labfax II: Gene Cloning and DNA Analysis*. II Edition, Academic Press, California, USA.
10. Glick, B.R. and Pasternak, J.J. (2009). *Molecular Biotechnology - Principles and Applications of Recombinant DNA*. IV Edition, ASM press, Washington, USA.


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KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – V

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY
PRACTICAL

Instruction: 3 hrs per week

No. of Credits: 1

I. Immunology

1. Identification of Blood grouping (Demonstration of Agglutination) using kit.
2. Demonstration of Precipitation (VDRL/RPR) using kit.
3. Histological study of Lymphoid organs -Spleen, Thymus, Lymph node, Bone marrow (through prepared slides).
4. Enumeration of Total RBC from a given blood sample.
5. Enumeration of Total WBC from a given blood sample.
6. Enumeration of Differential count of WBC from a given blood sample.

II. Animal Biotechnology

1. Study the following techniques through Photographs / Virtual Lab

- a) Identification of Vectors
- b) Identification of Transgenic animals
- c) DNA sequencing (Sanger's method)
- d) DNA finger printing
- e) Southern blotting
- f) Western blotting

2. PCR (demonstration) on site or of site demonstration.

- **Laboratory Record work shall be submitted at the time of practical examination**
- **Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

1. A Hand Book of Practical Immunology – **Ivan Riott**
2. Animal Biotechnology – **P.K. Gupta.**
3. Immunology, VI Edition. W.H. Freeman and Company **Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006).**
4. Immunology, VII Edition, Mosby, Elsevier Publication **David, M., Jonathan, B., David, R. B. and Ivan R. (2006).**
5. Cellular and Molecular Immunology. V Edition. Saunders Publication, **Abbas, K. Abul and Lechtman H. Andrew (2003.)**


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KAKATIYA UNIVERSITY, WARANGAL-506 009

B.Sc. Under CBCS System wef A.Y: 2021-22

Third Year : : Semester - V

GENERIC ELECTIVE (Common to all students)

WATER RESOURCES MANAGEMENT

(4 hrs/week) (Taught by ant Science Dept) (Credits:4) (Marks:100)

UNIT-I:

Introduction to water resources management, different types of water resources, water resources and its importance, Global distribution of water. Hydrological cycle, Conservation of water, recycling of water.

Unit-II:

Rain water harvesting, methods of roof top rain water harvesting in urban setting: Direct method - Storing rain water in tanks for direct use; indirect methods - Recharge pits, bore wells/dug wells, Recharge trenches. Over use of surface and ground water and control measures.

UNIT-III:

Importance of water shed and water shed management, Rain water harvesting in rural setting: Check dams, percolation tanks, gabion structure, continuous contour trenches, staggered contour trenches, farm ponds. Surface water and ground water pollution, control measures.

UNIT-IV :

Mission Bhagiratha: Telangana government water grid project for drinking water supply - aims and objectives and method of implementation. Mission Kakatiya: Telangana government project for the restoration of minor irrigation tanks, aims and objectives and method of implementation.

Text books:

- 1) Water Resources, Conservation and Management by Chatterjee, S.N.
- 2) Groundwater hydrology by Todd
- 3) Watershed management by J.V.S.Murthy
- 4) Applied Hydrogeology by Fetter.

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – VI

ECOLOGY, ZOOGEOGRAPHY AND EVOLUTION

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Ecology- I

- 1.1.1 Ecosystem Structure and Functions; Types of Ecosystems – Aquatic and Terrestrial
- 1.1.2 Bio-geo chemical nutrient cycles - Nitrogen, Carbon, Phosphorus and Water
- 1.1.3 Energy flow in ecosystem
- 1.1.4 Food chain, food web and ecological pyramids
- 1.1.5 Animal Associations-Mutualism; Commensalism; Parasitism; Competition, Predation

UNIT – II

2.1 Ecology – II

- 2.1.1 Concept of Species, Population dynamics and Growth curves
- 2.1.2 Community Structure and dynamics and Ecological Succession
- 2.1.3 Ecological Adaptations
- 2.1.4 Environmental Pollution- Sources, Effect and Control measures of Air, Water, Soil and Noise Pollution
- 2.1.5 Wildlife conservation - National Parks and Sanctuaries of India, Endangered species; Biodiversity and Hotspots of Biodiversity in India.

UNIT – III

3.1 Zoogeography

- 3.1.1 Zoogeographical regions
- 3.1.2 Climatic and faunal peculiarities of Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions
- 3.1.3 Wallace line, Discontinuous distribution
- 3.1.4 Continental Drift

Unit – IV

4.1. Evolution

- 4.1.1 Theories of Evolution – Lamarckism, Neo-Lamarckism, Darwinism, Neo-Darwinism, Modern synthetic theory, Evidences of Evolution.
- 4.1.2 Forces of Evolution–Natural Selection, Genetic drift, Gene flow, Genetic load, Organic variations, Hardy Weinberg Equilibrium.
- 4.1.3 Isolation –Premating and post mating isolating mechanisms.
- 4.1.4 Speciation: Methods of Speciation - Allopatric and Sympatric; Causes and Role of Extinction in Evolution.


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Suggested Readings:

1. Ecology – Himalaya Publishing company – M.P Arora
2. Environmental Biology – P.D. Sharma
3. Environmental Ecology – P.R. Trivedi and Gurdeep Raj
4. Indian Wildlife Threats and Prervation – Buddhadev Sharma and Te Kumar
5. Ecology-Principles and Application II Edn. Cambridge Univ Press, London, Champan. JL and Re.iss MJ.
6. Environmental Studies, TATA McGraw Hill Com. New Delhi, Benny Joseph.
7. Fundamentals of Ecology Third Edn., Nataraj Publishers, Dehradun, Eugene.P. Odum.
8. Ecology and Animal Distribution, Veea Bala Rastogi.
9. Text Book of Ecology and Environment, P.K. Gupta.
10. Ecology and Wildlife Biology, Bhatnagar and Bansal.
11. Evolution 3rd Edn. Blackwell Publishing, Ridley, M (2004).
12. Evolutionary Biology, Addison –Wesley; Minkoff,E(1983).
13. *Evolution*. Cold Spring, Harbour Laboratory Press Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H. (2007).
14. *Evolution*. IV Edition. Jones and Bartlett Publishers; Hall, B. K. and Hallgrimsson, B. (2008).
15. *Evolution*, 2nd Edn, Oxford and IBH Publishing Co., New Delhi, Jan M. Savage.


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KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – VI

**ECOLOGY, ZOOGEOGRAPHY AND EVOLUTION
PRACTICAL**

Instruction: 3 hrs per week
No. of Credits: 1

Ecology

1. Determination of pH of Soil and Water.
2. Estimation of Salinity (Chlorides) of water in given samples.
3. Estimation of Carbonates and Bicarbonates in the given water samples.
4. Estimation of dissolved Oxygen of Pond water, sewage, effluents.
5. Identification of Zooplankton from different water bodies.
6. Study of Pond Ecosystem / Local polluted site – Report submission.

Zoogeography

1. Study of at least 3 endangered or threatened wild animals of India through photographs/specimens/models
2. Field visit to Zoo Park to study the management, behavior and enumeration of wild animals.
3. Identification of Zoogeographical realms from the Map and identify specific fauna of respective regions.

Evolution

1. Museum Study of fossil animals: **Peripatus; Coelacanth fish, Dipnoi fishes; Sphenodon; Archacopteryx.**
 2. Study of homology and analogy from suitable specimens and pictures
 3. Problems on Hardy-Weinberg Law
 4. Macroevolution using Darwin finches (pictures)
- **Laboratory Record work shall be submitted at the time of practical examination**
 - **Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

1. Ecology Student Lab Manual, Biology Labs – Robert Desharnais, Jeffrey Bell.
2. Ecology Lab manual – Darrell S Vodopich.


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KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

B.Sc. Programme under CBCS

With effect from the A.Y: 2019

Optional Paper

(Common to all Science Courses)

III Year SEMESTER – VI

PUBLIC HEALTH AND HYGIENE

UNIT-I: Nutrition, Environment and Health

- 1.1 Classification of foods – Carbohydrates, Proteins, Lipids and Minerals.
- 1.2 Nutritional deficiencies and disorders of Carbohydrates, Proteins, Lipids and Minerals.
- 1.3 Concept, Steps and Applications of Environment and Health Impact Assessment.
- 1.4 Industrial, Agricultural and Urban Health. Environmental Pollution and Associated Health Hazards.

UNIT-II : Communicable and Non-Communicable Diseases

- 2.1 Causes, symptoms, diagnosis, treatment and prevention of Communicable Diseases (Malaria, Filaria, Tuberculosis and AIDS).
- 2.2 Causes, symptoms, diagnosis, treatment and prevention of Non-Communicable Diseases (Hypertension, Coronary Heart Diseases, Diabetes and Obesity).
- 2.3 Symptoms, treatment and prevention measures of Water Borne Diseases (Diarrhea, Typhoid, Hepatitis and Amebiasis).
- 2.4 Symptoms, treatment and prevention measures Air Borne Diseases (COVID-19, Influenza, Whooping cough and Chickenpox).

UNIT-III :Food and Diet Systems

- 3.1 Definition of Food, Types of foods (Texturized foods, Novel foods and Organic foods).
- 3.2 Food safety system and issues; Physical, chemical and microbiological contaminants; The significance of foodborne diseases.
- 3.3 Principles of diet in diseases, Classification of diets according to nutrients.
- 3.4 Etiology, Symptom and Dietary Management in Obesity, Underweight, Hypertension, Diabetes Mellitus, Atherosclerosis.

UNIT-IV : Personal Hygiene and Sanitation

- 4.1 Definition of Hygiene and Sanitation, Personal Hygiene of food handler, Techniques of Washing Hands, Pest control and Garbage Disposal.
- 4.2 Definition of Public Health, Hygiene, Social and Preventive Medicine, Basic aspects of Personal Hygiene and Disposal of Waste.
- 4.3 The Hygiene Practices of the different categories of family members (children, parents and aged members)
- 4.4 Definition of Sanitation, Environmental Sanitation, Sanitation of Food Serving Institution, The importance of proper sanitation practices.

Suggested Readings:

C.B.C.S Pattern Syllabus from 2019-2010 onwards
B.A., B.Sc., B.Com. & B.BA
1st Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) శకుంతలోపాఖ్యానం- నన్నయ
- 2) గోదగూచి కథ - పాల్కురికి సోమనాథుడు
- 3) సంవరణుడి తపస్సు-అద్దంకి గంగాధరుడు

Unit-II ఆధునిక కవిత్వం

- 1) కాసులు-గురజాడ అప్పారావు
- 2) రాజు-కవి-డా.గుణ్ణం జాషువా
- 3) గంగిరెద్దు-డా. పల్లా దుర్గయ్య
- 4) జయభేరి-శ్రీ శ్రీ

Unit-III వచన కవిత్వం

రుద్రమదేవి (నవల) - ఒద్దిరాజు సోదరులు

Unit-IV భాషా భాగాలు-వ్యాకరణం

పర్యాయ పదాలు, నానార్థాలు, సంధులు, సమాసాలు, తెలుగు వాక్యం



Handwritten signatures and dates in green ink. The signatures are: 'V. K. S.', 'K. S.', 'S. S.', and 'S. S.'. The date '20/1/19' is written below the first signature.

Department of Commerce & Business Management, Kakatiya University, Warangal.
Paper DSC 103: FUNDAMENTALS OF INFORMATION TECHNOLOGY

Hours Per Week: 6 (4T+2P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand the basic concepts and terminology of information technology and to identify issues related to information security.

UNIT-I: INTRODUCTION TO COMPUTERS:

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer. Role of I/O devices in a computer system. **Input Units:** Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, **Output Units:** Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT -II: COMPUTER ARITHMETIC & STORAGE FUNDAMENTALS:

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another. Primary Vs Secondary Storage, Data storage & retrieval methods. **Primary Storage:** RAM ROM, PROM, EPROM, EEPROM. **Secondary Storage:** Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

UNIT-III: SOFTWARE:

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

UNIT-IV: OPERATING SYSTEM:

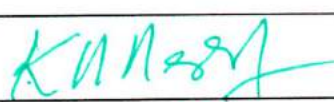
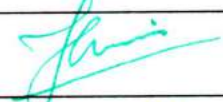
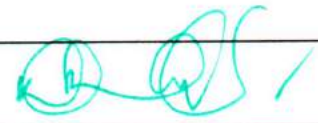



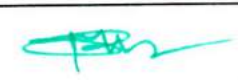
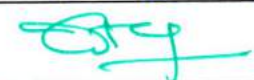

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

UNIT-V: DATA COMMUNICATION:

Data, Communication, Basic Networking Devices, Communication Process, Data Transmission speed, Communication Types(modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

SUGGESTED READINGS:

Computer Fundamentals: P.K.Sinha


Chairman (BOS)
Dept. of Com. & Business Mgt.
Kakatiya University, Warangal.

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B.COM CBCS COURSE STRUCTURE w.e.f. 2019-'20

Sl.No. (1)	Code (2)	Course Title (3)	HPW (5)	Credits (6)	Exam Hrs (7)	Marks (8)
SEMESTER - I						
1.	ELS1	Communication Skills	4	4		
2.	SLS1	Modern Indian Language	4	4		
3.	AEC1	Environmental Science/ Basic Computer Skills	2	2		
4.	SEC1	Principles of Insurance/ Foundations of Digital Marketing	2	2	1 ½ hrs	40U+10I
5.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
6.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
7.	DSC103	Foreign Trade	5	5	3 hrs	80U+20I
Total			25	25		
SEMESTER - II						
8.	ELS2	Advanced Communication Skills	3	3		
9.	SLS2	Modern Indian Language	3	3		
10.	AEC2	Basic Computer Skills/ Environmental Science	2	2		
11.	SEC2	Practice of Life Insurance/ Web Design & Analytics	2	2	1 ½ hrs	40U+10I
12.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
13.	DSC202	Business Laws	5	5	3 hrs	80U+20I
14.	DSC203	Banking and Financial Services	5	5	3 hrs	80U+20I
Total			25	25		
SEMESTER - III						
15.	ELS3	Gender Sensitization	3	3		
16.	SLS3	Modern Indian Language	3	3		
17.	AEC3	Advanced Computer Skills/ Managerial Skills	2	2		
18.	SEC3	Practice of General Insurance/ Social Media Marketing	2	2	1 ½ hrs	40U+10I
19.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
20.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
21.	DSC303	Financial Institutions and Markets	5	5	3 hrs	80U+20I
Total			25	25		
SEMESTER - IV						
22.	ELS4	Human Values and Ethics	3	3		
23.	SLS4	Modern Indian Language	3	3		
24.	AEC4	Managerial Skills/ Advanced Computer Skills	2	2		
25.	SEC4	Regulation of Insurance Business/ Search Engine Optimization & Online Advertising	2	2	1 ½ hrs	40U+10I

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26.	DSC401	Income Tax	5	5	3 hrs	80U+20I
27.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
28.	DSC403	Corporate Accounting	5	5	3 hrs	80U+20I
		Total	25	25		
		SEMESTER - V				
29.	ELS1	Verbal Reasoning	3	3		
30.	SLS4	Modern Indian Language	3	3		
31.	GE	Business Economics	4	4	3 hrs	80U+20I
32.	DSE501	a) Cost Accounting/ b) Financial Planning & Performance/ c) Financial Reporting	5	5	3 hrs	80U+20I
33.	DSE502	a) Computerized Accounting/ b) Financial Decision Making-I/ c) International Tax Regulation	3T+4P/ 5	5	3 hrs	50T+35 P+ 15I/ 80U+20I
34.	DSE503	a) Auditing/ b) Corporate Accounting/ c) Financial Management	5	5	3 hrs	80U+20I
		Total	27/25	25		80U+20I
		SEMESTER - VI				
35.	ELS6	Employability Communication Skills	3	3		
36.	SLS6	Modern Indian Language	3	3		
37.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15VV
38.	DSE601	a) Cost Control and Management Accounting/ b) Financial Reporting and control/ c) Auditing and Practice	5	5	3 hrs	80U+20I
39.	DSE602	a) Theory and Practice of GST/ b) Financial Decision Making-II / c) Business Environment & Concepts	3T+4P/ 5	5	3 hrs	50T+35 P+ 15I/ 80U+20I
40.	DSE603	a) Accounting Standards/ b) Corporate Governance/ c) Investment management	5	5	3 hrs	80U+20I
		Total	29/27	25		
		GRAND TOTAL	156/ 152	150		

ELS: English Language Skill; **SLS:** Second Language Skill; **AEC:** Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective; **T:** Theory; **P:** Practical; **I:** Internal Exam **U:** University Exam; **PR:** Project Report; **VV:** Viva-Voce Examination.

Note: i) A student should opt for either a or b or c of DSE Groups in V and VI Semesters.
ii) Project work should be done by a group of 4 students.

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UMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	3	18
2	Modern Language	6	3	18
3	AEC	4	2	8
4	SEC	4	2	8
5	GE	1	4	4
6	Project Report	1	4	4
7	DSC	12	5	60
8	DSE	6	5	30
	TOTAL	40		150
	Commerce	24		106

Faculty of Commerce, Kakatiya University

Paper SEC1: PRINCIPLES OF INSURANCE

Objectives: 1) to provide a basic understanding of the Insurance Mechanism; 2) to identify the relationship between Insurers and their Customers and the importance of Insurance Contracts; 3) to give an overview of major Life Insurance and General Insurance Products.

UNIT I: RISK MANAGEMENT AND INSURANCE AND INSURANCE TERMINOLOGY: Risk Management–Types of Risks – Actual and Consequential Losses – Management of Risks – Different Classes of Insurance – Importance of Insurance –Management of Risk by Individuals and Insurers – Fixing of Premiums – Reinsurance– Role of Insurance in Economic Development and Social Security –Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies –Role of Regulators –Common and specific terms inLife and Non Life Insurance –Understanding Insurance Customers –Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior.

UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS: Insurance Contract Terms–Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause–Life Insurance Products: Risk of Dying Early–Risk of Living too Long –Products offered – Term Plans – Pure Endowment Plans – Combinations of Plans –Traditional Products – Linked Policies – Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets – Exposure to Perils – Features of Products Covering Fire and Allied Perils – Products covering Marine and Transit Risks – Products covering Financial Losses due to Accidents – Products covering Financial Losses due to Hospitalization – Products Covering Miscellaneous Risks.

SUGGESTED READINGS

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Role of Insurance in Financial inclusion: Brinda Publishing House, Hyderabad
3. Guide to Risk Management : SagarSanyal
4. Insurance and Risk Management : P.K. Gupta
5. Insurance Theory and Practice : Tripathi PHI
6. Principles of Insurance Management : Neelam C Gulati, Excel Books
7. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
8. Principles of Risk Management and Insurance : George E Rejda(13th Edition)
9. Risk Management and Insurance : Trieschman , Gustavson and Hoyt . South Western College Publishing ,Cincinnati, Ohio

Suggested Websites:

- 1) www.irda.gov.in
- 2) www.policyholder.gov.in
- 3) www.irdaindia.org.in

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Paper 101: FINANCIAL ACCOUNTING-I

Objective: to acquire conceptual knowledge of basics of accounting and preparation of final accounts of sole trader.

UNIT-I: ACCOUNTING PROCESS: Financial Accounting: Introduction – Definition – Evolution – Functions-Advantages and Limitations –Users of Accounting Information-Branches of Accounting – Accounting Principles: Concepts and Conventions- Accounting Standards– Meaning – Importance –Types of Accounts – Accounting Cycle – Journal-Ledger and Trial Balance (Including problems).

UNIT-II: SUBSIDIARY BOOKS: Meaning –Types - Purchases Book - Purchases Returns Book - Sales Book - Sales Returns Book - Bills Receivable Book - Bills Payable Book – Cash Book: Single Column, Two Column, Three Column and Petty Cash Book - Journal Proper(Including problems).

UNIT-III: BANK RECONCILIATION STATEMENT: Meaning – Need - Reasons for differences between cash book and pass book balances –Favourable and over draft balances – Ascertainment of correct cash book balance (Amended Cash Book) - Preparation of Bank Reconciliation Statement (Including problems).

UNIT-IV: RECTIFICATION OF ERRORS AND DEPRECIATION: Capital and Revenue Expenditure – Capital and Revenue Receipts: Meaning and Differences - Differed Revenue Expenditure - Errors and their Rectification: Types of Errors - Suspense Account – Effect of Errors on Profit (Including problems).

Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortization and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method (Including problems).

UNIT-V: FINAL ACCOUNTS: Final Accounts of Sole Trader: Meaning -Uses -Preparation of Manufacturing, Trading and Profit & Loss Account and Balance Sheet – Adjustments – Closing Entries(Including problems).

SUGGESTED READINGS:

1. Introduction to Accountancy: T.S. Grewal, S.Chand and Co.
2. Financial Accounting-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
3. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
4. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
5. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
6. Financial Accounting-I: Dr. Yogeshweran, PBP
7. Financial Accounting-I:Srihari Krishna Rao, Himalaya Publishing House
8. Financial Accounting: B.Vishwanadham, S.Chand.
9. Accountancy–I: Tulasian, Tata McGraw Hill Co.
10. Financial Accounting: N.Padmalatha,L.V Kamala Devi, RachanaSharma,PBP
11. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
12. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
13. Financial Accounting: JawaharLal, Himalaya Publishing House.
14. Financial Accounting-I: PrasanthaAthma, Himalaya Publishing House.
- 15.

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Paper 102: BUSINESS ORGANISATION AND MANAGEMENT

Objective: To acquaint the students with the basics of Commerce and Business concepts and functions, forms of Business Organization and functions of Management.

UNIT-I: INTRODUCTION AND FORMS OF BUSINESS ORGANISATIONS: Concepts of Business, Trade, Industry and Commerce - Objectives and functions of Business –Social Responsibility of a business - Forms of Business Organization - Meaning, Characteristics, Advantages and Disadvantages of Sole Proprietorship –Meaning, Characteristics, Advantages and Disadvantages of Partnership -Kinds of Partners - Partnership Deed -Concept of Limited liability partnership – Meaning, Characteristics, Advantages and Disadvantages of Hindu Undivided Family – Meaning, Advantages and Disadvantages of Co-Operative Organization.

UNIT-II: JOINT STOCK COMPANY: Joint Stock Company - Meaning - Definition - Characteristics - Advantages and Disadvantages - Kinds of Companies -Promotion - Stages of Promotion - Promoter - Characteristics - Kinds - Preparation of Important Documents - Memorandum of Association - Clauses - Articles of Association - Contents – Prospectus - Contents – Red herring Prospectus-Statement in lieu of Prospectus (As per Companies Act. 2013).

UNIT-III:INTRODUCTION TO FUNCTIONS OF MANAGEMENT: Management - Meaning - Characteristics - Functions of Management - Levels of Management – Skills of Management-Scientific Management - Meaning - Definition - Objectives - Criticism – Fayol’s 14 Principles of Management .

UNIT-IV:PLANNING AND ORGANISING: Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages – Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits –Weaknesses—Definition of Organizing-Organization-Process of Organizing - Principles of Organization - Formal and Informal Organizations - Line, Staff Organizations - Line and Staff Conflicts - Functional Organization - Span of Management - Meaning - Determining Span - Factors influencing the Span of Supervision.

UNIT-V: AUTHORITY, COORDINATION AND CONTROL: Meaning of Authority, Power, responsibility and accountability - Delegation of Authority - Decentralization of Authority - Definition, importance, process, and principles of Coordination- techniques of Effective Coordination - Control - Meaning - Definition – Relationship between planning and control-Steps in Control – Types (post, current and pre-control) - Requirements for effective control.

SUGGESTED READINGS:

1. Business Organization & Management: Sharma Shashi K. Gupta, Kalyani Publishers
2. Business Organization & Management: Patrick Anthony, Himalaya Publishing House
3. Business Organization & Management: Dr. Manish Gupta, PBP.
4. Organization & Management: R. D. Agarwal, McGraw Hill.
5. Modern Business Organization: S.A. Sherlekar, V.S. Sherlekar, Himalaya Publishing House
6. Business Organization & Management: C.R. Basu, Tata McGraw Hill
7. Business Organization & Management: M.C. Shukla S. Chand,
8. Business Organisation and Management: D.S. Vittal, S. Chand
9. Organizational Behaviour Text & Cases: V.S.P. Rao, Himalaya Publishing House
10. Business Organization & Management: Uma Shekaram, Tata McGraw Hill
11. Business Organization & Management: Niranjana Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr. Neeru Vasihth, Tax Mann Publications.

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Paper 103: FOREIGN TRADE

Objective: to gain knowledge of India's foreign trade procedures policies, and international institutions.

UNIT-I: INTRODUCTION: Foreign Trade: Meaning and Definition - Types - Documents used-Commercial Invoice - Bills of Lading / Airway Bill - Marine Insurance Policy and Certificate - Bills of Exchange - Consumer Invoice - Customs Invoice - Certificate of Origin - Inspection Certificate - Packing List.

UNIT-II: BALANCE OF TRADE AND BALANCE OF PAYMENTS: Introduction - Meaning - Components of BOT & BOP - Concept of Disequilibrium - Causes -Remedies for Correcting Balance of Payments in International Trade.

UNIT-III: INDIAN TRADE POLICY: Importance and its Implementation - Current Export Policy and Import Policy.

UNIT-IV: FOREIGN TRADE AND TRADE BLOCS:Growth - Significance of Foreign Trade - Merits - Demerits - Trade Blocs: Types - Preferential Trade Area, Free Trade Area, Customs Unions, Common Markets, Economic Unions, Monetary Unions, Customs and Monetary Unions, and Economic and Monetary Unions.

UNIT-V: INTERNATIONAL ECONOMIC INSTITUTIONS:IMF: Objectives - Functions - World Bank: Objectives - Functions - Subsidiaries of World Bank - IMF Vs. IBRD; New Development Bank (NDB) - Objective Functions - Features - Membership - Shareholding, Criticism, Asian Infrastructure Investment Bank (AIIB) - Objective Functions - Features - Membership - Shareholding, Criticism; Trans-Pacific Partnership (TPP) -Objective Functions - Features - Membership - Shareholding, Criticism; UNCTAD: Aims - Features; WTO - Aims - Features - Agreements.

SUGGESTED READINGS:

1. International Marketing: Rathore& Jain, Himalaya Publishers.
2. International Marketing: Kushpat S. Jain &RimiMitra, Himalaya Publishers
3. International Economics: SSMDesai&NirmalBhalerao, Himalaya Publishers.
4. International Business Environment & Foreign Exchange Economies: Singh & S. Srivastava,
5. Foreign Trade and Foreign Exchange: O.PAgarwal & B.K.Chaudri, Himalaya Publishers
6. International Financial Markets & Foreign Exchange: ShashiK.Gupta & PraneetRangi, Kalyani
7. International Economics: Theory & Practice: Paul R. Krugman, Pearson Publishers.

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Paper SEC2: PRACTICE OF LIFE INSURANCE

Objectives: 1) to make the student understand Life Insurance Market in India, 2) to discuss the issues related to risk management in view of life insurance.

UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE POLICIES AND PREMIUM CALCULATION: Meaning evolution, growth and principles of Life Insurance – Life Insurance Organizations in India – Competition and Regulation of Life Insurance – Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes .Computation of Premiums - Meaning of Premium, its calculation-Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITINGS AND FINANCIAL PLANNING & TAX SAVING: Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

SUGGESTED READINGS:

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
5. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
6. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
7. Life Insurance in India: Sadhak, Respose Books, New Delhi

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Paper 201:FINANCIAL ACCOUNTING-II

Objective: to acquire conceptual knowledge and application of depreciation methods and single entry system, and preparation of accounts related to non-profit and partnership organizations.

UNIT-I: DEPRECIATION: Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortisation and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method - Sinking Fund Method - Sum of Digits Method - Annuity Method.

UNIT-II: ACCOUNTS FROM INCOMPLETE RECORDS: Features – Ascertainment of Profit - Statement of Affairs and Conversion method.

UNIT-III: ACCOUNTING FOR NOT-FOR-PROFIT ORGANIZATIONS: Not for Profit entities – Features – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet - Accounting for Organization and Individuals.

UNIT-IV: PARTNERSHIP ACCOUNTS-I: Meaning – Partnership Deed - Capital Accounts (Fixed and Fluctuating) – Admission of a Partner – Retirement and Death of a Partner (Excluding Joint Life Policy).

UNIT-V: PARTNERSHIP ACCOUNTS-II: Dissolution of Partnership – Insolvency of a Partner (excluding Insolvency of all partners) – Sale to a Company.

SUGGESTED READINGS:

1. Accountancy-I: S.P. Jain & K.L Narang, Kalyani.
2. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
3. Financial Accounting-II Dr.Yogeshweran, PBP.
4. Financial Accounting: S. N. Maheshwari&V.L. Maheswari, Vikas.
5. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
6. Accountancy-I: Tulasian, Tata McGraw Hill Co.
7. Advanced Accountancy-I: S. N. Maheshwari&V.L.Maheswari, Vikas.
8. Financial Accounting-I , Prasanthaathma, Himalaya Publishing House
9. Financial Accounting-I , Srihari Krishna Rao, Himalaya Publishing House
10. Financial Accounting: B.Vishwanadham, S Chand.
11. Financial Accounting-II: Padma Priya, Himalaya Publishing house
12. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
13. Financial Accounting: M.N Arora, Tax Mann Publications.

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Paper 202: BUSINESS LAWS

Objective: to understand basics of contract act, sales of goods act, IPRs and legal provisions applicable for establishment, management and winding up of companies in India.

UNIT-I: INDIAN CONTRACT ACT: Agreement and contract - Essentials of a valid contract - Types of contracts - Offer and Acceptance - Essentials of valid offer and acceptance - Communication and revocation of offer and acceptance - Consideration definition - Essentials of valid consideration - Modes of Discharge of a contract - Performance of Contracts - Breach of Contract - Remedies for Breach.

UNIT-II: SALE OF GOODS ACT AND CONSUMER PROTECTION ACT: Contract of Sale: Essentials of Valid Sale - Sale and Agreement to Sell - Definition and Types of Goods - Conditions and Warranties - Caveat Emptor - Exceptions - Unpaid Seller - Rights of Unpaid Seller. Consumer Protection Act 1986: Definitions of Consumer - Person - Goods - Service - Consumer Dispute - Consumer Protection Councils - Consumer Dispute Redressal Agencies - Appeals.

UNIT-III: INTELLECTUAL PROPERTY RIGHTS: Trade Marks: Definition - Registration of Trade Marks - Patents: Definition - Kinds of Patents - Transfer of the Patent Rights - Rights of the Patentee - Copy Rights: Definition - Rights of the Copyright Owner - Terms of Copy Right - Copy Rights Infringement - Other Intellectual Property Rights: Trade Secrets - Geographical Indications.

UNIT-IV: MANAGEMENT OF COMPANIES AND MEETINGS: Director: Qualification - Disqualification - Position - Appointment - Removal - Duties and Liabilities - Loans - Remuneration - Managing Director - Corporate Social Responsibility - Corporate Governance. Meeting: Meaning - Requisites - Notice - Proxy - Agenda - Quorum - Resolutions - Minutes - Kinds - Shareholder Meetings - Statutory Meeting - Annual General Body Meeting - Extraordinary General Body Meeting - Board Meetings.

UNIT-V: WINDING UP: Meaning - Modes of Winding Up - Winding Up by tribunal - Voluntary Winding Up - Compulsory Winding Up - Consequences of Winding Up - Removal of name of the company from Registrar of Companies - Insolvency and Bankruptcy code - 2016.

SUGGESTED READINGS:

- 1) Company Law: ND Kapoor, Sultan Chand and Co.
- 2) Company Law: Rajashree. - HPH
- 3) Business Law - Kavitha Krishna, Himalaya Publishing House
- 4) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
- 5) Company Law and Practice: GK Kapoor & Sanjay Dhamija, Taxmann Publication.
- 6) Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
- 7) Corporate Law: PPS Gogna, S Chand.
- 8) Business Law: D.S. Vital, S Chand
- 9) Company Law: Bagriyal AK, Vikas Publishing House.

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Paper 203: BANKING AND FINANCIAL SERVICES

Objectives: to familiarize with Fund-based and Non-fund-based Financial Services.

UNIT-I:INTRODUCTION:Functions of Commercial Banks - Emerging Trends in Commercial Banking in India:E-Banking – Mobile Banking - Core Banking – Bank Assurance – OMBUDSMAN.RBI Constitution - Organizational Structure – Management - Objectives – Functions – Monetary Policy - Brief description on various types of banks--District Co-Operative Central Banks – Contemporary Banks - Regional Rural Banks -National Bank for Agriculture and Rural Development (NABARD) – SIDBI – Development Banks.

UNIT-II: BANKER AND CUSTOMER RELATIONSHIP:Definition of Banker and Customer - Relationship Between Banker and Customer - KYC norms- General and Special Features of Relationship - Opening of Accounts - Special Types of Customers Like Minor, Married Women, Partnership Firms, Companies, Clubs and other Non-Trading Institutions.

UNIT-III:NEGOTIABLE INSTRUMENTS:Descriptions and their Special Features - Duties and Responsibilities of Paying and Collecting Banker - Circumstances under which a Banker can refuse Payment of Cheques - Consequences of Wrongful Dishonors - Precautions to be taken while Advancing Loans Against Securities – Goods - Documents of Title to Goods - Loans against Real Estate -Insurance Policies - Against Collateral Securities – Banking Receipts.

UNIT-IV: INTRODUCTION TO FINANCIL SERVICES: Financial Services: Meaning-Functions-Classification- Scope – Fund Based Activities - Non-fund Based Activities – Modern Activities - Causes for Financial Innovation – New Financial Products and Services – Innovative Financial Instruments – Challenges Facing the Financial Service Sector – Present Scenario.

UNIT-V: MERCHANT BANKING, VENTURE CAPITAL, LEASING, DISCOUNTING, FACTORING AND FORFEITING: Definition –Services of Merchant Banks –Problems and Scope of Merchant Banking in India-Venture Capital: Meaning, Features, Scope, Importance - Leasing-Definition and Steps- Types of Lease – Financial Lease – Operating Lease – Leverage Lease – Sale and Lease Back –Discounting:Concept – Advantages of Bill Discounting –Factoring-Meaning and Nature– Parties in Factoring – Merits and Demerits of Factoring –Forfeiting-Parties to Forfeiting – Costs of Forfeiting – Benefits of Forfeiting for Exporters and Importers .

SUGGESTED READINGS:

1. Banking Theory & Practices: Dr. P. K. Srivatsava, Himalaya Publishers
2. Banking Theory & Practices: K.C. Shekar, Vikas Publications
3. Banking and Financial Services: SanthiVedula&Kavitha Krishna Himalaya Publishing House
4. Banking and Financial Services: Dr.Jayanthi, PBP.
5. Banking Theory, Law & Practices: R. R Paul, Kalyani Publishers
6. Money Banking and Financial Markets: Averbach, Rabort. D, MacMillan. Landon
7. Financial Markets and Services: Gordon and Natarajan, Himalaya Publishing House.
8. Financial Services: T. Siddaiah, Pearson Education

C.B.C.S Pattern Syllabus from 2019-2010 onwards
B.A., B.Sc., B.Com. & B.B.A.
2nd Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) గజేంద్ర మోక్షం-పోతన
- 2) హనుమత్ సందేశం-మొల్ల
- 3) సుభాషితాలు-ఎనుగు లక్ష్మణ కవి

Unit-II ఆధునిక కవిత్వం

- 1) స్నేహలత లేఖ-రాయప్రోలు సుబ్బారావు
- 2) అంతర్నాదం-దాశరథి కృష్ణమాచార్యులు
- 3) ప్రపంచపదులు-డా॥ సి.నారాయణరెడ్డి
- 4) అల్విదా-కౌముది

Unit-III వచన విభాగం

- 1) యుగాంతం-నెల్లూరి కేశవ స్వామి
- 2) ఎంకన్న - ఆచార్య పాకాల యశోదారెడ్డి
- 3) మామిడి పండు - సురవరం ప్రతాపరెడ్డి
- 4) మా ఊరుపోయింది-దేవులపల్లి వేంకట కృష్ణశాస్త్రి

Unit-IV ఛందస్సు

ఉత్పలమాల, చంపకమాల, శార్దూలం, మత్తేభం, ఆటవెలది, తేటగీతి, ద్విపద, సీసం, కందం, ఉత్సాహం, తరళం, స్రగ్ధర, మహాస్రగ్ధర, ముత్యాలసరం



KAKATIYA UNIVERSITY, WARANGAL

B.A., B.Sc., B.Com. & B.B.A (CBCS)

Syllabus - 2020

Telugu (Second Language)

3rd Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) ధర్మజుని వాక్యాతుర్యం - తిక్కన
- 2) విభీషణ శరణాగతి - గోన బుద్ధారెడ్డి
- 3) గుణనిధి కథ - శ్రీనాథుడు

Unit -II ఆధునిక పద్యభాగం

- 1) రైతు ప్రశస్తి - వానమామలై జగన్నాథాచార్యులు
- 2) గురుదక్షిణ - అంబటి లక్ష్మీనరసింహరాజు
- 3) గుడిసెలు కాలిపోతున్నై - డా॥ బోయి భీమన్న

Unit -III అలంకారాలు

శబ్దాలంకారాలు: వృత్త్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస,
అంత్యానుప్రాస, యమకం, ముక్తపదగ్రస్తాలంకారాలు

అర్థాలంకారాలు: ఉపమ, ఉత్పేక్ష, రూపక, స్వభావోక్తి, ఉల్లేఖ,
అర్థాంతరవ్యాస, శ్లేష, దృష్టాంతాలంకారాలు

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం


29/8/2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL-506 003 (T.S.)




Head
Department of Telugu
Kakatiya University
Warangal-506 003(T.S.)

B.A, BSc & B Com SECOND YEAR - 2019-2020 -

URDU - SECOND LANGUAGE:

"MUTALA-E-ADAB" (Part - II)

(Compiled by Department of Urdu O.U. Hyderabad)

published in August-2008 by Urdu Academy-HYA.

SEMISTER - III

PAPER - III

URDU POETRY & PROSE

UNIT: I.

MASNAVI :- Amn Nama by Jaan Nisar Akhtar.

UNIT: II.

QASIDA :- Dar Shaan-e-Hameedud Dawla
— by —
Zauq Dahelvi.

UNIT: III

1. NOVEL :- Nasook ki Saleem Se Guftagu
— by —

Deputy Nazim Ahmed (Selected from
"Taubatun Nasook")

2. INSHAIYA :- Zaqq-e-Chai Noshi - By Moulana Az
(Selected from "GHUBAR-E-KHATIR).

[Signature]
2020.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A/B.COM/BBA/B.SC ENGLISH II YEAR
SEMESTER – III

PAPER – III: ENGLISH

Theory: 3 Hours/Week; Credits: 3 Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence
Published by Orient BlackSwan

UNIT I: GENDER EQUALITY

1. “Achieving Gender Equality in India: What Works, and What Doesn’t” by Smriti Sharma
2. “They Shut me up in Prose” by Emily Dickinson
3. Prepositions
4. Phrasal Verbs

UNIT II: GENDER ROLES

1. “The Wonder Story of Kalpana Saroj” by Rakhi Chakraborty
2. “The Kitchen” by Vimala
3. Voice
4. Technical Vocabulary

UNIT III: ENDING VIOLENCE AGAINST WOMEN

1. “What is my Name?” by P.Sathyavathi
2. “Voice of the Unwanted Girl” by Sujatha Bhatt
3. Connectives
4. Idioms

Kakatiya University, Warangal
Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objectives: To make Students to learn Principles of Insurance.

UNIT I: RISK MANAGEMENT AND INSURANCE:

Risk Management -Types of Risks - Actual and Consequential Losses - Management of Risks - Different Classes of Insurance - Importance of Insurance - Management of Risk by Individuals and Insurers - Fixing of Premiums – Reinsurance - Role of Insurance in Economic Development and Social Security - Constituents of Insurance Market - Operations of Insurance Companies - Operations of Intermediaries - Specialist Insurance Companies - Role of Regulators - Common and specific terms in Life and Non-Life Insurance - Understanding Insurance Customers - Customer Behavior at Purchase Point - Customer Behavior when Claim Occurs - Importance of Ethical Behavior


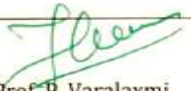





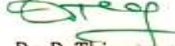

UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS:

Insurance Contract Terms - Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause - Life Insurance Products: Risk of Dying Early - Risk of Living too Long - Products offered - Term Plans - Pure Endowment Plans - Combinations of Plans - Traditional Products - Linked Policies - Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets - Exposure to Perils - Features of Products Covering Fire and Allied Perils - Products covering Marine and Transit Risks - Products covering Financial Losses due to Accidents - Products covering Financial Losses due to Hospitalization - Products Covering Miscellaneous Risks

SUGGESTED READINGS:

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
4. Principles of Insurance : Dr V Padmavathi, Dr V Jayalakshmi - PBP
5. Insurance and Risk Management: P.K. Gupta
6. Insurance Theory and Practice : Tripathi PHI
7. Principles of Insurance Management: Neelam C Gulati, Excel Books

Suggested Websites: 1) www.irda.gov.in 2) www.policyholder.gov.in
3) www.irdaindia.org.in

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
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Kakatiya University, Warangal
Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper SEC1 (b): FOUNDATION OF DIGITAL MARKETING

Objective: To make students to understand Foundation of digital marketing.

UNIT I: DIGITAL MARKETING FOUNDATIONS:


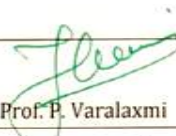





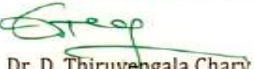
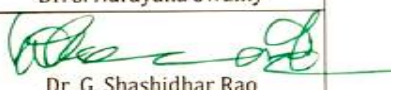
Digital Marketing Strategy - Exploring Digital Marketing - Starting with the Website - Foundations of Analytics - Search Engine Optimization - Search and Display Marketing - Social Media Marketing - Video Marketing – Advantages & Limitations of Digital Marketing.

UNIT II: ONLINE MARKETING, MOBILE MARKETING FOUNDATIONS:

Online marketing tools and setup – E-Marketing: Segmentation, personalization and mobile marketing - Content marketing: Blogs for content marketing - Content marketing for staying relevant - Newsletters for content marketing.

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Foundations of Digital Marketing: Dr. K.V. Nagaraj.K Usha Rani - PBP
4. Digital Marketing by Vandana Ahuja, Oxford
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper SEC1 (c) FUNDAMENTALS OF BUSINESS ANALYTICS

Objective: To make students to learn Fundamentals of Business Analytics.

UNIT I: USING DATA TO DRIVE BUSINESS DECISIONS:


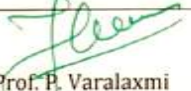





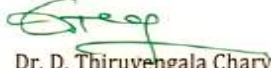

Need for data-driven decision making: Solving the business problem using Analytics - Overview of the Business Analytics cycle - Hierarchy of information user -The complete Business Analytics professional: Understanding Business Analyst roles and responsibilities - Identify the Popular Business Analytics Tools.

UNIT II: DATA ANALYTICS USING EXCEL:

Basics of Excel: Organizing data with Excel - Performing simple computations and aggregations using Excel - Working with Summing and other Reporting functions in Excel - Working with pivot tables and charts - Using Excel for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips - Display tips - Keyboard shortcuts - Mouse shortcuts - Standardized layouts - Understanding table based and spreadsheet-based layouts - Best practices Setting data rules and Cleaning data - Format as table - Data cleansing techniques using External Data - Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Query data from SQL - Working in the Select Part of an SQL Query - Managing SQL commands - Managing Tables - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - Using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data - Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options

SUGGESTED READINGS:

1. Fundamentals of Business Analytics, 2nd Edition; R N Prasad; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Monetizing Your Data: A Guide to Turning Data into Profit-Driving Strategies and Solutions; Andrew Roman Wells, Kathy Williams Chiang; Wiley
4. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
5. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
6. Excel Statistics: A Quick Guide, 3rd edition; Neil J. Salkind; Sage Publications
7. Microsoft Excel 2019: For Beginners; J. Davidson
8. Microsoft Excel 2019: Learn Excel Basics with Quick Examples; James Jackson

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Kakatiya University, Warangal

Faculty of Commerce & Business Management,

B.Com. III Semester - Paper SEC2 (a): PRACTICE OF LIFE INSURANCE

Objective: To make students to learn Practice of Life Insurance.

UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE


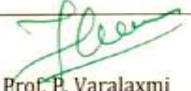
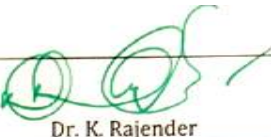




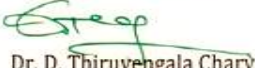

POLICIES AND PREMIUM CALCULATION: Meaning evolution, growth and principles of Life Insurance –Life Insurance Organizations in India – Competition and Regulation of Life Insurance - Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes. Computation of Premiums - Meaning of Premium, its calculation- Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITINGS AND FINANCIAL

PLANNING & TAX SAVING: Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis- Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

SUGGESTED READINGS:

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Principles of Life Insurance – Dr. V. Padmavathi, Dr. V. Jayalakshmi - PBP
5. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
6. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
7. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
8. Life Insurance in India: Sadhak, Respose Books, New Delhi.

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
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Kakatiya University, Warangal
Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper SEC2 (b): WEB DESIGN AND ANALYTICS

Objective: To make students to understand the Fundamentals of Web design and Analytics.

UNIT I: WEB DESIGN AND OPTIMIZING CONVERSION RATES:










Exploring and learning web design – Understanding Conversion rate optimization (CRO) – Setting CRO – Understanding target audience – Optimization champion

UNIT II: GOOGLE ANALYTICS:

Getting started with Google Analytics – Core concepts – Additional interface features – Using reports – Audience reports – Acquisition reports – Social reports – Behavior reports – Track events – Conversion reports – Additional features

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry
6. Don't Make Me Think Revisited: A Common Sense Approach to Web Usability By Steve Krug
7. Web Analytics 2.0 – Avinash Kaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. III Semester - Paper SEC2 (c): APPLICATION OF BUSINESS ANALYTICS

Objective: To make students to understand the Application of Business analytics.

UNIT I: STATISTICS USING EXCEL:

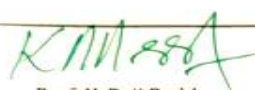
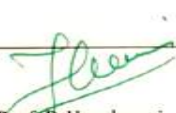


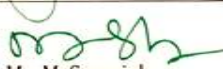


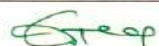
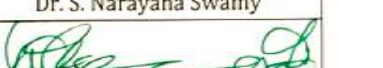
Descriptive statistics using Excel: Describe data using charts and basic statistical measures – Histograms - Pareto charts – Boxplots - Tree map and Sunburst charts - Inferential Statistics using Excel: Correlation and Regression - Probability distribution – Sampling techniques – Hypothesis testing

UNIT II: GETTING STARTED WITH R:

Introduction to R and R Studio components: Read datasets into R - Export data from R - Manipulate and Process Data in R - Use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R

SUGGESTED READINGS:

1. Microsoft Business Intelligence Tools for Excel Analysis; Michael Alexander, Jared Decker, Bernard Wehbe; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
4. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
5. Microsoft Excel Data Analysis for Dummies, 3rd edition; Stephen L. Nelson, E. C. Nelson; Wiley
6. Data Analytics with R; Bharti Motwani; Wiley

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. III Semester - Paper DSC 301: ADVANCED ACCOUNTING

Objective: To acquire accounting knowledge of partnership firms and joint stock companies

UNIT-I: PARTNERSHIP ACCOUNTS-I:

Meaning - Partnership Deed - Capital Accounts (Fixed and Fluctuating) - Admission of a Partner - Retirement and Death of a Partner (Excluding Joint Life Policy)(Including problems)

UNIT-II: PARTNERSHIP ACCOUNTS-II:

Dissolution of Partnership - Insolvency of a Partner (excluding Insolvency of all partners) - Sale to a Company (Including problems)

UNIT-III: ISSUE OF SHARES, DEBENTURES, UNDERWRITING AND BONUS SHARES:

Issue of Shares at par, premium and discount - Pro-rata allotment - Forfeiture and Re-issue of Shares - Issue of Debentures with Conditions of Redemption - Underwriting: Meaning - Conditions - Bonus Shares: Meaning - SEBI Guidelines for Issue of Bonus Shares - Accounting of Bonus Shares (Including problems)

UNIT-IV: COMPANY FINAL ACCOUNTS AND PROFIT PRIOR TO INCORPORATION:


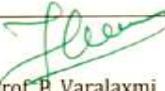







Companies Act, 2013: Structure - General Instructions for preparation of Balance Sheet and Statement of Profit and Loss - Part-I: Form of Balance Sheet - Part-II: Statement of Profit and Loss - Preparation of Final Accounts of Companies - Profits Prior to Incorporation - Accounting treatment (Including problems)

UNIT-V: VALUATION OF GOODWILL AND SHARES:

Valuation of Goodwill: Need - Methods: Average Profits method, Super Profits method and Capitalization Method -Valuation of Shares: Need - Net Assets method, Yield method and Fair Value Method. (Including problems)

SUGGESTED READINGS:

1. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
2. Advanced Accountancy: Shukla and Grewal, S.Chand & Co.
3. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons.
4. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
5. Advanced Accountancy: Dr. G. Yogeshwaran, Julia Allen - PBP
6. Accountancy-III: Tulasian, Tata McGraw Hill Co.
7. Advanced Accountancy: Arulanandam; Himalaya.
8. Accountancy-III: S.P. Jain & K.L Narang, Kalyani Publishers.

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 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

Kakatiya University, Warangal
Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper DSC 302: BUSINESS STATISTICS -I

Objective: To inculcate analytical and computational ability among the students.

UNIT-I: INTRODUCTION:

Origin and Development of Statistics - Definition - Importance and Scope - Limitations of Statistics - Distrust of Statistics.

Statistical Investigation: Planning of statistical investigation - Census and Sampling methods - Collection of primary and secondary data - Statistical errors and approximation - classification and Tabulation of data - Frequency distribution

UNIT - II: DIAGRAMMATIC AND GRAPHIC PRESENTATION:

Diagrammatic presentation: One Dimensional and Two Dimensional Diagrams - Pictograms - Cartograms - Graphic presentation: Technique of Construction of Graphs - Graphs of Frequency Distribution - Graphs of Time Series or Histograms

UNIT-III: MEASURES OF CENTRAL TENDENCY:

Introduction -Significance - Arithmetic Mean - Geometric Mean - Harmonic Mean – Mode - Median - Quartiles and Percentiles - Simple and Weighted Averages - Uses and Limitations of different Averages

UNIT-IV: MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS:

Measures of Dispersion: Significance - Characteristics - Absolute and Relative Measures – Range - Quartile Deviation - Mean Deviation- Standard Deviation - Coefficient of Variation


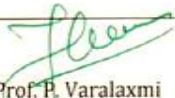







Measures of Skewness - Karl Pearson's Coefficient of Skewness - Bowley's Coefficient of Skewness - Kelly's Measure of Skewness - Kurtosis: Mesokurtosis, Platy kurtosis and Leptokurtosis

UNIT-V: CORRELATION:

Meaning -Types - Correlation and Causation - Methods: Scatter Diagram - Karl Person's Coefficient of Correlation - Probable Error and Interpretation of Coefficient of Correlation - Rank Correlation - Concurrent Deviation Method

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Statistics: E. Narayanan Nadar, PHI Learning
4. Business Statstics –I: Dr. Obul Reddy, Dr. D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata McGraw Hill
7. Fundamentals of Statistical: S. P Gupta, Sultan Chand
8. Business Statistics: J. K. Sharma, Vikas Publishers
9. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications

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B.Com. III Semester - Paper DSC 303: FINANCIAL INSTITUTIONS & MARKETS

Objective: To familiarize with various Financial Institutions and Markets.

UNIT-I: INDIAN FINANCIAL SYSTEM:

Components - Functions - Flow of Funds Matrix - Financial System and Economic Development - Recent Developments in Indian Financial System - Weaknesses of Indian Financial System

UNIT-II: FINANCIAL INSTITUTIONS:

Commercial Banking: Types - Functions - Lending by Commercial Banks - Recent Developments - Merchant Banking – functions - Venture Capital – objectives - Private Equity - role in start-ups - Hire purchase and leasing - Non-banking Finance Companies: Types - Functions

UNIT-III: MONEY MARKET:

Functions of Money Market - Organization of Money Market - Dealers - Money Market Instruments - RBI - Functions - Role of RBI in Money Market - LAF (Liquidity Adjustment Facility), MSF (Marginal Standing Facility), Repo, and Reverse Repo.

UNIT-IV: DEBT MARKET:

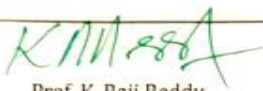
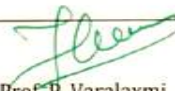


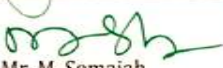


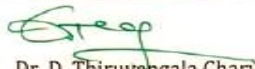

Evolution of Debt Markets in India - Instruments and Players in Debt Market: Government Securities - PSU Bonds - Corporate Bonds - Securities Trading Corporation of India - Primary Dealers in Government Securities - Bonds: Features of Bonds - Types of Bonds - Bond Ratings.

UNIT-V: EQUITY MARKET:

Meaning - Development of Equity Market in India - Primary Market: IPO and FPO - Methods of IPO - Role of Merchant Bankers in Fixing the Price - Red Herring Prospectus – Sweat Equity - ESOP - Rights Issue - Secondary Market: Meaning and Functions of Stock Exchanges - Evolution and Growth of Stock Exchanges - Stock Exchanges in India - Recent Developments in Indian Stock Exchanges - Stock Market Indices - SEBI: Objectives and Functions

SUGGESTED READINGS:

- 1) Bhole, L.M., Financial Markets and Institutions. Tata McGraw Hill Publishing Company, New Delhi, India.
- 2) Prof. Prashanta Athma, Financial Institutions and Markets: PBP
- 3) Gordon & Natarajan, Financial Markets and Services. Himalaya Publishing House, New Delhi, India.
- 4) Khan and Jain, Financial Services, Tata McGraw Hill, New Delhi, India.
- 5) Khan, M.Y., Indian Financial System -Theory and Practice. Vikas Publishing House, New Delhi, India.

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 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: to acquire basic conceptual background necessary to design and develop simple database system, Relational database mode, ER model and distributed databases, and to write good queries using a standard query language called SQL.

UNIT-I: BASIC CONCEPTS: Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary -Types of Database. Relational and ER Models: Data Models - Relational Model – Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint - Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model – Entities – Attributes – Relationships - More about Entities and Relationships - Defining Relationship for College Database - E-R Diagram - Conversion of E-R Diagram to Relational Database.

UNIT-II: DATABASE INTEGRITY AND NORMALISATION: Relational Database Integrity - TheKeys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems – Single Valued Dependencies – Normalisation - Rules of Data Normalisation - The First Normal Form -The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless-join Decomposition - Dependency Preservation. File Organisation : Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation

- Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation - Inverted File Organisation.


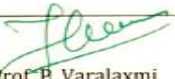
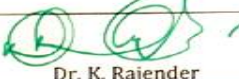




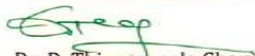

UNIT-III: STRUCTURES QUERY LANGUAGE (SQL): Meaning–SQL commands – Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by – Where - Group by - Nested Queries. Joins – Views – Sequences - Indexes and Synonyms - Table Handling.

UNIT-IV: TRANSACTIONS AND CONCURRENCY MANAGEMENT: Transactions – Concurrent Transactions - Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control. Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity - Database Security - Authorization.

UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES: Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution - Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

ADVANCED TOPICS: Overview: Parallel Database - Multimedia Database - Mobile Database - Web Database - Multidimensional Database. Data Warehouse - OLTP Vs OLAP - NoSQL Database. **LAB:** SQL QUERIES BASED ON VARIOUS COMMANDS.

SUGGESTED READINGS: 1) Database Systems: R.Elmasri & S.B. Navathe, Pearson.; 2) Introduction to Database Management System: ISRD Group, McGraw Hill.; 3) Database Management System: R.Ramakrishnan & J.Gehrke, McGrawHill.; 4) Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.; 5) Database System Concepts: Silberschatz, Korth & Sudarshan, McGrawHill. 6) Simplified Approach to DBMS: Parteek Bhaia, Kalyani Publishers.

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KAKATIYA UNIVERSITY, WARANGAL
B.A., B.Sc., B.Com. & B.B.A (CBCS)
Syllabus - 2020
Telugu (Second Language)
4th Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) నారద గానమాత్యర్యం - పింగలి సూరన
- 2) వాగ్దాన భంగం - అసూరి మరింగంటి వేంకట నరసింహాచార్యులు
- 3) నారసింహ శతకం - ధర్మపురి శేషప్ప

Unit -II ఆధునిక పద్యభాగం

- 1) నరుడ నేను, నరుడ నేను - కాళోజీ
- 2) ఆత్మగీతం - దేవరకొండ బాలగంగాధర తిలక్
- 3) దేవరకొండ దుర్గం - డా॥ ముకురాల రామారెడ్డి

Unit -III వచన విభాగం

- 1) అర్థరాత్రి అరుణోదయం - దాశరథి రంగాచార్య
- 2) సి.పి బ్రౌన్ సాహిత్య సేవ - జానమద్ది హనుమచ్ఛాస్త్రి
- 3) మన గ్రామ నామాలు - డా॥ కపిలవాయి లింగమూర్తి
- 4) నివురు తొలగిన నిప్పు - పోల్కంపల్లి శాంతాదేవి
- 5) కొండమల్లెలు - ఇల్లించల సరస్వతీదేవి

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి “సాహితీ కిన్నెర” తెలుగు వాచకం


29-8-2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL(A.P.)





Head
Department of Telugu
Kakatiya University
Warangal-506 09(T.S.).

B.A, B.Sc & B.Com SECOND YEAR.

URDU SECOND LANGUAGE

"MUTALA-E-ADAB" (Part - II)

(Compiled by Urdu Department - Osmania University - Hyderabad)
published in August 2008 by Urdu Academy - Hyderabad.

SEMESTER - IV

PAPER - IV

POETRY & PROSE

UNIT: I

MARSIA: "GARM KA SAMAN" by Meen Anees.

UNIT: II:

1. RUBAIYAT: a) ANEES - Pурсan koi kab Jawher - e -
Zaati ka hai.

ANEES - Duniya bhi jab Sataye - e -
Fani Dekhi.

b) HALI - Duniya - e - Demi ko Naqsh - e
Fani Samjha.

HALI - Yaro Nahi waqt Alam ka yeh.

c) AMJAD - Koshish hai apni tamam
Satayash ke liy.

AMJAD - Kam Zarf Ager Daulat - o -
Zar pata hai.

2. QITAAT: a) AKBAR ILAHRADI - Chod Literature
ko Apni History Bhoal Ja.

b) ALLAM IQBAL - Andaz - e - Bayan

Ger - che - Bahut Shookh nahi
hai.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A/B.COM/BBA/B.SC ENGLISH II YEAR

SEMESTER – IV

PAPER – IV: ENGLISH

Theory:

3 Hours/Week;

Credits: 3

Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence

Published by Orient BlackSwan

UNIT I: RENEWABLE AND NON-RENEWABLE RESOURCES

1. Jadav Payeng
2. “The Tame Bird was in a Cage” by Rabindranath Tagore
3. Reported Speech
4. Commonly Confused Words

UNIT II: ECOSYSTEMS AND ENVIRONMENTAL POLLUTION

1. “Climate Change and Global Warming” by Michael Shafer
2. “A Requiem for Earth” by O.N.V.Kurup
3. Conditionals
4. Suffixes

UNIT III: CONSERVATION AND BIODIVERSITY

1. “The Ungrateful Man: A Conversation between Trees ” by Swathi Shenoy
2. “The Felling of the Banyan Tree” by Dilip Chitre
3. Common Errors
4. Collocations

Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC3 (a): PRACTICE OF GENERAL INSURANCE

Objective: To make the student understand general policies and accounting.

UNIT I: GENERAL INSURANCE POLICIES:








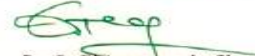
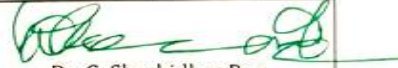
Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability, Personal Accident and Specialty Insurance, Engineering and other insurance.

UNIT II: UNDERWRITING, PREMIUMS, CLAIMS AND INSURANCE RESERVES AND ACCOUNTING:

Concept of Underwriting—Underwriting Process—Risk sharing and its methods—risk management and steps involved in it—Rating and Premiums—concept of soft and hard markets—Concept of Claim-understanding the process of claim management—claims fraud and fraud prevention—Insurance reserves and accounting—different types of reserves of insurance companies—reserving process followed by insurance companies—Insurance accounting.

SUGGESTED READINGS:

1. Practice of General Insurance - Insurance Institute of India.
2. Practice of General Insurance - D.S. Vittal-HPH.
3. Principles & Practice of Insurance- Dr. P. Periasamy - HPH.
4. Risk Management: A Publication of the Insurance Institute of India.
5. Practice of General Insurance: Dr. V. Padmavathi, Dr. V. Jayalakshmi, PBP.
6. Insurance Theory and Practice: Tripathi PHI
7. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
8. Risk Management and Insurance : Trieschman, Gustavson and Hoyt
9. South Western College Publishing Cincinnati, Ohio.

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC3 (b): SOCIAL MEDIA MARKETING

Objective: To make students to understand the Social Media marketing.

UNIT I: SOCIAL MEDIA MARKETING:



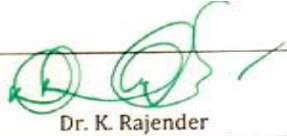






Building an online community – Understanding Social Media Marketing – Marketing and building presence on Facebook – Marketing and building presence on Twitter – Employer branding on LinkedIn

UNIT II: ONLINE ADVERTISING ON SOCIAL MEDIA:

Facebook advertising overview – How Facebook ads work – How to create Facebook ads – Additional advertising options and best practices for Facebook advertising – Marketing and monetizing on YouTube – Customize your YouTube Channel – Video optimization on YouTube – YouTube Analytics

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Tuten: Social Media Marketing, sage
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Social Media Marketing All-In-One for Dummies By Jan Zimmerman and Deborah Ng
7. Facebook Growth Hacking: How to Correctly Set Up and Maintain Your Facebook Presence and Gain Massive Amounts of Fans (Social Media Marketing) by Jeff Abston
8. Youtube Influencer: How To Become a Youtube Influencer, Why Influencer Marketing Matters, and How To Monetize Your Channel by Jeff Abston

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC-3 (c): BUSINESS INTELLIGENCE

Objective: To make students to understand the Business Intelligence.

UNIT I: BUSINESS INTELLIGENCE USING POWER BI:

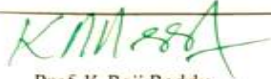
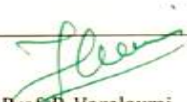





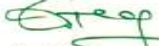

Getting data in Power BI: Overview of Power BI Desktop - Connect to data sources in Power BI Desktop - Clean and transform data with the Query Editor - advanced data import and cleaning techniques - Cleaning irregularly formatted data - Modeling the data: Manage data relationships - Create calculated columns - Optimizing data models - Create calculated measures - Create calculated tables - Explore time-based data - Exploring data: Introduction to the Power BI service - Turn business intelligence data into data insights

UNIT II: POWER BI AND EXCEL:

Using Excel data in Power BI: Uploading an Excel workbook with a simple table into Power BI - Upload workbooks created with Excel Power Pivot and Power View - Publishing and sharing: Publish Power BI Desktop reports - Print and export dashboards and reports - Manually republish and refresh data - Power BI Mobile - Create groups in Power BI - Publish to web

SUGGESTED READINGS:

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Create space Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; Teo Lachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC4 (a): REGULATION OF INSURANCE BUSINESS

Objective: To equip the students with the knowledge regarding Insurance Business Regulations.

UNIT I: INSURANCE LEGISLATION IN INDIA:


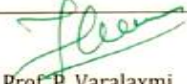


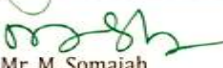


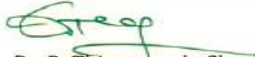
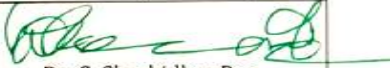
History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS-insurance repositories-TPAs—Role and duties of surveyors—Origin and development of micro-insurance—regulation of ULIPs— pension schemes—money laundering—KYC—methods of receipt of premium—Exchange control regulations relating to General and Life Insurance—IRDA Health Insurance Regulations, 2016—Health plus life combo products.

UNIT II: POLICY HOLDERS RIGHTS OF ASSAIGNMENT, NOMINATION AND TRANSFER:

Assignment and transfer of insurance policies—provisions related to nomination—repudiation— Fraud—protection of policyholder interest—stages in insurance policy—presale stage—post sale stage—free look period—grievance redressal—claim settlement—key feature document—dispute resolution mechanism—insurance ombudsman—solvency margin and investments— international trends in insurance regulation.

SUGGESTED READINGS:

1. Regulation of Insurance Business - Insurance Institute of India
2. Regulation of Insurance Business - D.S. Vittal, HPH
3. Regulation of Insurance Business: Dr. V. Padmavathi, PBP
4. Risk Management : A Publication of the Insurance Institute of India
5. Insurance Theory and Practice: Tripathi PHI
6. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
7. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt
8. South Western College Publishing Cincinnati, Ohio.
9. Insurance Management - S.C. Sahoo & S.C. Das-HPH.

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**B.Com. IV Semester - Paper SEC4 (b): SEARCH ENGINE OPTIMIZATION AND
ONLINE ADVERTISING**

***Objective:** To make students to understand the Search engine optimization and online advertising.*

UNIT I: SEO FOUNDATIONS AND SEO KEYWORD STRATEGY:

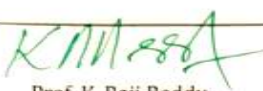







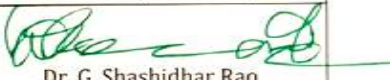
Understanding SEO – Keyword strategy – Content optimization – Long-term content planning – Link-building strategies – Measuring SEO effectiveness – SEO for Ecommerce – Local search – Mobile SEO

UNIT II: GOOGLE ADWORDS AND REMARKETING:

Pay-Per-Click Advertising – Getting started with Google Adwords – Advertising tracking – Key Google Adwords strategies – Remarketing with Google – Budget and ROI tips – B2B Remarketing Campaigns

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. SEO for Dummies, 6th Edition, by John Kent
6. SEO Fitness Workbook: 2018 Edition: The Seven Steps to Search Engine Optimization Success on Google By Jason McDonald
7. The Art of SEO: Mastering Search Engine Optimization By Eric Enge, Stephan Spencer and Jessie Stricchiola
8. Google Adwords for Beginners: A Do-It-Yourself Guide to PPC Advertising By Cory Rabazinsky, 2015

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**B.Com. IV Semester - Paper SEC-4 (c) DATA VISUALIZATION &
STORYTELLING**

Objective: To make students to understand the Data visualization & Storytelling.

UNIT I: DATA VISUALIZATION USING POWER BI:

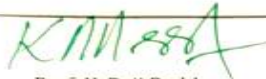
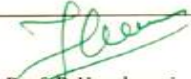






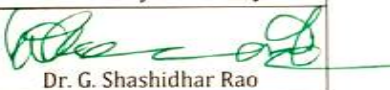
Visuals in Power BI: Bar charts – Pie charts – Treemaps – Combination charts – Slicers – Map visualizations – Matrixes and Tables – Scatter charts – Waterfall and funnel charts - Gauges and single-number cards - Modifying visuals and reports: Modify colors in charts and visuals – Add shapes, text boxes, and images to reports - Page layout and formatting - Other Data Visualization features and options: Group interactions among multiple visualizations on the same report page - Summarization and category options – Z-order - Visual hierarchies and drill-down

UNIT II: TELLING STORIES WITH DATA:

Data Storytelling: Apply storytelling principles to business analytics - Improve business analytics presentations through storytelling - Creating high-impact reports and presentations: Guidelines and best practices

SUGGESTED READINGS:

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; Teo Lachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
5. Microsoft Power BI Dashboards Step by Step, Errin O'Connor, Microsoft Press
6. Storytelling with Data: A Data Visualization Guide for Business Professionals; Cole Nussbaumer Knaflic; Wiley

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: INCOME TAX

Objective: To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from different heads with reference to an Individual Assessee.

UNIT-I: INTRODUCTION:

Direct and Indirect Taxes – Canons of Taxation - Features and History of Income Tax in India – Definitions and Basic Concepts of Income Tax: Assessee – Deemed Assessee – Assessee-in-default – Assessment Year – Previous Year - Person – Agricultural Income – Heads of Income – Gross Total Income – Total Income -- Incomes Exempt from Tax. Residential Status and Scope of Total Income: Meaning of Residential Status – Conditions applicable to an Individual Assessee – Incidence of Tax – Types of Incomes (Theory only)

UNIT-II: INCOME FROM SALARIES:

Definition of Salary – Characteristics of Salary – Computation of Salary Income: Salary u/s 17(1) – Annual Accretion – Allowances – Perquisites – Profits in lieu of Salary – Deductions u/s. 16 – Problems on computation of Income from Salary

UNIT-III: INCOME FROM HOUSE PROPERTY:

Definition of House Property – Exempted House Property incomes– Annual Value – Determination of Annual Value for Let-out House and Self-occupied House – Deductions u/s.24 – Problems on computation of Income from House Property

UNIT-IV: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

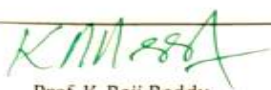
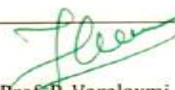





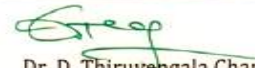
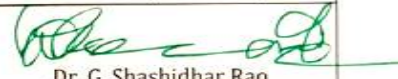
Definition of Business and Profession – Procedure for computation of Income from Business – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Problems on computation of Income from Business. Income from Profession: Rules– procedure – problems on computation of Income from Profession.

UNIT-V: CAPITAL GAINS AND INCOME FROM OTHER SOURCES:

Introduction - Meaning – Basis of charge – Short term and Long term Capital Assets – Transfer – Deemed Transfer –Determination of Cost of Acquisition – Procedure for computation of Long-term and Short-term Capital Gains/Losses – Exemptions in respect of certain Capital Gains u/s. 54 – Problems on computation of capital gains – Income from Other Sources - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, cross world puzzles, Races – Interest on Securities – Gifts received by an Individual – Casual Income – Family Pension – Rent received on let out of Furniture- Plant and Machinery with/without Building – Deductions u/s. 57. (Theory only)

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Taxation: Dr. M.N. Ravi, PBP.
3. Direct Taxes Law & Practice: Dr. Vinod K. Singhanian & Dr. Kapil Singhanian, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: EXCEL FOUNDATION

Objective: Students will learn how to start working with M S Excel right from basics to Tables, Templates and Printing of their work.

UNIT-I: INTRODUCTION TO EXCEL:

Workbooks and Worksheets, Moving Around a Worksheet, Ribbon tabs, Types of commands on the Ribbon, Using Shortcut Menus, Working with Dialogue Boxes, Task Panes, Getting started on your worksheet, Creating a chart, Printing your worksheet, Saving your worksheet, Exploring Data Types, Modifying Cell Contents, Deleting, Replacing, Editing of a cell. Some handy data entry techniques, Number Formatting.

UNIT-II: WORKSHEET OPERATIONS:

Moving and resizing windows, Switching among windows, Activating a worksheet, Adding, Deleting a worksheet, Changing a sheet tab color, Rearranging your worksheets, Hiding, un-hiding a worksheet, Worksheet View, Comparing sheets side by side, Selecting ranges, complete rows and columns, noncontiguous ranges, multi-sheet ranges, special types of cells. Copying or Moving Ranges. Paste Special dialogue box, Adding comments to cells.

UNIT-III: TABLES AND FORMATTING:

Creating a Table, Changing the Look of a Table, Navigating in a Table, Selecting parts of a Table, Adding, Deleting new rows or columns, Moving a Table, Working with the Total Row, Removing duplicate rows from a table. Sorting and filtering a table, Converting Table into Range. Formatting tools on the Home tab, Mini Toolbar, Fonts, Text Alignment, Wrapping text to fit a cell, Colors and Shading, Borders and Lines. Naming Styles.

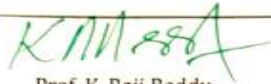
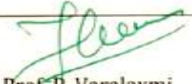







UNIT-IV: EXCEL FILES & TEMPLATES:

Creating a New Workbook, Filtering filenames, Saving and Auto Recovery, Password-Protecting a Workbook, Recovering unsaved work, Protect Workbook options, Checking Compatibility. Creating a Excel Templates, Modifying a template, Custom Excel Templates, Default Templates, Editing your Template, Resetting the default workbook, Saving your Custom Templates, Getting ideas for creating Templates.

UNIT-V: PRINTING YOUR WORK: Normal, Page Layout, Page Break View, Choosing your printer, Specifying what you want to print, Changing Page Orientation, Specifying paper size, Adjusting page margins, Inserting a page break, Removing manual page breaks, Printing Row and Column Titles, Scaling printed output, Header or Footer Options, Preventing certain cells, Objects from being printed, Creating Custom Views of your Worksheet. Creating PDF files. Introducing Excel:

SUGGESTED READINGS:

1. Excel 2013 Bible: John Walkenbach, Wiley.
2. Microsoft Excel 2013: Data Analysis and Business Modeling: Winston, PHI
3. Excel Data Analysis - Modeling and Simulation: Hector Guerrero, Springer.
4. Excel Functions and Formulas: Bernd Held, BPB Publications.
5. Financial Analysis and Modeling using Excel and VBA: Chandan Sengupta, Wiley

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Kakatiya University, Warangal

Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper DSC 402: BUSINESS STATISTICS - II

Objective: to inculcate analytical and computational ability among the students.

UNIT-I: REGRESSION:

Introduction – Definition – Types – Uses - Correlation Vs. Regression - Regression Lines– Regression Equations - Using Regression Lines for Prediction.

UNIT-II: INDEX NUMBERS:

Introduction - Uses - Types - Problems in the Construction of Index Numbers - Methods of Constructing Index Numbers - Simple and Weighted Index Number (Laspeyre - Paasche, Marshall – Edgeworth) – Quantity of Volume Index Numbers – Value Index Numbers -Tests of Consistency of Index Number: Unit Test - Time Reversal Test Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers. Consumer Price Index Number – Need – Utility – Construction – Method.

UNIT-III: TIME SERIES:

Introduction –Definition – Utility - Components – Methods-Semi Averages - Moving Averages – Least Squares Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:


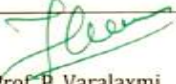





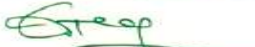

Introduction - Definition – Probability Concepts - Experiment – Types of Events - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye’s Theorem - Basics of Set Theory – Permutations & Combinations.

UNIT-V: THEORITCAL DISTRIBUTIONS:

Meaning – Importance –Types of Theoretical Distributions -Binomial Distribution: Introduction – Assumptions – Expansion – Constants -Fitting of Binomial Distribution - Poisson Distribution: Introduction – Features – Assumptions – Uses and importance – Models and Probability of Poisson Distributions – Constants - Fitting of Poisson Distribution. Normal Distribution: Concept – Properties - Importance - Central Limit Theorem - Fitting of a Normal Curve (Areas Method Only).

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson,
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Business Statistics: Theory & Application, P. N. Jani, PHI Learning
4. Business Statics – II: Obul Reddy, D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata Mc Graw Hill

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Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper DSC 403: CORPORATE ACCOUNTING

Objective: To acquire knowledge of AS-14 and preparation of accounts of banking and insurance companies.

UNIT-I: COMPANY LIQUIDATION:

Meaning – Modes - Contributory Preferential Payments – Statements of Affairs - Liquidator's Remuneration - Preparation of Liquidator's Final Statement of Account (Including problems)

UNIT-II: AMALGAMATION (AS-14):

Amalgamation: In the nature of Merger and Acquisition – Calculation of Purchase Consideration – Accounting Treatment in the books of transferor and transferee companies. (Including problems)

UNIT-III: INTERNAL RECONSTRUCTION AND ACQUISITION OF BUSINESS:

Internal Reconstruction: Accounting treatment – Preparation of final statement after reconstruction- Acquisition of business when new set of books are opened- Debtors and Creditors taken over on behalf of vendors- When same set of books are continued(Including problems)



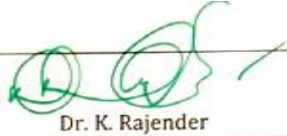






UNIT-IV: ACCOUNTS OF BANKING COMPANIES:

Books and Registers maintained – Slip system of posting – Rebate on Bills Discounted – Non-Performing Assets – Legal Provisions relating to final accounts – Preparation of Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCE COMPANIES AND INSURANCE CLAIMS: Introduction – Formats-Revenue Account-Net Revenue Account - Balance Sheet - Valuation - Balance Sheet – Net Surplus – General Insurance - Preparation of final accounts with special reference to Life Insurance - Insurance claims- Meaning – Loss of Stock and Assets – Average Clause – Treatment of Abnormal Loss - Loss of Profit. (Including problems)

SUGGESTED READINGS:

1. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
2. Accountancy-III: Tulasian, Tata McGraw Hill Co.
3. Advanced Accountancy: Arulanandam; Himalaya
4. Accountancy-III: S.P. Jain & K.L Narang, Kalyani Publishers
5. Advanced Accounting (Vol-II): Chandra Bose, PHI

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester -Paper DSC 403: WEB TECHNOLOGIES
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To gain skills of usage of Web Technologies to design Web pages.

UNIT-I: INTRODUCTION:

Art of creating a web site - Markup language (HTML) - Hypertext - Formatting text - Forms & formulating instructions & formulation elements - Commenting code - Anchors - Back grounds - Images - Hyperlinks - Lists - Tables - Frames - Web design principles.

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages and dynamic web page technologies: Introduction to Dynamic HTML programming - Cascading style sheets (CSS) - Basic syntax and structure - Events handling - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT & EVENTS AND EVENT HANDLERS:

Java Script: Introduction - Client side Java script - Server side Java script - Core features - Data types and variables - Operators - Expressions and statements - Functions - Objects - Array - Date and math related objects - Document object model - Event handling.

Events And Event Handlers: General information about Events - Event - OnAbort - OnClick - Ondbl click - Ondrag drop - Onerror - Onfocus - Onkey Press - Onkey Up - Onload - Onmouse Down - Onmouse Move - Onmouse Out - Onmouse Over - Onmove - Onrest - Onresize - Onselect - On submit - Onunload.

UNIT-IV: HYPER TEXT PRE PROCESSOR (PHP):

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads. Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies.

File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML) & JSP:

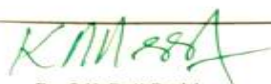
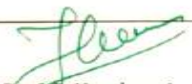





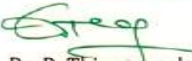
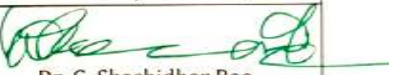
Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet - Hyperlinks in XML Document Object Model - XML Query Language.

JSP: Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT-SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:

1. Web Technology: Pradeep Kumar, HPH
2. Internet & World Wide Web How to Program: Deitel&Deitel, Pearson.
3. Web programming: Chris Bates.
4. HTML & XML An Introduction NIIT, PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson

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Faculty of Commerce & Business Management,
B.Com. V Semester - Paper GE: BUSINESS ECONOMICS

Objective: To acquire knowledge for application of economic principles and tools in business practices.

UNIT-I: INTRODUCTION:

Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Concepts used in Business Economics -Law of Diminishing marginal utility - Law of Equi-marginal utility.

UNIT- II: DEMAND ANALYSIS:

Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand –Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticities of Demand

UNIT-III: SUPPLY ANALYSIS:

Law of Supply - Factors influencing Supply - Market Equilibrium- Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

UNIT-IV: PRODUCTION ANALYSIS:










Concept of Production –production function-Total Production - Marginal Production - Average Production – Returns to a factor- Law of Variable Proportions - Law of Returns to Scale – Isocost – Isoquants - Economies and Dis-economies of Scale.

UNIT-V: COST AND REVENUEANALYSIS:

Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches -Revenue Curves–relationship between total marginal and average revenues- --Break Even Analysis—Meaning – Assumptions – Uses and Limitations.

SUGGESTED READINGS:

1. Business Economics: V. G. Mankar, Himalaya Publishing House
2. Managerial Economics: Vanith Agrawal, Pearson Education
3. Business Economics: H. L. Ahuja, S. Chand & Co. Ltd.
4. Business Economics : R. K. Lekhi, Kalyani Publishers
5. Business Economics: D. M. Mithani, Himalaya Publishing House
6. Business Economics: P. N. Chopra, Kalyani Publishers
7. Essential of Business Economics: D. N. Dwivedi, Vikas Publishers

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 501 (a) : COST ACCOUNTING

Objective: To make the students acquire the knowledge of cost accounting methods.

UNIT-I: INTRODUCTION:

Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting – Cost concepts – Cost Classification. (Theory Only)

UNIT-II: MATERIAL:

Direct and Indirect Material cost – Inventory Control Techniques – Stock Levels – EOQ – ABC Analysis – JIT - VED - FSND - Issue of Materials to Production – Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods. (Problems)

UNIT-III: LABOUR AND OVERHEADS:

Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods.

Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads. (Problems)

UNIT-IV: UNIT AND JOB COSTING:

Unit Costing: Features - Cost Sheet – Tender and Estimated Cost Sheet.


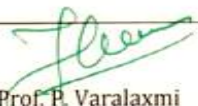
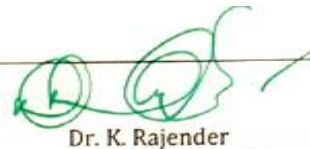




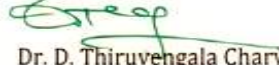

Job Costing: Features - Objectives – Procedure - Preparation of Job Cost Sheet. (Problems)

UNIT-V: CONTRACT AND PROCESS COSTING:

Contract Costing: Features – Advantages - Procedure of Contract Costing – Guidelines to Assess profit on incomplete Contracts. Process Costing: Meaning – Features – Preparation of Process Account – Normal and Abnormal Losses. (Problems)

SUGGESTED READINGS:

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: Prashanta Athma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 501 (b): FINANCIAL PLANNING & PERFORMANCE

Objective: To make students to understand the Financial Planning & Performance.

UNIT I: STRATEGIC PLANNING:

Strategic planning: Meaning – Characteristics – Environmental Scanning – Strategic Planning Vs. Tactical Planning – Strategic Planning Process

Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Financial statement projections - Cash flow projections.

UNIT II: BUDGETING AND FORECASTING:

Budgeting Concepts: Operations and performance goals - Characteristics of a successful budget process - Resource allocation - Forecasting techniques: Regression analysis - Learning curve analysis - Expected value - Budgeting Methodologies: Annual business plans (master budgets) - Project budgeting - Activity-based budgeting - Zero-based budgeting - Continuous (rolling) budgets - Flexible budgeting – Meaning & Problems.

UNIT III: COST AND VARIANCE ANALYSIS:

Cost and Variance Analysis: Comparison of actual to planned results - Use of flexible budgets to analyze performance - Management by exception - Standard Cost System: Use of standard cost systems - Analysis of variation from standard cost expectations

UNIT IV: PERFORMANCE MEASURES:








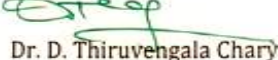

Performance Measures: Product profitability analysis - Business unit profitability analysis - Customer profitability analysis - Return on investment - Residual income - Investment base issues - Key performance indicators (KPIs) - Balanced scorecard - Responsibility Centers and Reporting Segments: Types of responsibility centers - Transfer pricing - Reporting of organizational segments

UNIT V: TECHNOLOGY AND ANALYTICS:

Information Systems: Accounting information systems - Enterprise resource planning systems - Enterprise performance management systems - Data Governance: Data policies and procedures - Life cycle of data - Controls against security breaches - Technology-enabled finance transformation: System Development Life Cycle - Process automation - Innovative applications
Data analytics: Business intelligence - Data mining - Analytic tools - Data visualization

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Strategic Management and Business Policy: Globalization, Innovation and Sustainability, 15th edition; Wheelen, Thomas L., et. al.; Prentice Hall
3. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
4. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
5. Quantitative Methods for Business, 13th Edition; Anderson, David, R., Sweeney, Dennis J., Williams, Thomas A., Camm, Jeff, and Martin, R. Kipp; Cengage Learning
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 501 (c) : INTERNATIONAL FINANCIAL
REPORTING - I

Objective: To make students to understand the International Financial Reporting.

UNIT I: GENERAL PURPOSE OF FINANCIAL ACCOUNTING AND REPORTING AS PER US GAAP AND IFRS:

Conceptual framework: Standard Setting Bodies & Hierarchy - Elements of F/S - Primary objectives of financial reporting - Qualitative Characteristics of F/S - Fundamental Assumptions & Principles - Accounting Cycle & Preparation of F/S - General-purpose financial statements: Balance sheet - Income statement - Statement of comprehensive income - Statement of changes in equity - Statement of changes cash flows - Public company reporting requirements: SEC Reporting Requirements - Interim Financial Reporting - Segment Reporting - Revenue recognition: 5-Step approach to Revenue Recognition - Certain Customer's Rights & Obligations - Specific Arrangements - Long Term Construction Contracts

UNIT II: CURRENT ASSETS AND CURRENT LIABILITIES (AS PER US GAAP AND IFRS):

Monetary Current Assets & Current Liabilities: Cash & Cash Equivalents - Accounts Receivable - Notes Receivable - Transfers & Servicing of Financial Assets - Accounts Payable - Employee-related Expenses Payable - Inventory: Determining Inventory & Cost of Goods Sold - Inventory Valuation - Inventory Estimation Methods

UNIT III: FINANCIAL INVESTMENTS AND FIXED ASSETS (AS PER US GAAP AND IFRS):

Financial Investments: Investments in Equity Securities - Investment in Debt Securities - Financial Instruments - Tangible Fixed Assets: Acquisition of Fixed Assets - Capitalization of Interest - Costs Incurred After Acquisition - Depreciation - Impairment - Asset Retirement Obligation - Disposal & Involuntary Conversions - Intangible Assets: Knowledge-based intangibles (R&D, software) - Legal rights based intangibles (patent, copyright, trademark, franchise, license, leasehold improvements) - Goodwill

UNIT IV: FINANCIAL LIABILITIES (AS PER US GAAP AND IFRS):

Bonds Payable: Types of Bonds - Convertible bonds vs. Bonds with detachable warrants - Bond Retirement - Fair Value Option & Fair Value Election - Debt Restructuring: Settlement - Modification of terms










UNIT V: SELECT TRANSACTIONS (AS PER US GAAP AND IFRS):

Fair value measurements: Valuation techniques - Fair value hierarchy - Fair value concepts - Accounting changes and error correction: Changes in accounting estimate - Changes in accounting principle - Changes in reporting entity - Correction of an error - Contingencies: Possibility of occurrence (remote, reasonably possible or probable) - Disclosure vs. Recognition

Derivatives and Hedge Accounting: Speculation (non-hedge) - Fair value hedge - Cash flow hedge - Non-monetary exchanges: Exchanges with commercial substance - Exchanges without commercial substance - Leases: Operating lease - Finance lease - Sale leaseback

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (a): COMPUTERIZED ACCOUNTING

Objective: To make the students to acquire the knowledge of computer software

UNIT I: MAINTAINING CHART OF ACCOUNTS IN ERP:

Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shut Company-Select a Company-Alter Company Details-Company Features and Configurations-F11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger Creation-Single Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation-Multiple Group Creation-Displaying Groups and Ledgers-Displaying Groups-Display of Ledgers-Deletion of Groups and Ledgers – P2P procure to page.

UNIT II: MAINTAINING STOCK KEEPING UNITS (SKU):

Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock Group-Creation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports.

UNIT III: RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:

Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)-Contra Voucher (F4)-Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)-Journal Voucher (F7).


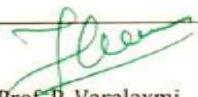





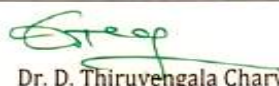

UNIT IV: ACCOUNTS RECEIVABLE AND PAYABLE MANAGEMENT: Introduction-Accounts Payables and Receivables-Maintaining Bill-wise Details-Activation of Maintain Bill-wise Details Feature-New Reference-Against Reference-Advance-On Account-Stock Category Report-Changing the Financial Year in ERP.

UNIT V: MIS REPORTS:

Introduction-Advantages of Management Information Systems-MIS Reports in ERP - Trial Balance - Balance Sheet-Profit and Loss Account-Cash Flow Statement-Ratio Analysis-Books and Reports - Day Book-Receipts and Payments-Purchase Register-Sales Register-Bills Receivable and Bills Payable.

SUGGESTED READINGS:

1. Computerised Accounting: Garima Agarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
5. Computerised Accounting and Business Systems: Kalyani Publications
6. Manuals of Respective Accounting Packages
7. Tally ERP 9: J.S. Arora, Kalyani Publications.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (b): FINANCIAL DECISION MAKING - I

Objective: To make students to understand the Financial Decision Making.

UNIT I: FINANCIAL STATEMENT ANALYSIS

Basic Financial Statement Analysis: Common size financial statements - Common base year financial statements - Financial Ratios: Liquidity - Leverage - Activity - Profitability - Market Profitability analysis: Income measurement analysis - Revenue analysis - Cost of sales analysis - Expense analysis - Variation analysis - Impact of changes in accounting treatment - Accounting and economic concepts of value and income - Earnings quality

UNIT II: FINANCIAL MANAGEMENT

Risk & Return: Calculating return - Types of risk - Relationship between risk and return Long-term Financial Management: Term structure of interest rates - Types of financial instruments - Cost of capital - Valuation of financial instruments

UNIT III: RAISING CAPITAL

Raising Capital: Sources of Long term Capital: Equity, Preference, Debt - Financial institutions - Initial and secondary public offerings - Dividend policy - Lease financing

UNIT IV: WORKING CAPITAL MANAGEMENT








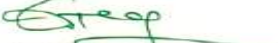

Managing working capital: Cash management - Marketable securities management - Accounts receivable management - Inventory management - Short-term Credit: Types of short-term credit - Short-term credit management

UNIT V: CORPORATE RESTRUCTURING AND INTERNATIONAL FINANCE

Corporate Restructuring: Mergers and acquisitions - Bankruptcy - Other forms of restructuring International Finance: Fixed, flexible, and floating exchange rates - Managing transaction exposure - Financing international trade.

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Interpretation and Application of International Financial Reporting Standards; Mackenzie, Bruce, Coetsee, Danie, Njikizana, Tapiwa, Chamboko, Raymond, Colyvas, Blaise, and Hanekom, Brandon; Wiley
3. Financial Reporting & Analysis, 13th edition; Gibson, Charles H.; South-Western Cengage Learning
4. Financial Statement Analysis, 10th edition; Subramanyam, K.R., and Wild, John L.; McGraw Hill
5. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (c) : INTERNATIONAL TAX & REGULATION

Objective: To make students to understand the International Tax & Regulation..

UNIT I: TAXATION OF INDIVIDUALS:

Individual Income Tax Return: Filing Status - Cash basis and Accrual basis. Gross Income: Wages, Salaries, Bonus, Commission, Fees & Tips - Interest & Dividend Income Business Income - Capital Gains & Losses - Passive Income - Farming Income - Deductions: Adjustments - Deductions from AGI - Calculating Tax: Tax Credits - Alternative Minimum Taxes - Other Taxes - Estimated Tax penalty

UNIT II: PROPERTY TRANSACTIONS & DEPRECIATION:

Capital Gains & Losses - Gains & Losses from Sale of Long-term Business property - Depreciation & Amortization

UNIT III: TAXATION OF CORPORATIONS:

C-Corporations: Formation - Income Tax Return - Income - Deductions - Reconciliation of Taxable Income with books - Calculating Tax - Corporate Earnings & Distributions - Corporate Liquidation & Reorganizations - S-Corporations: Eligibility criteria - Income Tax Return - Shareholder basis - Earnings and Distribution - Termination of Election

UNIT IV: TAXATION OF OTHER ENTITIES:








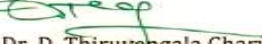
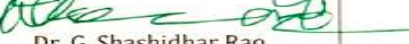
Partnerships: Formation - Income Tax Return - Partner basis - Partnership Distributions - Sale of Partnership Interest by a Partner - Termination of Partnership - Estate, Trust & Gift Taxation: Estate and Trust Fiduciary Income Tax Return - Estate Tax Return - Gift Tax Return - Generation-skipping transfer Tax - Tax Exempt Organizations: Formation - Income Tax Return

UNIT V: STATUTORY REGULATIONS, ACCOUNTANT RESPONSIBILITIES, BUSINESS STRUCTURES:

Federal Security Regulations: Securities Act of 1933 - Securities Exchange Act of 1934 - Other federal security regulations - Professional & Legal Responsibilities: Accountant Common Law Liabilities - Accountant Statutory Liabilities - Accountant Liabilities for Privileged Information - Accountant Criminal Liabilities - Employment Regulations - Environmental Regulations - Antitrust Regulations - Business Structures: Sole Proprietorships - Partnerships - Corporations

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Regulation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Regulation, Wiley
3. Internal Revenue Code: Income, Estate, Gift, Employment and Excise Taxes, CCH Tax Law Editors
4. Federal Income Tax: Code and Regulations--Selected Sections, Martin B. Dickinson, Wolters Kluwer
5. Federal Income Taxation by Katherine Pratt and Thomas D. Griffith, Wolters Kluwer

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Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503 (a) : AUDITING

Objective: to understand meaning and elements of auditing and gain knowledge for execution of audit.

UNIT-I: INTRODUCTION:

Auditing: Meaning – Definition – Evolution – Objectives – Importance - Types of Audit – Standards of Auditing – Procedure for issue of standards by AASB.

UNIT-II: AUDITOR AND EXECUTION OF AUDIT:

Appointment – Qualification and Disqualification – Qualities – Remuneration – Removal – Rights – Duties – Civil and Criminal Liabilities of Auditors – Commencement of Audit – Engagement Letter – Audit Program – Audit Note Book – Audit Workbook – Audit Markings.

UNIT-III: INTERNAL CONTROL, INTERNAL CHECK AND INTERNAL AUDIT: Meaning and Objectives of Internal Control – Internal Check and Internal Audit – Internal Check Vs. Internal Audit – Internal Control vs. Internal Audit.

UNIT-IV: VOUCHING:

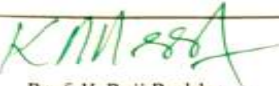
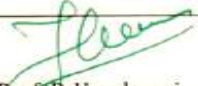







Meaning – Objectives – Types of Vouchers – Vouching of Trading Transactions – Vouching Cash Transaction – Auditing in an EDP Environment.

UNIT-V: VERIFICATION AND VALUATION OF ASSETS:

Meaning and Definition – Distinction – Verification and Valuation of various Assets and Liabilities – Audit Committee – Role of Audit Committee – Audit Reports.

SUGGESTED READINGS:

1. Principles and Practice of Auditing: RG Saxena, Himalaya Publishing House.
2. Auditing and Assurance for CA Integrated Professional Competence: SK Basu, Pearson.
3. Auditing : Mahitha HPH
4. Auditing: Dr. Nazia Sultana, PBP.
5. Auditing: Aruna Jha, Taxmann Publications.
6. Auditing Principles, Practices & Problems: Jagdish Prakash, Kalyani Publishers.
7. Auditing and Assurance: Ainapure & Ainapure, PHI Learning.
8. Principles and Practice of Auditing: Dinkar Pagare, Sultan Chand & Sons.
9. Fundamentals of Auditing: Kamal Gupta and Ashok Arora, Tata McGraw-Hill
10. A Hand Book of Practical Auditing: B.N. Tandon etal., S. Chand.

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503 (b) : ADVANCED CORPORATE ACCOUNTING

Objective: To gain knowledge of AS-19 & 21 and format accounts.

UNIT-I: HOLDING COMPANIES (AS-21):

Nature – Legal requirements – Capital and Revenue Profit/Reserves/Losses – Minority Interest – Cost of Control or Goodwill – Capital Reserve – Inter Company Transactions – Un-realized Profit on Unsold stock - Revaluation of Assets – Interim Dividend by Subsidiary Companies - Debentures in Subsidiary Companies – Consolidated Balance Sheet.

UNIT-II: ELECTRICITY COMPANIES (DOUBLE ACCOUNTING SYSTEM):

Meaning of Double Account System – Final Accounts - Calculation of Reasonable Return and Disposal of Surplus – Replacement of an Asset.

UNIT-III: ACCOUNTING FOR PRICE LEVEL CHANGES:

Introduction – History – Limitations – Profit measurement under different systems of accounting – Methods of Accounting for Price Level Changes: Current Purchasing Power (CPP) – Current Cost Accounting (CCA).

UNIT-IV: LEASE ACCOUNTS (AS-19):

Meaning – Terminology – Advantages and Disadvantages – Types: Financial and Operating Lease – Accounting Treatment in the books of both the parties.


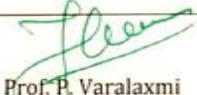





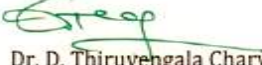

UNIT-V: HUMAN RESOURCE ACCOUNTING & SOCIAL RESPONSIBILITY ACCOUNTING:

Human Resource Accounting: Definition – Objectives – Assumptions – Advantages and Limitations – Approaches - Human resource accounting in India (Theory only).

Social Responsibility Accounting: Meaning – Nature – Need – Objectives – Accounting Concepts – Indicators of Social Performance (Theory only).

SUGGESTED READINGS:

1. Corporate Accounting: R.L.Gupta, M.Radha Swamy, Sultan Chand
2. Advanced Corporate Accounting: Srilatha Reddy, Himalaya
3. Advanced Corporate Accounting: Dr. Thangapandi, PBP
3. Advanced Accounting: Tulsania, TataMcGraw-hill Publishing Company
4. Corporate Accounting: Jain & Narang, Kalyani Publications
5. Advanced Accounting: S.M.Shukla, Sahitya Bhavan
6. Corporate Accounting: Prashanta Athma, Himalaya Publishers.
7. Advanced Accounting (Vol. II): Chandra Bose, PHI

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503 (c) : FINANCIAL MANAGEMENT

Objective: *To understand basics in Financial Management.*

UNIT-I: INTRODUCTION:

Financial Management: Meaning - Nature and Scope - Importance - Objectives - Profit Maximization vs Wealth Maximization - Traditional Functions of Finance Manager - Changing Role of Finance Manager - Relationship between Financial Management and Other Management Areas (Theory).

UNIT-II: FINANCIAL PLANNING:

Sources of Finance - Financial Planning: Meaning and Definition - Objectives - Characteristics - Process - Factors - Limitations (Theory).

UNIT-III: CAPITALIZATION:

Meaning of Capital and Capitalization - Sources of Capital - Theories of Capitalization - Over Capitalization: Meaning - Causes - Consequences - Remedies - Under Capitalization: Meaning - Causes - Consequences - Remedies - Comparison of Under and Over Capitalization - Watered Stock (Theory).

UNIT-IV: COST OF CAPITAL:

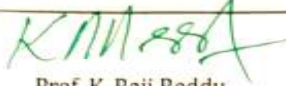
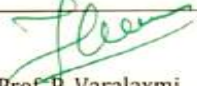





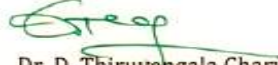
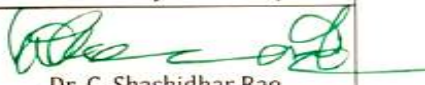
Meaning and Definition - Significance - Classification of Costs - Problems in Determination of Cost of Capital - Cost of Debt - Cost of Perpetual and Redeemable Debt - Cost of Preference Capital - Cost of Equity Capital - Cost of retained earnings - Weighted Average Cost of Capital (Simple Problems).

UNIT-V: CAPITAL STRUCTURE:

Meaning - Importance - Factors - Types - Optimal Capital Structure - Theories of Capital Structure: Net Income Approach - Net Operating Income Approach - Traditional Approach - Modigliani and Miller Approach (Simple Problems).

SUGGESTED READINGS:

1. Financial Management: I M Pandey, Vikas Publishing House Pvt Ltd.
2. Financial Management: M.Y. Khan & P.K. Jain, Tata McGraw-Hill
3. Financial Management: Shashi K. Gupta & R.K. Sharma, Kalyani Publishers,
4. Financial Management: Prasanna Chandra, McGraw Hill
5. Financial Management: Rustagi, Taxman Publications.
6. Financial Management: Tulsian, S. Chand.

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503a: MANAGEMENT INFORMATION SYSTEM

(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To equip the students with finer nuances of MIS.

UNIT-I: INTRODUCTION TO MIS:

The Technical and Business Perspective, Organization Structure, Evaluation of MIS through Information System, The Decision Making Process , System Approach to Problem Solving, The Structure of Management Information System, MIS Organization within the Company.

UNIT-II: INFORMATION SYSTEMS FOR DECISION MAKING:

Evolution of an Information System, Basic Information Systems, Decision Making and MIS, Decision Assisting Information System, Concepts of Balanced MIS Effectiveness and Efficiency Criteria.

UNIT-III: DEVELOPMENT OF MIS:

Methodology and Tools/Techniques for Systematic Identification, Evaluation and Modification of MIS. *Enterprise Resource Planning:* Introduction, Basics of ERP, Evolution of ERP, Enterprise Systems in Large Organizations, Benefits and Challenges of Enterprise Systems, *E-Enterprise System* : Introduction: Managing the E-enterprise, Organisation of Business in an E-enterprise, E-business, E-commerce, E-communication, E-collaboration.

UNIT-IV: ADVANCED MIS:


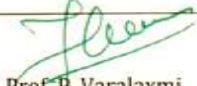







Concepts, Needs and Problems in Achieving Advanced MIS, DSS., Business intelligence + process management, systems development, and security.

UNIT-V: COLLABORATION, IMPACT & PITFALLS IN MIS:

Collaboration processes and information systems, Impact of Web 2.0 and social media on business process, Pitfalls in MIS Development: Fundamental Weakness, Soft Spots in Planning and Design Problems.

SUGGESTED READINGS:

- 1.Murdic, Rose and Clagett- Information Systems for Modern Management, PHI, New Delhi.
- 2.Process, Systems, and Information, David M. Kroenke,
3. MIS Cases Decision Making with Application Software, 4th Edition, Lisa Miller
- 4.Laudon-Laudon- Management Information Systems, Pearson Education, New Delhi.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503b: E-COMMERCE
(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: to acquire conceptual and application knowledge of ecommerce.

UNIT-I: INTRODUCTION:

E-Commerce: Meaning - Advantages & Limitations - E-Business: Traditional & Contemporary Model, Impact of E-Commerce on Business Models - Classification of E-Commerce: B2B - B2C - C2B - C2C - B2E - Applications of Ecommerce: E-Commerce Organization Applications - E-Marketing - E-Advertising - E-Banking - Mobile Commerce - E-Trading - E-Learning - E-Shopping.

UNIT-II: FRAMEWORK OF E-COMMERCE:

Framework of E-Commerce: Application Services - Interface Layers - Secure Messaging - Middleware Services and Network Infrastructure - Site Security - Firewalls & Network Security - TCP/IP - HTTP - Secured HTTP - SMTP - SSL.

Data Encryption: Cryptography - Encryption - Decryption - Public Key - Private Key - Digital Signatures - Digital Certificates.

UNIT-III: CONSUMER ORIENTED E-COMMERCE APPLICATIONS:

Introduction - Mercantile Process Model: Consumers Perspective and Merchant's Perspective - Electronic Payment Systems: Legal Issues & Digital Currency - E-Cash & E-Cheque - Electronic Fund Transfer (EFT) - Advantages and Risks - Digital Token-Based E-Payment System - Smart Cards.

UNIT-IV: ELECTRONIC DATA INTERCHANGE:

Introduction - EDI Standards - Types of EDI - EDI Applications in Business - Legal - Security and Privacy issues if EDI - EDI and E-Commerce - EDI Software Implementation.


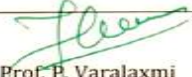







UNIT-V: E-MARKETING TECHNIQUES:

Introduction - New Age of Information - Based Marketing - Influence on Marketing - Search Engines & Directory Services - Charting the On-Line Marketing Process - Chain Letters - Applications of 5P's (Product, Price, Place, Promotion, People) E-Advertisement - Virtual Reality & Consumer Experience - Role of Digital Marketing.

Lab work: Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.

SUGGESTED READINGS:

1. Frontiers of Electronic Commerce: Ravi Kalakota, Andrew B Whinston, Pearson
2. E-Commerce: Tulasi Ram Kandula, HPH.
3. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
4. E-Commerce & Computerized Accounting: Rajinder Singh, Er. Kaiser Rasheed, Kalyani
5. E-Commerce & Mobile Commerce Technologies: Pandey, Saurabh Shukla, S. Chand

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503C: MOBILE APPLICATIONS
(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand and apply the mobile applications.

UNIT-I: INTRODUCTION:

What is Android, Android versions and its feature set The various Android devices on the market, The Android Market application store ,Android Development Environment - System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs), the Android Software Stack, The Linux Kernel, Android Runtime - Dalvik Virtual Machine, Android Runtime - Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings, Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files,

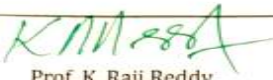
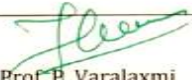







UNIT-II: MOBILE SOFTWARE:

Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project , Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application, Android Application Components, Android Activities: Defining the UI, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications Content Providers: Data Management, Android Intent Objects: Messaging for Components.

Android Manifest XML: Declaring Your Components, Designing for Different Android Devices, Views and View Groups, Android Layout Managers, The View Hierarchy, Designing an Android User Interface using the Graphical Layout Tool.

UNIT-III: MOBILE DISPLAY:

Displaying Text with Text View, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menus using views, Gallery, Image Switcher, Grid View, and Image View views to display images, Creating Animation, Saving and Loading Files, SQLite Databases, Android Database Design, Exposing Access to a Data Source through a Content Provider, Content Provider Registration, Native Content Providers

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UNIT-IV: MOBILE APPLICATIONS:

Intent Overview, Implicit Intents, Creating the Implicit Intent Example Project, Explicit Intents, Creating the Explicit Intent Example Application, Intents with Activities, Intents with Broadcast Receivers, An Overview of Threads, The Application Main Thread, Thread Handlers, A Basic Threading Example, Creating a New Thread, Implementing a Thread Handler, Passing a Message to the Handler. Sending SMS Messages Programmatically, Getting Feedback after Sending the Message Sending SMS Messages Using Intent Receiving, sending email

Introduction to location-based service, configuring the Android Emulator for Location-Based Services, Geo coding and Map-Based Activities, Playing Audio and Video, Recording Audio and Video, Using the Camera to Take and Process Pictures

UNIT-V: MOBILE APP DEVELOPMENT & INSTALLATION:





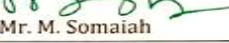


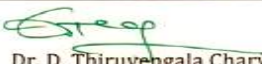

Introduction to Windows Phone App Development, Installing the Windows Phone SDK, Creating Your First XAML for Windows Phone App. Understanding the Role of XAP Files, the Windows Phone Capabilities Model, the Threading Model for XAML-Based Graphics and Animation in Windows Phone, Understanding the Frame Rate Counter, The Windows Phone Application Analysis Tool, Reading Device Information, Applying the Model-View-View Model Pattern to a Windows Phone App, Property Change Notification, Using Commands

SUGGESTED READINGS:

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015
3. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
4. AnubhavPradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2

Web Resource :

Google Developer Training, "Android Developer Fundamentals Course – Concept Reference", Google Developer Training Team, 2017.
<https://www.gitbook.com/book/google-developer-training/android-developerfundamentals-course-concepts/details> (Download pdf file from the above link)

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper PR : RESEARCH METHODOLOGY & PROJECT REPORT

Objective: To introduce the basics of conducting research in social sciences.

UNIT-I: INTRODUCTION, MEASUREMENT AND HYPOTHESIS TESTING:

Meaning of Research-Steps involved- Identification of Problem- Steps involved in the selection of problem-Research Design-Meaning and Types- Measurement Levels/Scales - Scaling Techniques-Hypothesis-Meaning - Types - Testing Procedure.

UNIT-II: PARAMETRIC AND NON-PARAMETRIC TESTS AND RESEARCH REPORT:


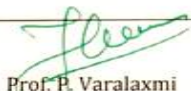





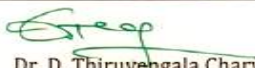

Introduction - t-Test - F-Test - Chi Square Test - Anova (One-Way Anova, Two-Way Anova).
Contents of a Research Report. (Concepts only)

SUGGESTED READINGS:

1. Research Methodology: Himalaya Publications.
2. Methodology of Research in Social Sciences: Krishna Swamy,
3. Research Methodology: Kothari & Garg, New Age Publication
4. Research Methodology: Paneerselvam R, PHI
5. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
6. Research Methodology: Sashi.K Gupta, Praneeth Rangi, Kalyani Publishers.

GUIDELINES FOR PROJECT WORK

- 1) Project work is a part of the prescribed curriculum to B. Com students.
- 2) Project work is allotted to a group of 4 students.
- 3) During the IV semester, students are expected to undergo internship at a business firm/ Government Department /Software organization/Voluntary organization as per the guidance of teacher concerned.
- 4) Students should get a certificate from the organization.
- 5) At the end of Semester-VI, the project reports would be evaluated by the external examiner designated by the Controller of Examinations, from the panel submitted by the Board of Studies in Commerce. The Examiner would evaluate the project reports for a maximum of 35 marks and conduct Viva-Voce examination for 15 marks. The award lists duly signed would be sent the Controller of Examinations.
- 6) Examiners will examine the following in the project report: i) Survey/Analysis on the topic chosen; ii) Method of data collection; iii) Presentation: Style, Comprehensiveness, graphs, charts etc.; iv) Analysis and inference and implications of the study; v) Bibliography.
- 7) Students must ensure that they maintain **regular contact with their supervisor** and also that they provide the supervisor with drafts of their work at regular intervals.
- 8) Students are required to submit a project report on a topic related/connected with trade, industry & commerce. Project can be done by taking the information from the select organization focusing on areas like marketing, finance, human resource, operations, general management etc.
- 9) Project should be a practical, in-depth study of a problem, issue, opportunity, technique or procedure or some combination of these aspects of business. The Students are required to define an area of investigation, assemble relevant data, analyse the data, draw conclusions and make recommendations.

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Faculty of Commerce & Business Management,

ORGANISATION OF PROJECT REPORT

1) Project report should be presented in the following sequence:

i) Title page; ii) Student's declaration; iii) Supervisor's certificate; iv) Internship certificate; V. Abstract; vi) Acknowledgements; vii) Table of contents; viii) List of tables; ix) List of figures; x) List of appendices.

2) Chapter Design should be as follows:

Chapter-I: Introduction: this chapter includes the research problem, need for study/significance of the project, objectives, methodology (hypotheses, statistical tools, data source, scope, sample, chapter design).

Chapter-II: Company Profile: this chapter should contain a brief historical retrospect about the entity of your study.

Chapter-III: Data Analysis and interpretation: this chapter should present the data analysis and inferences.

Chapter-IV: Conclusion and Suggestions: This Chapter should give an overview of the project, conclusions, implications, recommendations and scope for further research.

Bibliography: lists the books, articles, and websites that are referred and used for research on the topic of the specific project. Follow Harvard style of referencing.

Appendices: the data, used to prepare the tables for analysis, may not be feasible to incorporate as part of chapters, may given as appendices.

TECHNICAL SPECIFICATIONS OF THE PROJECT

1) Project should be typed on **A4 white paper**, and be **1.5 spaced**.

2) All pages should be **numbered**, and numbers should be placed at the centre of the bottom of the page.

3) **All tables, figures and appendices** should be consecutively numbered or lettered, and suitably labeled.


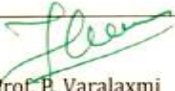
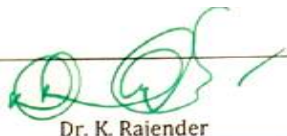




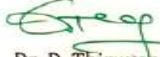

4) **3 bound copies & a soft-copy** should be handed in to the **principal/director of your college/institute** at the time of submission.

5) **bibliography and referencing: Referencing** is necessary to avoid plagiarism, to verify quotations and to enable readers to follow-up and read more fully the cited author's arguments. Reference is given within the text of the project as well as at the end of the project. The basic difference between citation and a reference list (bibliography) is that the latter contains full details of all the in-text citations.

Citation provides brief details of the author and date of publication for referencing the work in the body of the text.

Reference list is given at the end of the text and is a list of all references used with additional details provided to help identify each source.

Proper referencing is as crucial aspect of your project. You are therefore strongly advised to talk to your supervisor about this, in order to make sure that your project report follows the appropriate referencing system.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601 (a): COST CONTROL AND
MANAGEMENT ACCOUNTING

Objective: To be acquaint with Cost Control techniques, Managerial Accounting decision-making techniques and reporting methods.

UNIT-I: INTRODUCTION TO MANAGEMENT ACCOUNTING & MARGINAL COSTING:

Meaning and Importance of Management Accounting – Marginal Cost Equation – Difference between Marginal Costing and Absorption Costing – Application of Marginal Costing – CVP Analysis – Break Even Analysis: Meaning – Assumptions – Importance - Limitations. Marginal Costing for Decision Making-Make or Buy – Add or Drop Products – Sell or Process Further – Operate or Shut-down – Special Order Pricing – Replace or Retain. (Including Problems)

UNIT-II: BUDGETARY CONTROL AND STANDARD COSTING:

Budget: Meaning – Objectives – Advantages and Limitations – Essentials of Budgets - Budgetary Control - Classification of Budgets - Preparation of Fixed and Flexible Budgets. Standard Costing: Meaning – Importance – Standard Costing and Historical Costing - Steps involved in Standard Costing. Variance Analysis: Material variance - Labour variance - Overhead variance. (Including Problems)

UNIT-III: TECHNIQUES OF FINANCIAL STATEMENT ANALYSIS:

Meaning – Objectives - Techniques: Comparative Statement, Common Size Statement, Trend Analysis. Ratios- Meaning, Objectives and Classification—Computation of Activity, Liquidity, Solvency and Profitability Ratios. (Including Problems)

UNIT-IV: FUNDS FLOW ANALYSIS:


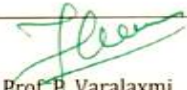






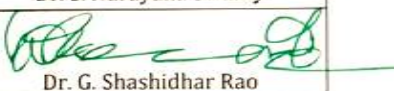
Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds. (Including Problems)

UNIT-V: CASH FLOW ANALYSIS (AS-3):

Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement. (Including Problems)

SUGGESTED READINGS:

1. Management Accounting- Principles & Practice: Sharma RK & Shashi K. Gupta, Kalyani
2. Advanced Managerial Accounting: Srihari Krishna Rao, Himalaya
3. Advanced Managerial Accounting: Dr. Sundaram, PBP
3. Advanced Management Accounting: Robert S. Kaplan & Anthony A. Atkinson, Prentice-Hall
4. Management Accounting: Rustagi R.P, Galgotia
5. Managerial Accounting: Ronald W. Hilton, TMH

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601 (b): FINANCIAL CONTROL

Objective: To make students to understand the Financial Control.

UNIT I: EXTERNAL FINANCIAL REPORTING DECISIONS (AS PER US GAAP & IFRS):

Financial Statements: Balance sheet - Income statement - Statement of Comprehensive Income - Statement of changes in equity - Statement of cash flows - Integrated reporting

UNIT II: RECOGNITION, MEASUREMENT, VALUATION, AND DISCLOSURE (AS PER US GAAP & IFRS) :

Assets, Liabilities & Equity: Asset valuation - Valuation of liabilities - Equity transactions - Income: Revenue recognition - Income measurement - Major differences between U.S. GAAP and IFRS

UNIT III: COST MANAGEMENT:

Measurement concepts: Cost behavior and cost objects - Actual and normal costs - Standard costs - Absorption (full) costing - Variable (direct) costing - Joint and by-product costing - Costing Systems: Joint and by-product costing - Job order costing - Process costing - Activity-based costing - Life-cycle costing - Overhead costs: Fixed and variable overhead expenses - Determination of allocation base - Allocation of service department costs

UNIT IV: SUPPLY CHAIN MANAGEMENT AND BUSINESS PROCESS IMPROVEMENT:


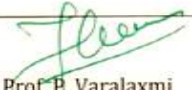







Supply chain management: Lean resource management techniques - Enterprise resource planning (ERP) - Theory of constraints - Capacity management and analysis - Business Process Improvement: Value chain analysis - Value-added concepts - Process analysis, redesign, and standardization - Activity-based management - Continuous improvement concepts - Best practice analysis - Cost of quality analysis - Efficient accounting processes

UNIT V: INTERNAL CONTROLS:

Governance, Risk & Compliance: Internal control structure and management philosophy - Internal control policies for safeguarding and assurance - Internal control risk - Corporate governance - External audit requirements - System Controls & Security Measures: General accounting system controls - Application and transaction controls - Network controls - Backup controls - Business continuity planning

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Intermediate Accounting, 17th edition; Kieso, Donald E., Weygandt, Jerry J., and Warfield, Terry D.; Wiley
3. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601(c) : INTERNATIONAL FINANCIAL
REPORTING - II

Objective: To make students to understand the International Financial Reporting.

UNIT I: PENSIONS & POST-EMPLOYMENT BENEFITS (AS PER US GAAP & IFRS):

Defined contribution pension plans - Defined benefit pension plans: Pension obligations - Pension plan assets - Net pension expense - Other Post-retirement benefits

UNIT II: INCOME TAXES (AS PER US GAAP & IFRS):

Income tax expense: Current income tax expense - Deferred income tax expense - Deferred taxes on balance sheet: Deferred tax assets - Deferred tax liabilities - Specific accounting considerations: Net Operating Losses (NOL) - Investee's undistributed dividends

UNIT III: EQUITY (AS PER US GAAP & IFRS):

Equity accounts: Common Stock - Preferred Stock - Additional Paid-In Capital - Retained Earnings - Accumulated Other Comprehensive Income - Treasury Stock - Specific accounting considerations: Share-based Payments to Employees - Equity Securities Classified as Debt Presentation of Equity: On Balance sheet - On Statement of Changes in Equity - Earnings per Share (EPS): Basic EPS - Diluted EPS

UNIT IV: SELECT TRANSACTIONS (AS PER US GAAP & IFRS):


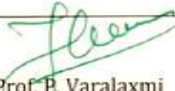





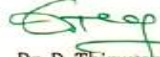

Business Combinations and Consolidations: Acquisitions - Non-controlling Interest - Intercompany Transactions - Variable Interest Entities (VIE) - Foreign currency: Remeasurement - Translation

UNIT V: NOT-FOR-PROFIT AND GOVERNMENTAL ACCOUNTING AND REPORTING (AS PER US GAAP):

Not-for-Profit (NFP) Entities: NFP Financial Statements - Contribution Revenue - Specific Accounting Considerations - Colleges and Universities - Voluntary Health and Welfare Organizations - Health Care Organizations - Governmental Entities: Fund types (Governmental funds, Proprietary funds, Fiduciary funds) - Modified Accrual Accounting - Inter-fund transactions - Government Financial Reporting

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602(a): THEORY AND PRACTICE OF GST

Objective: to equip the students with the knowledge regarding Theory and Practice of GST.

UNIT I: INTRODUCTION TO GST:

Introduction – GST - Taxes Subsumed under GST -Determination of Tax - Registration -Process of Registration - Cancellation and renovation of registration - Supply of Goods and Services - Transition to GST - Registered Business -Availed Input Tax Credit -Unavailed CENVAT credit and Input VAT on capital goods-Availing the input credit held in closing stock -Invoicing -Tax Invoice - Bill of Supply - Credit Note, Debit Note and Supplementary Invoice-Transportation of goods without issue of Invoice - Input Credit Mechanism - Input Tax - GST Returns - Payment of Tax.

UNIT II: GETTING STARTED WITH GST:

Introduction - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST - Intrastate Supply of Goods-Intrastate Inward Supply -Intrastate Outward Supply -Interstate - Interstate Outward Supply - Return of Goods -Purchase Returns -Sales Returns -Supplies Inclusive of Tax -Defining Tax Rates at Master and Transaction Levels - Defining GST Rates at Stock Group Level-Defining GST Rate at Transaction Level -Hierarchy of Applying Tax Rate Details –Reports.

UNIT III: RECORDING ADVANCED ENTRIES, GST ADJUSTMENT AND RETURN FILING:

Introduction -Accounting of GST Transactions -Purchases from Composition Dealer -Purchases from Unregistered Dealers-Exports -Imports -Exempted Goods -SEZ Sales -Advance Receipts and payments - Mixed Supply and Composite Supply under GST -Mixed Supply of Goods -Composite Supply of Goods -GST Reports - Generating GSTR- Report in ERP -Input Tax Credit Set Off -GST Tax Payment -Time line for payment of GST tax -Modes of Payment -Challan Reconciliation -Exporting GSTR- return and uploading in GST portal.

UNIT IV: GETTING STARTED WITH GST (SERVICES):

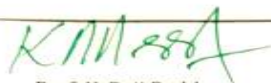
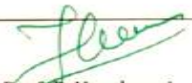





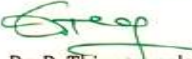
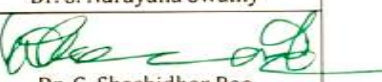
Introduction -Determination of supply of services -Determining the Place of Supply of Services - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods - Intrastate Inward Supply-Intrastate Outward Supply -Interstate Supply -Interstate Outward Supply - Interstate Inward Supply -Interstate Outward Supply of Services -Cancellation of Services - Cancellation of Inward Supplies -Cancellation of Outward Supply of Services -Defining Tax Rates at Master and Transaction Levels.

UNIT V: RECORDING ADVANCED ENTRIES AND MIGRATION TO ERP:

Introduction - Accounting Multiple Services in a Single Supply - Recording Partial Payment to Suppliers -Outward Supplies - Recording Outward Supply with Additional Expenses - Supply of services -Business to consumers - Time of Supply of Services - Place of Supply of Services - Determining place of supply of services - Exempt Supply of Services under GST -Export Supply of Services - Reverse Charge on Services under GST - Advance Receipts from Customers under GST - Advance Receipt and issuing Invoice on same month -Advance Receipt and issuing Invoice on different month - Reversal of GST on account of cancellation of advance receipt - Generating GSTR- Report in ERP - Input Tax Credit Set Off - Migration to ERP - Activate Goods and Services Tax (GST) in ERP - Set up GST rates - Update Masters - Update party GSTIN/UIN - Creation of GST Duty ledgers.

SUGGESTED READINGS:

1. Taxmann's Basics of GST
2. Taxmann's GST: A practical Approach
3. Theory & Practice of GST, Srivathsala, HPH
4. Theory & Practice of GST: Dr. Ravi M.N, PBP.

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602(b): FINANCIAL DECISION MAKING - II

Objective: To make students to understand the Financial Decision making.

UNIT I: DECISION ANALYSIS:

Cost/volume/profit analysis: Breakeven analysis - Profit performance and alternative operating levels - Analysis of multiple products - Marginal Analysis: Sunk costs, opportunity costs and other related concepts - Marginal costs and marginal revenue - Special orders and pricing - Make versus buy - Sell or process further - Add or drop a segment - Capacity considerations

UNIT II: PRICING:

Pricing decisions: Pricing methodologies - Target costing - Elasticity of demand - Product life cycle considerations - Market structure considerations

UNIT III: RISK MANAGEMENT:

Enterprise Risk: Types of risk - Risk identification and assessment - Risk mitigation strategies - Managing risk

UNIT IV: INVESTMENT DECISIONS:

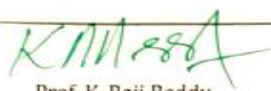
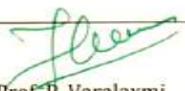






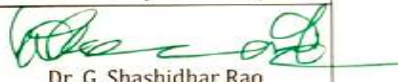
Capital budgeting process: Stages of capital budgeting - Incremental cash flows - Evaluating uncertainty - Capital investment method analysis: Net present value - Internal rate of return - Payback - Comparison of investment analysis methods

UNIT V: PROFESSIONAL ETHICS:

Business ethics: Moral philosophies and values - Ethical decision making - Ethical considerations for management accounting and financial management professionals: IMA's Statement of Ethical Professional Practice - Fraud triangle - Evaluation and resolution of ethical issues - Ethical considerations for the organization: Organizational factors and ethical culture - IMA's Statement on Management Accounting, –Values and Ethics: From Inception to Practice|| - Ethical leadership - Legal compliance - Responsibility for ethical conduct - Sustainability and social responsibility.

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
3. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
4. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602 (c): INTERNATIONAL AUDITING

Objective: To make students to understand the International Auditing.

UNIT I: ETHICS, PROFESSIONAL RESPONSIBILITIES AND GENERAL AUDITING PRINCIPLES:

Introduction to Auditing: Generally Accepted Auditing Standards (GAAS) - International Standards of Auditing (ISA) - Ethics, independence and professional conduct: AICPA Code of Professional Conduct - Sarbanes-Oxley Act (SOX), 2002 - Public Company Accounting Oversight Board (PCAOB) - Securities Exchange Commission (SEC) - International Standards - Engagement Understanding and Acceptance: Pre-Engagement Acceptance Activities - Engagement Letter - Auditor's communication with those charged with governance Quality Control: Statements on Quality Control Standards (SQCS) - Elements of a System of Quality control

UNIT II: ASSESSING AUDIT RISK AND DEVELOPING A PLANNED RESPONSE:

Audit Risk: Inherent Risk - Control Risk - Detection Risk - Fraud Risk: Fraudulent financial reporting - Misappropriation of assets - Fraud risk factors - Auditor's consideration of fraud
Planning the Audit: Audit Strategy - Audit Plan - Internal Controls: Auditor's Consideration of Internal Control - Operating Cycles - Internal Control Reports and Communications

UNIT III: PERFORMING FURTHER PROCEDURES AND OBTAINING AUDIT EVIDENCE:

Audit Evidence: Management's Assertions - Sufficient & Appropriate Audit Evidence - Audit Evidence determined by Risk of Material Misstatement (RMM) - Substantive Procedures: Revenue cycle - Expenditure cycle - Production cycle - Payroll cycle - Investing cycle - Financing cycle - Opening Balances - Illegal Acts - Related Parties - Contingencies - Estimates & Fair Value Measurements - Subsequent Events - Omitted Procedures & Subsequent Discovery of Facts - Using the Work of Others - Evaluating Audit Findings - Audit Documentation - Management Representation Letter - Audit Sampling: Sampling Risks - Attributes Sampling - Classical Variables Sampling - Probability Proportional to Size (PPS) Sampling

UNIT IV: AUDIT REPORTING:


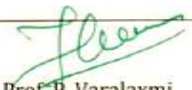
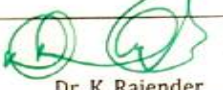




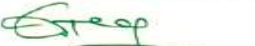

Audit Reports: Unmodified opinion - Unmodified Opinion with Emphasis-of-matter and/or Other-matter paragraph - Qualified Opinion - Adverse Opinion - Disclaimer of Opinion - Audit Reporting Considerations: Audit of Comparative financial statements - Supplementary Information - Audit of Group financial statements - Audit of Single financial statements & Specific financial statement elements, accounts or items - Audit of Special Purpose financial statements - Audit of financial statements prepared using financial reporting framework of another country

UNIT V: OTHER ENGAGEMENTS:

Accounting & Review Services: Preparation of financial statements - Compilation engagement - Review engagement - Attestation Engagements: Examination - Review Agreed-upon Procedures - Governmental Auditing: Governmental Auditing Standards - Single Audit Act

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Auditing and Attestation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Auditing and Attestation, Wiley
3. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 603(a): ACCOUNTING STANDARDS

Objectives: To make the students acquire the knowledge and application of Indian Accounting Standards.

UNIT-I: INTRODUCTON:

Introduction to Accounting – Concept of Accounting Theory – Role of accounting theory - Classification of Accounting Theory – Deductive and inductive approach in theory formulation – Accounting Principles: Concepts and Conventions - Accounting standard: Concept – Evolution. (Theory only)

UNIT-II: STANDARDS RELATING TO FINANCIAL REPORTING & DISCLOSURE:

Ind AS-101: First time adoption of Indian Accounting Standards – Ind AS-1: Presentation of Financial Statements – Ind AS-7: Cash Flow Statements (Including problems) – Ind AS-8:

Accounting Policies, Changes in Accounting Estimates and Errors – Ind AS-10: Events after the Balance Sheet Date -- Ind AS-24: Related Party Disclosures – Ind AS- 34: Interim Financial Reporting - Ind AS-105: Non-current assets held for sale and discontinued operations – Ind AS- 108: Operating Segments.

UNIT-III: STANDARDS PROVIDING GUIDANCE ON FINANCIAL STATEMENT ITEMS:

Ind AS-2: Inventories (Including simple problems) -- Ind AS-11: Construction contracts (Including simple problems) - Ind AS-12: Income taxes – Ind AS-16: Property, Plant and Equipment – Ind AS-17: Leases (Including simple problems) - Ind AS-18: Revenue – Ind AS-20: Accounting for Government Grants and Disclosure of Government Assistance – Ind AS-23: Borrowing Costs – Ind AS-38: Intangible Assets.

UNIT-IV: STANDARDS RELATING TO BUSINESS ACQUISITIONS AND CONSOLIDATIONS:








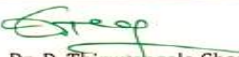
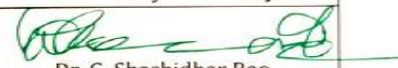
Ind AS-28: Investments in Associate and Joint Ventures - Ind AS-103: Business Combinations – Ind AS-110: Consolidated Financial Statements – Ind AS-111: Joint Arrangements – Ind AS- 112: Disclosure of interest in other entities

UNIT-V: FINANCIAL REPORTING:

Financial reporting – Concept -- Development in Financial reporting objectives: True blood Report (USA) – The Corporate Report (UK) – Stamp Report (Canada) - Objectives of Financial Reporting – Qualities of Financial Reporting - Recent trends in Corporate Reporting in India. (Theory only)

SUGGESTED READINGS:

1. Rawat D.S. –Ind ASs Converged IFRS|| Taxmann Allied Services Private Limited.
2. Accounting Theory and Practice: Jawaharlal, Himalaya Publishing Company
3. Accounting Standards: Rawat D.S, Taxmann Allied Services Private Limited
4. IFRS Concepts and Applications: Kamal Garg, Bharat Law House Pvt. Limited
5. Accounting Theory: Porwal L.S, TataMcGraw-Hill Publishing Company
6. Accounting Theory & Management Accounting: Jain S.P. &Narang K.L, Kalyani

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Faculty of Commerce & Business Management,

B.Com. VI Semester - PAPER DSE – 603 (B): CORPORATE GOVERNANCE

Objective: *To acquaint the student with the finer nuances of Corporate Governance.*

UNIT-1: CORPORATE GOVERNANCE: Evolution and Significance: Corporate Governance: Meaning – Definition - Evolution – Historical Perspective of Corporate Governance – Nature and Scope of Corporate Governance – Need for Corporate Governance – Essentials of Corporate Governance – Objectives of Corporate Governance - Benefits and Limitations of Corporate Governance - Structure – Theories.

UNIT – II: CORPORATE GOVERNANCE COMMITTEES AND MODELS:

CG Committees: Cadbury Committee, Greenbury Committee, Hampel Committee, Sarbanes-Oxley Act, 2002, Blue Ribbon Committee, King Committee, Kumara Mangalam Birla Committee, Narayana Murthy Committee, CII Task Force Committee – CG Models : Anglo-American, German, Japanese and Indian Model.

UNIT - III: CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY:

Corporate Social Reporting – Meaning – Types of CSR - Role of CSR towards Society – Employees, Government, Stakeholders and Consumers – Nature of CSR – CSR Principles and Strategies - Models – Best Practices of CSR - CSR: Indian Perspective – Sachar Committee Report.

UNIT - IV: ACCOUNTABILITY IN CORPORATE GOVERNANCE:

Definition – Importance - Accounts and Financial Reporting - Stakeholders Influence - Social Responsibility and Accountability - Reflection of Stakeholder's Accountability in Legislation.


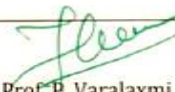






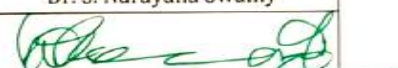
Guidance on Stakeholders and Shareholders Interest. Role of Top Management in Corporate Governance. Role of Auditors in Corporate. Role of Shareholders & Other Stakeholders in Corporate Governance.

UNIT – V: ISSUES IN CORPORATE GOVERNANCE :

Role of Promoters - Nominee Directors - Mismanagement –Corporate Frauds - Negligent Role of Auditors – Banks- Supervision and Control of Stock Exchanges – Whistle Blowing Policy - RBI – Ministry of Corporate Affairs – Towards Building Ethical and Sustainable Organization.

SUGGESTED READINGS:

1. Business Ethics and Corporate Governance, (2017) Prof. K. Viyyanna Rao, Dr. G. Nagaraju I.K., International Publishing House Pvt. Ltd,
2. Corporate Governance,(2014), Bholanath Dutta and S.K. Podder - Vision Book house,
3. Business Ethics,(2005)2ND Edition, R.V. Badi N.V. Badi,Vrinda Publication pvt Ltd
4. Business Ethics An Indian Perspective, 2015, A. C. Fernando - Pearson
5. Business Ethics and Corporate Governance, Reprint 2013, C.S.V. Murthy – Himalaya Publication
6. Corporate Governance,(2004) H.R. Machiraju, Himalaya Publication House

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 603(C) : INVESTMENT MANAGEMENT

Objective: To familiarize with concepts of risk and return relating to Investment.

UNIT-I: INTRODUCTION:

Investment Management: Meaning and Definition – Objectives - Scope – Investment Vs Speculation – Investment Vs Gambling - Factors affecting Investment Decisions – Investment Alternatives - Types of Investors (Theory).

UNIT-II: RISK AND RETURN:

Meaning of Risk – Risk Vs Uncertainty – Causes of Risk – Types of Risks – Risk and Return of Single Asset – Ex-Ante and Ex-Post – Risk-Return Relationship – Risk-Return Trade off (Simple Problems).

UNIT-III: MARKET INDICES:

Concept of Index – Methods of computing stock indices – Leading Stock Price Indices in India – Sensex and Nifty – Uses of Market Index (Simple Problems).

UNIT-IV: TIME VALUE OF MONEY:



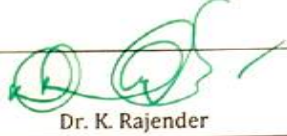




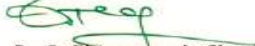

Concept - Techniques - Compounding Techniques - Doubling Period - Multiple Compounding Period - Present Value Techniques (Simple Problems).

UNIT-V: PORTFOLIO ANALYSIS:

Traditional Vs Modern - Rationale of Diversification - Markowitz portfolio theory - Effect of combining the securities - Measurement of expected return and risk of portfolio (Simple Problems).

SUGGESTED READINGS:

1. Investment Management (Text and Cases): V.K. Bhalla, S. Chand & Company.
2. Security Analysis and Portfolio Management: Shashi K. Gupta & Rosy Joshi, Kalyani Publishers.
3. Investment Management: Dr. V.A. Avadhani, Himalaya Publishing House.
4. Fundamentals of Investment Management: Preeti Singh, Himalaya Publishing House
5. Security Analysis and Portfolio Management: Kevin, PHI.
6. Investment Analysis and Portfolio Management: Prasanna Chandra, Tata McGraw-Hills
7. Investment Management, Prashanta Athma: Kalyani Publications.
8. Security Analysis and Portfolio Management: Madhumati Ranganathan, Pearson.
9. Investment Management: Mashewari, PHI.
10. Security Analysis and Portfolio Management: Dhanesh Khatri, Trinity Press.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE603a: MULTIMEDIA SYSTEMS
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To acquire the knowledge of multimedia systems.

UNIT-I: MEDIA AND DATA STREAMS:

Properties of multimedia systems, Data streams characteristics: Digital representation of audio, numeric instruments digital interface Bark concepts, Devices, Messages, Timing Standards Speech generation, analysis and transmission.

UNIT-II: DIGITAL IMAGE&ANIMATIONS:

Digital Image: Analysis, recognition, transmission, **Video:** Representation, Digitalization, transmission.

Animations: Basic concepts, animation languages, animations control transmission.

UNIT-III: DATA COMPRESSION STANDARDS&STORAGE:

Data Compression Standards: JPEG, H-261, MPEG DVI

Optical storage devices and Standards: WORHS, CDDA, CDROM, CDWO, CDMO.

Real Time Multimedia, Multimedia file System.

UNIT-IV: MULTIMEDIA COMMUNICATION SYSTEM, DATABASES&SYNCHRONIZATION:

Multimedia Communication System: Collaborative computing session management, transport subsystem, QOS, resource management.

Multimedia Databases: Characteristics, data structures, operation, integration in a database model.

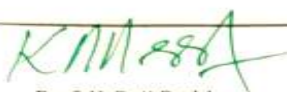
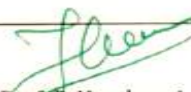







Synchronization: Issues, presentation requirements, reference to multimedia synchronization, MHEG.

UNIT-V: MULTIMEDIA APPLICATION:

Media preparation, Composition, integration communication, consumption, entertainment.

SUGGESTED READINGS:

1. Ralf Steninmetz, KlaraHahrstedt, *Multimedia: Computing, Communication and Applications*, PHI PTR Innovative Technology Series.
2. John F.KoegelBufford, *Multimedia System*, Addison Wesley, 1994.
3. Mark Elsom – Cook, *Principles of Interactive Multimedia*, Tata Mc-Graw Hill, 2001.
4. Judith Jefcoate, *Multimedia in Practice: Technology and Application*, PHI 1998.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 603b: CYBER SECURITY
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective To understand the cyber security, detection, network security, the law and cyber forensic.

UNIT-I: INTRODUCTION TO CYBER SECURITY, CYBER SECURITY VULNERABILITIES AND CYBER SECURITY SAFEGUARDS:

Introduction to Cyber Security: Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace.

Cyber Security Vulnerabilities: Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.

Cyber Security Safeguards: Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT-II: SECURING WEB APPLICATION, SERVICES AND SERVERS:

Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges.

UNIT-III: INTRUSION DETECTION AND PREVENTION:

Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

UNIT-IV: CRYPTOGRAPHY AND NETWORK SECURITY:

Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec.


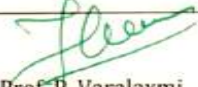





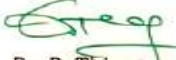

UNIT-V: CYBERSPACE AND THE LAW, CYBER FORENSICS:

Cyberspace and The Law: Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.

Cyber Forensics: Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

SUGGESTED READINGS:

1. Ramandeepkaurnagra, Cyber laws and Intellectual Property Rights, Kalyani Publishers, 7e,
2. Nina Godbole&SunitBelapureCyber Security, Wiley India Pvt Ltd, 2012.
3. Gerald. R. Ferrera, Reder and linchtenstein, Cyber laws – Text and Cases,3e, Cengage learning

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 603c: DATA ANALYTICS
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To learn the different ways of data Analysis, data streams, mining and clustering and visualization.

UNIT-I: INTRODUCTION TO BIG DATA:

Introduction to Big Data Platform – Challenges of conventional systems – Web data – Evolution of Analytic scalability, analytic processes and tools, Analysis vs reporting – Modern data analytic tools, Stastical concepts: Sampling distributions, resampling, statistical inference, prediction error.

UNIT-II: DATA ANALYSIS:

Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics – Rule induction – Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods.

UNIT-III: MINING DATA STREAMS:

Introduction to Streams Concepts – Stream data model and architecture – Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window – Realtime Analytics Platform(RTAP) applications – case studies – real time sentiment analysis, stock market predictions.

UNIT-IV: FREQUENT ITEMSETS AND CLUSTERING:


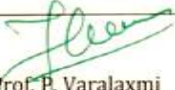
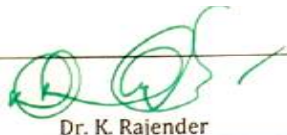






Mining Frequent itemsets – Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data – CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-euclidean space – Clustering for streams and Parallelism.

UNIT-V: FRAMEWORKS AND VISUALIZATION:

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases – S3 – Hadoop Distributed file systems – Visualizations – Visual data analysis techniques, interaction techniques; Systems and applications:

SUGGESTED READINGS:

1. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
2. AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge University Press, 2012.
3. Bill Franks, Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with advanced analytics, John Wiley & sons, 2012.

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KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. ECONOMICS I Year

SEMESTER – I

PAPER – I MICRO ECONOMICS

(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module-I: Consumer Behaviour:

Cardinal Approach to Utility Analysis - Ordinal utility Analysis - Properties of Indifference curves - concept of budget line - equilibrium of consumer - price consumption curve - income consumption curve - derivation of demand curve with the help of Indifference Curves' Analysis - Concepts of price - income and substitution effects.

Module-II Production Analysis

Concept of Production Function - Linear and homogeneous production function - Short run and long run production function – Law of Variable Proportions - Laws of Returns to Scale - Properties of iso-product curves - concept of factor price line - analysis of least cost input combination - concepts of expansion path and economic region of production - Properties of Cobb-Douglas Production Function.

Module-III: Cost and Revenue Analysis

Cost concepts: Accounting, real, opportunity, explicit costs - Total cost- total fixed cost - total variable cost - average cost - average fixed cost - average variable cost - marginal cost and the relationship between average and marginal cost - derivation of long run average cost curve - Economies of scale: internal and external - Revenue concepts: total - average and marginal - relationship between Average revenue & marginal revenue and price elasticity of demand.

Module-IV: Analysis of Market Structure:

Concepts & Classification of Markets –Basic Features of Perfect Competition - Monopoly-Equilibrium of a monopolist – Concept of Price discrimination & degrees of price discrimination-Monopolistic competition – characteristics - concepts of product differentiation and selling cost - Equilibrium under Monopolistic competition – Oligopoly- characteristics of oligopoly – Price and output determination – Analysis of Kinked Demand Curve – Concept of Duopoly - Cournot's version of duopoly.

Module-V: Analysis of Business Firm and Profit

Characteristics of a business firm, objectives of business firm: profit maximization, sales revenue maximization, market share maximization, growth maximization. Profit concepts: Accounting and economic; break-even point and profit –volume analysis

References:

1. M L Seth : Micro Economics
2. M L Jhinguan: : Micro Economics
3. H L Ahuja: : Modern Micro Economics
4. Koutsainies; : Modern Micro Economics
5. Stonier and Hague : Micro Economics
6. Salvatore : Micro economics
7. Schaum Series : Micro economics
8. Pyndick : Micro economics
9. Gregory Mankiw : Principles of Micro Economics

B.A Political Science
I st Semester
Paper - I
Understanding Political Theory

- Unit-I Political Theory
- What is Political Theory, Evolution, Nature , Significance
 - Debates on Political Theory
 - a) Normative b) Contemplative c) Explanatory
- Unit-II What is Political?
- State: Theories of origin of the state, Divine, Social Contract, Evolution Theories
 - Power and Authority
 - Authoritative allocation of Values
 - Sovereign state : Challenges
- Unit- III Political Values and Theoretical Perspective
- Liberty :- A) Liberal B) Marxist C) Feminist
 - Equality :- A) Liberal B) Marxist C) Feminist
 - Justice :- A) Liberal B) Marxist C) Feminist
- Unit-IV Political Ideologies
- Liberalism
 - Nationalism
 - Multiculturalism
- Unit-V Political Institutions and Functions
- Legislature, Executive and Judiciary
 - Political Parties, Pressure Groups, Media

Reading list : -

1. Rajeev Bhargava & Ashok Acharya , editions , Political Theory : An Introduction , Pearson ,2019
2. Sushila Ramaswamy, Political Theory : Ideas and Concept , PHI Learning Pvt , Ltd .2015
3. O.P. Gauba, An Introduction to Political Theory , Macmillan, 2019
4. Michael G. Roskin , Robert L. Cord, James A. Medeiros , Walter S. Jones , Political Science : An Introduction , Pearson ,2018
5. Hoveyda Abbas , Ranjay Kumar , Political Theory , Pearson ,2019
6. John Hottman , Paul Graham , Introduction to Political Ideologies , Pearson ,2014
7. A. Appadorai, (2000), *Substance of Politics*, Oxford University Press, New Delhi, India.
8. George H Sabine, Thomas L Thorson, (1973), A History of Political Theory, Oxford & IBH Publishing Co., New Delhi.
9. Heywood, Andrew, (2012) Political Ideologies: An Introduction, Palgrave Macmillan, UK.
10. Heywood, Andrew, (2013), Politics, Palgrave Macmillan (UK).
11. Leon P. Baradat, (2011), Political Ideologies, Routledge.
12. Michael Freeden, Lyman Tower Sargent, Marc Stears,(eds) (2013), The Oxford Handbook of Political Ideologies, Oxford University Press, UK.
13. Ernest Barker : Principles of Social and Political Theory (London , Oxford University Press 1951)
14. Norman P. Barry : An Introduction to Modern Political Theory (London Macmillan, 1989)
15. Richard Bellamy (ed) : Theories and Concepts of Politics (New York , Manchester University Press 1993.)
16. Anthopny H. Birch : The Concepts and Theories of Modern Democracy (London , Routledge ,2001)
17. Martin Carnoy : The State and Political Theory (Princeton , Princeton University Press , 1984)

**TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - I**

**History of India (From Earliest Times to c.700 CE)
(DSC-101) Discipline Specific Course - Paper - I
(With Effect from 2019-2020)**

- Module-I: Definitions - Nature and Scope of History - History and Its Relationship with other Social Sciences - Geographical Features of India - Sources of Indian History: Pre-History - Paleolithic, Mesolithic, Neolithic, Chalcolithic and Megalithic Cultures.
- Module-II: Indus Valley Civilization - Its Features & Decline; Early Vedic and Later Vedic Civilizations - Vedic Literature - Society - Economy - Polity - Religion.
- Module-III: Rise of New Religious Movements - Charvakas, Lokayathas, Jainism and Buddhism; Mahajanapadas - Rise of Magadha; Alexander's Invasion and Its Impact.
- Module-IV: Foundation of the Mauryan Dynasty; Ashoka and His Dharma - Polity - Administration - Society - Economy - Religion - Literature - Art and Architecture; Disintegration of the Mauryan Empire; Post-Mauryan Kingdoms - Indo-Greeks - Kushanas and Kanishka - Society - Economy - Literature - Art and Architecture; The Satavahanas; Sangam Age - Literary Development.
- Module-V: Gupta Empire: A Brief Political Survey - Polity and Administration, Social and Economic Conditions, Agriculture and Land Grants - Feudalism, Caste System, Position of Women, Education, Literature, Science and Technology, Art and Architecture - Harshavardana and His Achievements.

Recommended Books:

- A.L. Basham, *The Wonder that was India*, Rupa & Co., New Delhi, 2001.
- Allchin, Bridget & Raymond, *The Rise of Civilization in India and Pakistan*, CUP, New Delhi, 1996.
- E.H. Carr, *What is History?* Penguin Books, England, 1990.
- Majumdar, R.C., *History and Culture of the Indian People*, Vols. I, II & III.
- Romila Thapar, *Asoka and the Decline of the Mauryas*, OUP, New Delhi, 1995.
- Romila Thapar, *Early India (From the earliest to AD 1300)*.
- Romila Thapar, *A History of India*, Vol. I, Penguin Books, New Delhi, 1990.
- Upinder Singh, *A History of Ancient and Medieval India*.


[R. SUMALATHA]


(S. Ganapathilakshmi)


Bos


Head.

C.B.C.S Pattern Syllabus from 2019-2010 onwards
B.A., B.Sc., B.Com. & B.BA
1st Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) శకుంతలోపాఖ్యానం- నన్నయ
- 2) గోదగూచి కథ - పాల్కురికి సోమనాథుడు
- 3) సంవరణుడి తపస్సు-అద్దంకి గంగాధరుడు

Unit-II ఆధునిక కవిత్వం

- 1) కాసులు-గురజాడ అప్పారావు
- 2) రాజు-కవి-డా.గుణ్ణం జాషువా
- 3) గంగిరెద్దు-డా. పల్లా దుర్గయ్య
- 4) జయభేరి-శ్రీ శ్రీ

Unit-III వచన కవిత్వం

రుద్రమదేవి (నవల) - ఒద్దిరాజు సోదరులు

Unit-IV భాషా భాగాలు-వ్యాకరణం

పర్యాయ పదాలు, నానార్థాలు, సంధులు, సమాసాలు, తెలుగు వాక్యం



Handwritten signatures and dates in green ink. The signatures are: "V. K. S.", "K. S. S.", "S. S. S.", and "S. S. S.". The date "20/1/19" is written below the first signature.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS I Year
SEMESTER –II

PAPER – II MACRO ECONOMICS

(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module– I: Introduction

Macro Economics – Concept of Circular Flow of Incomes –National Income Analysis: Concepts and Components – Methods of Measurement –Difficulties and Limitations in the Estimation of National Income.

Module– II: Theories of Income and Employment

Classical Theory of Income and Employment - Keynesian Theory of Income and Employment- Effective Demand – Consumption Function- Average Propensity to Consume (APC) and Marginal Propensity to Consume (MPC) – Factors Determining Consumption Function – Savings Function- Average Propensity to Save and Marginal Propensity to Save – Concepts of Multiplier and Accelerator

Module– III: Investment & Theories of Interest Rate

Capital and Investment- Types of Investment- Determinants of Level of Investment – Marginal Efficiency of Capital and Marginal Efficiency of Investment- Neo-Classical and Keynesian Theories of Interest.

Module – IV: Supply of Money & Demand for Money

Functions and Classification of Money – Money Supply – Measures of Money Supply with reference to India: M1, M2, M3 and M4 – Classical Theories of Money: Fisher's and Cambridge Versions of Quantity Theory of Money – Keynes' Theory of Money and Prices.

Module– V: Inflation & Trade Cycles

Inflation: Concept, Types, Causes and Measurement – Effects of Inflation – Measures to Control Inflation – Concepts of Phillips Curve, Deflation and Stagflation – Trade Cycles: Concept, Causes and Phases of trade cycle.

Reference Books:

- Ackley, G (1976) : Macro Economics: Theory and Policy, Macmillan, New York
Shapiro, E (1996) : Macro Economic Analysis, Galgotia Publications, New Delhi
Hansen A H (1953): A Guide to Keynes, McGraw Hill, New York
Keynes JM (1936) : The General Theory of Employment, Interest and Money,
MC Vaish : Macro Economic Theory
HL Ahuja : Macro Economic Theory & Policy
Vanitha Agarwal : Macro Economic Theory & Policy, Pearson Education
HL Ahuja : Macro Economic Analysis
Gupta, SB : Monetary Economics: Institutions, Theory and Policy
M.L. Seth : Macro Economics, Lakshmi Narain Agarwal, Agra, 2006

B.A Political Science
II st Semester
Paper - II
Western Political Thought

Unit- I Greek Political Thought

- Greek Political Thought – Sophists
- Plato:- Concept of Justice , Ideal State , Education and Communism.
- Aristotle :- Forms of Governments, On revolution , Slavery , Best state

Unit- II : Medieval and Early Modern Thought

- Thomas Aquinas :- Theory of Laws, Christianized Aristotle
- Church – State Controversy
- Niccolo Machiavelli – Human Nature , StateCraft

Unit- III Social Contractualists

- Thomas Hobbes :- Individualism and Absolute (State) Sovereignty
- John Locke :- Natural Rights Limited Government
- J. J. Rousseau :- Romanticism, General will , Popular Sovereignty

Unit- IV : Utilitarian Thought

- Jeremy Bentham :- Utilitarian Principles; Hedonism
- J. S. Mill :- On liberty , Representative Government

Unit- V : Philosophy of Dialectics

- G.W. F. Hegal :- Dialectics Purpose of History Geist (Spirt) and State
- Karl Marx:- Historical Materialism, Class war and Revolution.

Reading list :

1. . D.Mackenzie Brown, (1959), Indian Political Thought from Manu to Gandhi., University of California Press, Berleley and Los Angeles.
2. George Klosko, (eds), (2011), The Oxford Handbook of The History of Political Philosophy, Oxford University Press, New York.
3. Gregory Claeys, (eds)(2013), Encyclopedia of Modern Political Thought, Sage Publication, New Delhi.
4. M.P.Singh and Himanshu Roy, (eds), (2011), Indian Political Thought: Themes and Thinkers, Pearson, New Delhi.
5. N.D.Arora and S.S.Awashthy, (2007), Political Theory and Political Thought, Har-Anand Publications, New Delhi.
6. S.K.Sarma and Urmila Sharma, (2006), Western Political Thought (from Plato to Burke), Atlantic Publishers, New Delhi.
7. Subrata Mukherjee & Sushila Ramaswamy, (2011), A History of Political Thought,: Plato to Marx, PHI Learning Private Limited, New Delhi.
8. Thomas Pantham, Kenneth L. Deutsch, (1986), Political Thought in Modern India, Sage Publication, New Delhi.

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - II
History of India (c.700-1526 CE)
(DSC-201 - Discipline Specific Course) - Paper – II
(2019-2020)


- Module-I: The Age of Rajputs Society, Economy and Culture - Rise of Regional States: Pallavas, Chalukyas of Badami, Rashtrakutas, Cholas; Local Self Government under Cholas; Society, Economy, Literature, Art and Architecture; Bhakti Movement in South India: Shaiva Nayanars and Vaishnava Alwars.
- Module-II: Arab Conquest of Sind, Ghaznavids and Ghoris; Foundation of Delhi Sultanate: Slave, Khaljis, Tughlaqs, Sayyids and Lodis – Polity, Administration, Society – Religion - Economy - Art and Architecture - Growth of Education and Literature – and the decline of Delhi Sultanate.
- Module-III: Bhakti and Sufi Movements, Prominent Bhakti and Sufi Saints, their Preachings - Impact on Society and Culture - Emergence of Composite Culture.
- Module-IV: Kakatiyas – Polity – Administration - Society and Economy - Literature and Religion – Art and Architecture – Yadavas – Hoysalas and Pandyas – Their contribution to South Indian Culture.
- Module-V: Vijayanagara – A Brief survey of Political History – Polity - Administration - Society and Economy – Religion – Art and Architecture – Language and Literature - The Brief History of Bahamanis and their Contribution to the Deccan Culture.

Recommended Books:

- A.L. Basham, *The Wonder that was India*, Rupa & Co., New Delhi, 2001.
 Irfan Habib, *Medieval India-I*, OUP, Delhi, 1999.
 K.A. Nilakanta Sastri, *A History of South India*.
 Majumdar, R.C., *History and Culture of the Indian People*, Vols. I, II & III.
 Romila Thapar, *Early India (From the earliest to AD 1300)*.
 Satish Chandra, *Medieval India (From Sultanate to the Mughals)*, Part-I, Har-Anand Publications, New Delhi, 1997.
 Upinder Singh, *A History of Ancient and Medieval India*.
 Vipul Singh, *Interpreting Early and Medieval India*.

Telugu:

- A. Bobbili and others, *Bharatha Desha Charitra upto A.D. 1526*, Telugu Academy, Hyderabad, 2003.
 D.D. Kosambi, *Bharatha Desha Charitra Parichaya Vyasalu*, Hyderabad Book Trust, Hyderabad, 1996.
 B.A. First & Second Year Indian History Text Books (English & Telugu Medium-CBCS) 2017-18.


 [B. SUMALATHA]






C.B.C.S Pattern Syllabus from 2019-2010 onwards
B.A., B.Sc., B.Com. & B.B.A.
2nd Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) గజేంద్ర మోక్షం-పోతన
- 2) హనుమత్ సందేశం-మొల్ల
- 3) సుభాషితాలు-ఎనుగు లక్ష్మణ కవి

Unit-II ఆధునిక కవిత్వం

- 1) స్నేహలత లేఖ-రాయప్రోలు సుబ్బారావు
- 2) అంతర్నాదం-దాశరథి కృష్ణమాచార్యులు
- 3) ప్రపంచపదులు-డా॥ సి.నారాయణరెడ్డి
- 4) అల్విదా-కౌముది

Unit-III వచన విభాగం

- 1) యుగాంతం-నెల్లూరి కేశవ స్వామి
- 2) ఎంకన్న - ఆచార్య పాకాల యశోదారెడ్డి
- 3) మామిడి పండు - సురవరం ప్రతాపరెడ్డి
- 4) మా ఊరుపోయింది-దేవులపల్లి వేంకట కృష్ణశాస్త్రి

Unit-IV ఛందస్సు

ఉత్పలమాల, చంపకమాల, శార్దూలం, మత్తేభం, ఆటవెలది, తేటగీతి, ద్విపద, సీసం, కందం, ఉత్సాహం, తరళం, స్రగ్ధర, మహాస్రగ్ధర, ముత్యాలసరం



BA 203 Semester-H: Development Dynamics and Emerging Trends

Module-I: Comparative & Development Administration

- a. Comparative Administration
- b. Development Administration
- c. Changing Dynamics of Development Administration

Module-II: Emerging Trends-I

- a. New Public Administration - Minnowbrook-I
- b. New Public Administration - Minnowbrook-II
- c. New Public Administration - Minnowbrook-III

Module-III: Market Theories

- a. Public Choice Approach
- b. New Public Management

Module-IV: Emerging Trends-I

- a. Public Policy and Governance
- b. Role of Public Services in the Emergence and Development of New State of Telangana

Module-V: Emerging Trends-II

- a. Globalization and Public Administration
- b. Present Status of Public Administration in the context of Globalization

Expected Outcomes

After study of the Course-1, the learner should be able to:

- Appreciate the nature, scope and changing paradigms of Public Administration;
- Understand the synthesizing nature of knowledge of public administration from public perspective;
- Grasp the administrative theories, concepts and principles to make sense of administrative practices.


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Telangana-506 009

References

- Ali Farazmand (2001) Handbook of Comparative and Development Public Administration, Merrell Dekker, New York.
- Arora, Ramesh K. (1996) Comparative Public Administration, Associated Publishing House, Agra.
- Esmon, Milton J. (1970) CAG and the Study of Public Administration in F.W. Riggs (ed) The Frontiers of Development Administration (pp. 41-71), Durham, North Carolina; Duke University Press.
- Heady F. (1996) Public Administration: A comparative perspective (5th ed.) New York: Marcel Dekker.
- Hoshiar Singh and Pardeep Sachdeva (2012) Public Administration: Theory and Practice, Pearson, Delhi.
- Montgomery, J. (1966) Approaches to development politics, administration and change, New York, McGraw Hill.
- Pai Panandikar, V.A. (1964) Development Administration: An Approach, Indian Journal of Public Administration, 10 (1), pp. 34-44.
- Raphaeli, N. (1967) Readings in comparative public administration, Boston, Massachusetts: Allyn and Bacon.
- Riggs F.W. (1956) Public Administration: A neglected factor in economic development. Annals of the American Academy of Political and Social Sciences, No. 305, Agrarian Societies in Transition, (May 1956), 70-80.
- Riggs F.W. (1970) The ecology of administration, Bloomington: Indiana University.
- Swerdlow, I. (1963) (ed). Development Administration: Concepts and Problems, Syracuse, New York: Syracuse University Press.
- Telugu Akademi (2016) BA. 1st Year Public Administration.
- W.E. Weidner, (ed) (1970), Development Administration in Asia, Durham, North Carolina; Duke University Press.
- Waldo D (1963) Comparative Public Administration: Prologue, Performance and Problems, Indian Journal of Political Science, 24 (3), pp. 177-216.
- Weidner, W.E. (1970a) (ed) Development Administration in Asia, Durham, North Carolina; Duke University Press.


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KAKATIYA UNIVERSITY, WARANGAL

B.A., B.Sc., B.Com. & B.B.A (CBCS)

Syllabus - 2020

Telugu (Second Language)

3rd Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) ధర్మజుని వాక్యాతుర్యం - తిక్కన
- 2) విభీషణ శరణాగతి - గోన బుద్ధారెడ్డి
- 3) గుణనిధి కథ - శ్రీనాథుడు

Unit -II ఆధునిక పద్యభాగం

- 1) రైతు ప్రశస్తి - వానమామలై జగన్నాథాచార్యులు
- 2) గురుదక్షిణ - అంబటి లక్ష్మీనరసింహరాజు
- 3) గుడిసెలు కాలిపోతున్నై - డా॥ బోయి భీమన్న

Unit -III అలంకారాలు

శబ్దాలంకారాలు: వృత్త్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస,
అంత్యానుప్రాస, యమకం, ముక్తపదగ్రస్తాలంకారాలు

అర్థాలంకారాలు: ఉపమ, ఉత్పేక్ష, రూపక, స్వభావోక్తి, ఉల్లేఖ,
అర్థాంతరవ్యాస, శ్లేష, దృష్టాంతాలంకారాలు

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం


29/8/2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL-506 002, T.S.


Head
Department of Telugu
Kakatiya University
Warangal-506 09(T.S.).

B.A, BSc & B Com SECOND YEAR - 2019-2020 -

URDU - SECOND LANGUAGE:

"MUTALA-E-ADAB" (Part - II)

(Compiled by Department of Urdu O.U. Hyderabad)

published in August-2008 by Urdu Academy-HYA.

SEMISTER - III

PAPER - III

URDU POETRY & PROSE

UNIT: I.

MASNAVI :- Amn Nama by Jaan Nisar Akhtar.

UNIT: II.

QASIDA :- Dar Shaan-e-Hameedud Dawla
— by —
Zauq Dahelvi.

UNIT: III

1. NOVEL :- Nasook ki Saleem Se Guftagu
— by —

Deputy Nazim Ahmed (Selected from
"Taubatun Nasook")

2. INSHAIYA :- Zaqq-e-Chai Noshi - By Moulana Az
(Selected from "GHUBAR-E-KHATIR).

[Signature]
2020.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A/B.COM/BBA/B.SC ENGLISH II YEAR
SEMESTER – III

PAPER – III: ENGLISH

Theory: 3 Hours/Week; Credits: 3 Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence
Published by Orient BlackSwan

UNIT I: GENDER EQUALITY

1. “Achieving Gender Equality in India: What Works, and What Doesn’t” by Smriti Sharma
2. “They Shut me up in Prose” by Emily Dickinson
3. Prepositions
4. Phrasal Verbs

UNIT II: GENDER ROLES

1. “The Wonder Story of Kalpana Saroj” by Rakhi Chakraborty
2. “The Kitchen” by Vimala
3. Voice
4. Technical Vocabulary

UNIT III: ENDING VIOLENCE AGAINST WOMEN

1. “What is my Name?” by P.Sathyavathi
2. “Voice of the Unwanted Girl” by Sujatha Bhatt
3. Connectives
4. Idioms

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS II Year
SEMESTER – III

PAPER – III STATISTICS FOR ECONOMICS
(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module– I: Introduction to Statistics

Meaning and Basic Concepts of Statistics – Population and Sample, Frequency Distribution, Cumulative Frequency – Graphic and Diagrammatic Representation of Data –Types of Data: Primary and Secondary Data –Methods of Collecting Data: Census and Sampling Methods (Random, Non-random Sampling Methods)

Module– II: Measures of Central Tendency and Dispersion

Measures of Central Tendency: Mean, Median, Mode, Geometric Mean and Harmonic Mean – Properties of Good Average – Comparison of Different Averages –Measures of Dispersion – Absolute and Relative Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation and Variance

Module– III: Correlation and Regression

Correlation: Meaning and Types – Karl Pearson's Correlation Co-efficient – Spearman's Rank Correlation –Regression: Meaning and Uses of Regression.

Module– IV: Index Numbers

Meaning and Uses – Aspects and Difficulties in the Construction of Index Numbers - Types of Index Numbers –Methods of Index Numbers - Laspayer, Paasche and Fisher.

Module– V: Analysis of Time Series

Meaning and Uses – Components of Time Series Analysis: Secular, Seasonal, Cyclical and Irregular Variations – Methods of Measurement of Secular Trends: Graphic, Semi-Averages, Moving Averages.

Reference Books:

- Allen, RGD : Mathematical Analysis for Economists, Macmillan Press, London.
Bhardwaj RS : Mathematics for Economics and Business, Excel Books, New Delhi
Bose : Mathematics for Economics, Himalaya Publishing, New Delhi
Chiang, AC : Fundamental Methods of Mathematical Economics McGraw Hill,
New Delhi Nagar & Das: Basic Statistics
S.P. Gupta : Statistical Methods, S. Chand & Co.,
G.S. Monga : Mathematics for Economists

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - III
History of India (1526-1857 CE)
(DSC - Discipline Specific Course - Paper – III
(2019-2020)


- Module-I: Establishment of Mughal Dynasty - Sources – Shershah Sur and His Reforms - Brief Survey of Political History of Mughals – Akbar, Shah Jahan and Aurangzeb - Polity - Administration – Society – Economy – Technological Developments - Religion – Hindu-Muslim Relations – Emergence of Composite Culture – Education – Language and Literature – Art and Architecture - Disintegration of Mughal Empire.
- Module-II: Rise of Regional Powers - Marathas – Shivaji his Military Achievements, and his Administration – The Rise of Peshwas – and their role in Maratha History - The Third Battle of Panipat – The Rise of Sikhs. – Ranjit Singh – Rise of Princely States – Hyderabad – Avad - Junagarh – Mysore – Kashmir.
- Module-III: Advent of European Powers - Portuguese, Dutch, English and French, Anglo-French Rivalry - Expansion and Consolidation of British Power – Wellesley's Subsidiary Alliance – Dalhousie's Doctrine of Lapse.
- Module-IV: Three Stages of Colonialism – Mercantilism - Free Trade Policies – Finance Capital - Land Revenue Settlements – Cornwallis and Permanent Revenue Settlement; Thomas Munroe and Ryotwari; Mahalwari System – Changes in the Agrarian Economy and Condition of Peasantry – Famines.
- Module-V: Decline of Rural Cottage Industries and Urban Handicrafts - Growth of Railways, Roads, Communication – Modern Industries – Coal Mines, Textiles, Iron and Steel, etc. - Anti-Colonial Upsurge - 1857 Revolt – Nature, Causes and Results.

Recommended Books:

- A.L. Srivastava, *History of India from A.D. 1000 to 1707.*
A.R. Desai, *Social Background of Indian Nationalism.*
Bipan Chandra, *A History of Modern India.*
Harbans Mukhia, *The Mughals.*
John F. Richards, *The Mughal Empire*, CUP, New Delhi, 1995.
R.C. Majumdar (ed.), *A History and Culture of India People*, Bharatiya Vidya Bhavan Series (Relevant Vols.).
R.C. Majumdar, H.C. Raychaudhuri & K. Datta, *An Advanced History of India*, Madras, 1995.
Satish Chandra, *Medieval India*, Vol. II.
Sumit Sarkar, *Modern India (1885-1947)*, Macmillan India Ltd., Madras, 1995.
Tarachand, *A History of the Freedom Movement in India*, Four Volumes.
V.D. Mahajan, *History of Medieval India (Sultanate Period and Mughal Period).*
V.D. Mahajan, *Modern Indian History.*

Telugu:

- B. Laxminarayana Rao, *Bharatadesa Swathantra Charitra (Part-3)*, (Trans.), Telugu Academy, 2005.
Bipan Chandra, *Adhunika Bharatadesa Charitra* (Translation Sahavasi), Hyderabad Book Trust.
B.A. First & Second Year Indian History Text Books (English & Telugu Medium-CBCS) 2016-17.
J. Durga Prasad and Others, *Bharatadesa Charitra (1526-1964 A.D.)*, Telugu Academy, 2006.
V. Rama Krishna Reddy, *Bharatadesa Charitralo Mukhya Ghattalu*, Telugu Academy, 2005.


[B.S.V. LALITHA]

B.A Political Science
III rd Semester
Paper - III
Indian Political Thought

- Unit-I State and Society in Ancient India
- Manu – Features of Manusmriti, Origins of Varna, Varna Dharma
 - Buddha – Dhamma , Sangha , Eightfold path
 - Kautilya- Saptanga Theory , Mandala Theory , Statecraft
- Unit-II Medieval Political Thought
- Basava- Anubhava Mantapa , Gender Equality
 - Ziauddin Barani- Theory of Kingship (Ideal Sulthan) , Ideal Polity
- Unit- III RenaissanceThought
- Raja Ram Mohan Roy - Colonial Encounters , Brahma Samaj
 - Jyothi Rao Phule- Gulam Giri , Satya Shodhak Samaj , Education
- Unit-IV Reformist Thought
- M. K. Gandhi – Satyagraha , Trusteeship , Problem of Political Obligation
 - Dr. B. R. Ambedkar- Who are Shudras ? , Annihilation of Caste
- Unit-V Socialist Thought
- M.N. Roy- Radical Humanism
 - Jawaharlal Nehru- Democratic Socialism
 - R.M. Lohia – Concept of Four Pillars of State(Chaukhamba Model)



Prof. G. Veeranna,

CHAIRMAN

Board of Studies in Political Science
KAKATIYA UNIVERSITY
WARANGAL-506 009 (T.S.)

BA II Year

Semester III : Indian Administration

The Objectives of the Course are:

1. To understand the historical evolution and socio-economic, political, cultural and global context of Indian Administration;
2. To identify the transformative role of Indian Administration;
3. To make out the multi-dimensionality of problems and processes of Indian Administration;
4. To understand the form and substance of Indian Administration; and
5. To appreciate the emerging issues in Indian Administration in the context of changing role of state, market and civil society.

DSC 303 : Union Administration

Unit- I: Historical Background

- a. Evolution of Indian Administration
- b. Indian Administration after Independence: Continuity and Change
- c. Indian Constitutional Moorings and Administration.

Unit- II: Union Administration: Structure and Processes

- a. Political Executive at Central Level
 - i) President
 - ii) Prime Minister
 - iii) Council of Ministers
- b. Central Secretariat and other Offices

Unit-III: Centre-State Relations

- a. Centre-State Administrative Relations
- b. Central Personnel Agencies-All India Services

Unit-IV: Constitutional and Other National Bodies

- a. Union Public Service Commission
- b. (i) Election Commission; (ii) Comptroller and Auditor General of India (C&AG)
- c. NITI Aayog

Unit-V: Public Enterprises in India

- a. Forms of Public Enterprises - Department, Corporation, Company
- b. Performance and Disinvestment

References:

- Bidyut Chakravarty, Prakash Chand (2019), Indian Administration: Evolution and Practise, Sage Publications
- Krishna K.Tummala (1996), Public Administration in India, Allied Publishers Limited.
- Kuldeep Mathur (2019), Recasting Public Administration in India: Reform, Rhetoric, and Neoliberalism, Oxford University Press
- M.Sharma (2004), Indian Administration, Anmol Publishers.
- Meredith Townsend (2019), The Annals of Indian Administration, Volume-3, Creative Media Partners.
- Parmar, A., A Study of Kautilya's Arthashastra, Delhi, Atma Ram & Sons, 1987
- Radha Krishna Sapru (2019), Indian Administration: Foundations of Governance, Sage Publications.
- Ramesh K Arora, Rajni Goyal (2018), Indian Public Administration: Institutions and Issues, New Age International Publishers.
- S.R.Maheswari (2004), Indian Administration, Orient Longman Publishers Limited.
- Siuli Sarkar (2018), Public Administration in India (Second Edition), PHI Learning Private Limited.
- Vaman Govind Kale (2010), Indian Administration, Kessinger Publications.
- P.D. Sharma and B.M. Sharma (2009) Indian Administration: Retrospect and Prospect, Rawat Publications.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit-I

Basic Concepts: Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models: Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

Unit-II

Database Integrity And Normalization: Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalization, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

File Organization: Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

Unit-III

Structures Query Language (SQL): Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit-IV

Transactions and Concurrency Management: Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

Text Book: Database Systems: R.Elmasri & S.B. Navathe, Pearson.

References:

1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

Library Books (Accession number, Title, Author, Department, Purchase Date, Price),

Issued Books (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled “Database System Concepts”.
- c) Change the Department of the book titled “Discrete Maths” to “CS”.
- d) List all books that belong to “CS” department.
- e) List all books that belong to “CS” department and are written by author “Navathe”.
- f) List all computer (Department=“CS”) that have been issued.
- g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks (rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
- c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (Cust ID, email, Name, Phone, Referrer ID)

Bicycle (Bicycle ID, Date Purchased, Color, Cust ID, Model No)

Bicycle Model (Model No, Manufacturer, Style) Service

(Start Date, Bicycle ID, End Date)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
- c) List the bicycles purchased by the customers who have been referred by Customer "C1".
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column "email" of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
- f) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Hyderabad.
- j) Get part numbers for part supplied by a supplier in Warangal to a project in

Chennai.

- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

KAKATIYA UNIVERSITY, WARANGAL
B.A., B.Sc., B.Com. & B.B.A (CBCS)
Syllabus - 2020
Telugu (Second Language)
4th Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) నారద గానమాత్యర్యం - పింగలి సూరన
- 2) వాగ్దాన భంగం - అసూరి మరింగంటి వేంకట నరసింహాచార్యులు
- 3) నారసింహ శతకం - ధర్మపురి శేషప్ప

Unit -II ఆధునిక పద్యభాగం

- 1) నరుడ నేను, నరుడ నేను - కాళోజీ
- 2) ఆత్మగీతం - దేవరకొండ బాలగంగాధర తిలక్
- 3) దేవరకొండ దుర్గం - డా॥ ముకురాల రామారెడ్డి

Unit -III వచన విభాగం

- 1) అర్థరాత్రి అరుణోదయం - దాశరథి రంగాచార్య
- 2) సి.పి బ్రౌన్ సాహిత్య సేవ - జానమద్ది హనుమచ్ఛాస్త్రి
- 3) మన గ్రామ నామాలు - డా॥ కపిలవాయి లింగమూర్తి
- 4) నివురు తొలగిన నిప్పు - పోల్కంపల్లి శాంతాదేవి
- 5) కొండమల్లెలు - ఇల్లించల సరస్వతీదేవి

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి “సాహితీ కిన్నెర” తెలుగు వాచకం


29-8-2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL(A.P.)





Head
Department of Telugu
Kakatiya University
Warangal-506 09(T.S.).

B.A, B.Sc & B.Com SECOND YEAR.

URDU SECOND LANGUAGE

"MUTALA-E-ADAB" (Part - II)

(Compiled by Urdu Department - Osmania University - Hyderabad)
published in August 2008 by Urdu Academy - Hyderabad.

SEMESTER - IV

PAPER - IV

POETRY & PROSE

UNIT: I

MARSIA: "GARM KA SAMAN" by Meen Anees.

UNIT: II:

1. RUBAIYAT: a) ANEES - Pурсan koi kab Jawher - e -
Zaati ka hai.

ANEES - Duniya bhi jab Sataye - e -
Fani Dekhi.

b) HALI - Duniya - e - Demi ko Naqsh - e
Fani Samjha.

HALI - Yaro Nahi waqt Alam ka yeh.

c) AMJAD - Koshish hai apni tamam
Satayash ke liye.

AMJAD - Kam Zarf Ager Daulat - o -
Zar pata hai.

2. QITAAT: a) AKBAR ILAHRADI - Chod Literature
ko Apni History Bhoal Ja.

b) ALLAM IQBAL - Andaz - e - Bayan

Ger - che - Bahut Shookh nahi
hai.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A/B.COM/BBA/B.SC ENGLISH II YEAR

SEMESTER – IV

PAPER – IV: ENGLISH

Theory:

3 Hours/Week;

Credits: 3

Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence

Published by Orient BlackSwan

UNIT I: RENEWABLE AND NON-RENEWABLE RESOURCES

1. Jadav Payeng
2. “The Tame Bird was in a Cage” by Rabindranath Tagore
3. Reported Speech
4. Commonly Confused Words

UNIT II: ECOSYSTEMS AND ENVIRONMENTAL POLLUTION

1. “Climate Change and Global Warming” by Michael Shafer
2. “A Requiem for Earth” by O.N.V.Kurup
3. Conditionals
4. Suffixes

UNIT III: CONSERVATION AND BIODIVERSITY

1. “The Ungrateful Man: A Conversation between Trees ” by Swathi Shenoy
2. “The Felling of the Banyan Tree” by Dilip Chitre
3. Common Errors
4. Collocations

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS II Year
SEMESTER – IV

PAPER – IV INDIAN ECONOMY
(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module I: Structure of the Indian economy:

Indian Economy at the time of Independence - Changes in the Composition of National Income and Employment - Natural Resource base - Land, Water, Forest, Mineral and Metal Resources - Population: Size, Growth and Composition and their implications for Indian economy.

Module II: Indian Agriculture:

Importance of Agriculture - Trends in Agricultural Production and Productivity. Land Reforms - Green Revolution - Agricultural Finance - Agricultural Marketing - Agricultural Price Policy - Food Security in India.

Module III: Indian Industry:

Importance of Industrialization - Trends in Industrial Production - Industrial Policy Resolutions - 1948, 1956, 1991 - Role of Public and Private Sectors - Formal and Informal Sectors in Industry.

Module IV: NIIT AAYOG:

Evolution of Planning Commission – Failures and Demise of planning commission - Genesis of NITI Aayog: structure and composition of NIIT Aayog, Functions and objectives of NIIT Aayog, Differences between NIIT Aayog and planning commission - NIIT Aayog role in strategic planning and development.

Module-V Service Sector and Economic Reforms:

Concept, Components, Trends and Role of Service Sector - Infrastructural Development-Transport, Banking, Insurance, and Information Technology - Economic Reforms-Liberalization, Privatization, and Globalization- A critical evaluation.

References:

- | | |
|----------------------|---|
| 1. SK Misra and Puri | : Indian Economy, Himalaya Publishing House. |
| 2. Ishwar C Dhigra | : The Indian Economy: Environment and Policy,
SC Chand & Sons, New Delhi |
| 3. KPM Sundaram | : Indian Economy |
| 4. PK Dhar | : Growing Dimensions of Indian
Economy, Kalayani Publisher. |

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS II Year
SEMESTER – IV

PAPER – IV INDIAN ECONOMY
(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module I: Structure of the Indian economy:

Indian Economy at the time of Independence - Changes in the Composition of National Income and Employment - Natural Resource base - Land, Water, Forest, Mineral and Metal Resources - Population: Size, Growth and Composition and their implications for Indian economy.

Module II: Indian Agriculture:

Importance of Agriculture - Trends in Agricultural Production and Productivity. Land Reforms - Green Revolution - Agricultural Finance - Agricultural Marketing - Agricultural Price Policy - Food Security in India.

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References:

- | | |
|----------------------|---|
| 1. SK Misra and Puri | : Indian Economy, Himalaya Publishing House. |
| 2. Ishwar C Dhigra | : The Indian Economy: Environment and Policy,
SC Chand & Sons, New Delhi |
| 3. KPM Sundaram | : Indian Economy |
| 4. PK Dhar | : Growing Dimensions of Indian
Economy, Kalayani Publisher. |

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - IV
History of India (1858-1964 CE)
(DSC - Discipline Specific Course-401) - Paper - IV
(2019-2020)

- Module-I: Queen's Proclamation – Beginning of Colonial Rule – Introduction of Western Education – Role of Christian Missionaries – Press, Communication and Emergence of Middle Classes - Lytton and Rippon: Impact of their Policies.
- Module-II: Socio-Religions Reform Movements – Brahma Samaj - Arya Samaj - Theosophical Society - Ramakrishna Mission - Aligarh Movement; Anti-Caste Movements - Jyotibha Phule - Narayana Guru - Periyar Ramaswamy Naicker and Dr. B.R. Ambedkar.
- Module-III: Factors for the Rise of Nationalism – Formation of Indian National Congress – Three Phases of Freedom Struggle: Moderate Phase, Extremist Phase and Gandhian Era - Non-Cooperation, Civil Disobedience and Quit India Movement; Indian National Army and Subhash Chandra Bose.
- Module-IV: Revolutionary Movement: Gadhar Party – Bhagath Singh – Chandra Sekhar Azad and Others; Left-Wing Movement – Rise of Socialist and Communist Parties - Peasant and Workers Movements.
- Module-V: Emergence of Communal Politics and Mohd. Ali Jinnah – Prelude to Partition of India - Sardar Vallabhai Patel and Integration of Princely States into Indian Union – Republic of India – Jawaharlal Nehru and His Policies.

Recommended Books:

- A.R. Desai, *Social Background of Indian Nationalism*, Popular Prakashan Pvt. Ltd., Mumbai, 2002.
- Bipan Chandra (et.al.), *India's Struggle for Independence*, Penguin Books, Kolkata, 2001.
- Bipan Chandra, *A History of Modern India*.
- Kenneth Jones, *Social and Religious Reform Movements in India*.
- R.C. Majumdar (ed.), *A History and Culture of India People*, Bharatiya Vidya Bhavan Series (Relevant Vols.).
- R.C. Majumdar, H.C. Raychaudhuri & K. Datta, *An Advanced History of India*, Macmillan, Madras, 1995.
- S. Gopal, *Jawaharlal Nehru – A Biography*.
- Sumit Sarkar, *Modern India (1885-1947)*, Macmillan India Ltd., Madras, 1995.
- Tarachand, *A History of the Freedom Movement in India*, Four Volumes.
- V.D. Mahajan, *Modern Indian History*.

Telugu:

- B. Vijaya Bharati, *Mahatma Jyothirao Phule* (Translation), Hyderabad Book Trust, 2004.
- Bhoopati Laxminarayana Rao, *Bharatadesa Swathantra Charitra* (Part – 3), (Translation), Telugu Academy, 2005.
- Bipan Chandra, *Adhunik Bharatadesa Charitra* (Translation Sahavasi), Hyderabad Book Trust.
- J. Durga Prasad and Others, *Bharatadesa Charitra (upto 1526-1964 A.D.)*, Telugu Academy, 2006.
- V. Rama Krishna Reddy, *Bharatadesa Charitralo Mukhya Ghattalu*, Telugu Academy, 2005.

[B.SUMALATHA]

Semester-IV: DSC 403: State Administration

Unit-I: State Administration: Structure and Processes

- a. Administrative History of Telangana
- b. Political Executive at State Level, Governor & Chief Minister

Unit-II: State Administrative Mechanisms

- a. State Secretariat & Directorates
- b. Local Governance & District Administration in Telangana

Unit- III: Emerging Issues

- a. Administrative Reforms: Need and Importance
- b. 2nd Administrative Reforms Commission – Features and Recommendations

Unit-IV: Technology and Integrity in Government

- a. e-Government
- b. Values and Ethics in Administration

Unit-V: Control over Administration

- a. Redressal of Citizen Grievances: Transparency, Accountability and Right to Information Act
- b. Administrative Accountability: Legislative and Judicial Control

Expected Outcomes

After study of the course, the learner should be able to:

- discern the connects and disconnects between structure, purpose and process and results in Indian Administration;
- Understand the Indian Administration role as the main instrument of State to achieve its developmental goals;
- Appreciate the varying historical, socio-economic, political and other conditioning factors that gave Indian Administration its distinct nature to the learner

References:

- Bidyut Chakravarty, Prakash Chand (2019), Indian Administration: Evolution and Practise, Sage Publications
- Krishna K.Tummala (1996), Public Administration in India, Allied Publishers Limited.
- Kuldeep Mathur (2019), Recasting Public Administration in India: Reform, Rhetoric, and Neoliberalism, Oxford University Press
- M.Sharma (2004), Indian Administration, Anmol Publishers.
- Meredith Townsend (2019), The Annals of Indian Administration, Volume-3, Creative Media Partners.
- Parmar, A., A Study of Kautilya's Arthashastra, Delhi, Atma Ram & Sons, 1987
- Radha Krishna Sapru (2019), Indian Administration: Foundations of Governance, Sage Publications.
- Ramesh K Arora, Rajni Goyal (2018), Indian Public Administration: Institutions and Issues, New Age International Publishers.
- S.R.Maheswari (2004), Indian Administration, Orient Longman Publishers Limited.
- Siuli Sarkar (2018), Public Administration in India (Second Edition), PHI Learning Private Limited.
- Vaman Govind Kale (2010), Indian Administration, Kessinger Publications.

B.A. (ECONOMICS) SYLLABUS SEMESTER – V: CORE

COURSE (Credits - 4) PAPER - V:

INDIAN ECONOMY

Unit – I: Basic Structure of the Indian Economy

Concepts of Development, Underdevelopment – Basic Features of Indian Economy: Growth and Structural Changes in Indian Economy – Demographic Features – Population: Size, Growth, Composition and their Implications on Indian Economy – Concept of Demographic Dividend – Occupational Distribution of Population in India – Population Policy of India.

Unit – II: National Income, Poverty and Unemployment

Estimation of National Income – Trends and Composition of National Income in India – Income Inequalities in India: Magnitude, Causes, Consequences and Remedial Measures – Poverty in India: Concept, Types, Causes and Consequences – Unemployment in India: Concept, Types, Trends, Causes and Consequences – Poverty Alleviation and Employment Generation Programmes in India.

Unit – III: Planning and Public Policy

Five Year Plans: Concept and Objectives – Review of Five Year Plans – NITI Aayog – Economic Reforms: Liberalization, Privatization and Globalization – A critical evaluation.

Unit – IV: Agricultural and Industrial Sectors

Importance and Role of Agriculture in Indian Economy – Trends in Agricultural Production and Productivity – Land Reforms – Green Revolution – Agricultural Finance – Agricultural Marketing – Agricultural Pricing – Food Security in India.

Unit – V: Industrial and Service Sectors

Structure, Growth, Importance and Problems of Indian Industry – Large, Medium and Small Scale Industries: Role and Problems – Industrial Policies of 1948, 1956 and 1991 – Disinvestment Policy – Foreign Direct Investment. Concept and Components of Service sectors-Infrastructural Development: Transport, Banking, Insurance, Information Technology, Communication and Tourism

References: Section Break (Continues)

SK Misra and Puri
Ishwar C Dhigra

: Indian Economy, Himalaya Publishing
House : The Indian Economy: Environment

KAKATIYA UNIVERSITY
B.SC I YEAR SEMESTER-I - CBCS
Ability Enhancement Compulsory Course (AECC)

ENVIRONMENTAL STUDIES

(2 hrs./week)

Credits – 2

UNIT - I : Ecosystem, Biodiversity & Natural Resources

(15 hrs.)

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity , Genetic,Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu)
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation , Rain water harvesting & Watershed management.

UNIT – II: Environmental Pollution , Global Issues & Legislation

(15 hrs.)

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-
(a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

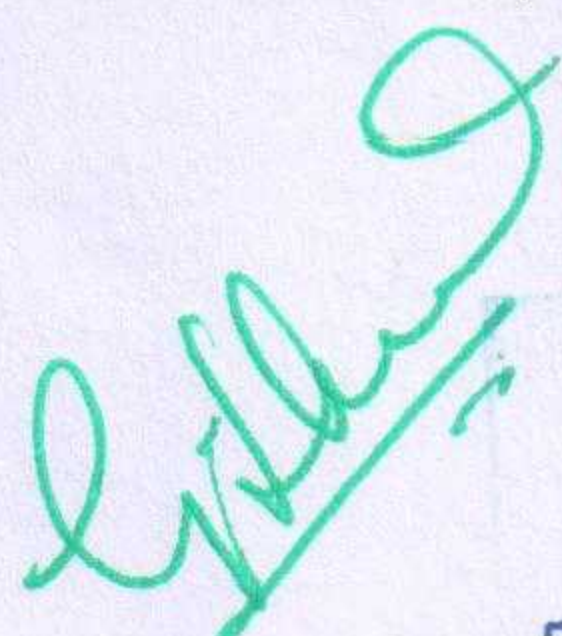
❖ **Field Study:**

(5 hours)

- Pond Ecosystem
- Forest Ecosystem

REFERENCES:

- Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
- A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana



Dr. G. SHAMITHA
Chairperson
Board of Studies
Department of Zoology & Sericulture Unit
KAKATIYA UNIVERSITY - WGL-506009 (T.S)

DEPARTMENT OF ENGLISH
KAKATIYA UNIVERSITY
 UG I Semester

LESSON ONE (SHORT FICTION)	TEXT	OLD MAN AT THE BRIDGE by Ernest Hemmingway
	PRONUNCIATION	CONSONANTAL SOUNDS
	GRAMMAR	ARTICLES
	VOCABULARY	SYNONYMS
	SPELLING	PICK OUT THE WRONGLY-SPELT WORDS
	CONVERSATIONS	ICE-BREAKING
	READING PASSAGE	RUDRAMA DEVI
	LIFE SKILLS	SELF-AWARENESS
LESSON TWO (PROSE)	TEXT	INDIA AND DEMOCRACY by Dr.B.R.AMBEDKAR
	PRONUNCIATION	VOWEL SOUNDS: MONOPHTHONGS
	GRAMMAR	PREPOSITIONS
	VOCABULARY	ANTONYMS
	SPELLING	USE OF 'UN' OR 'DIS'
	CONVERSATIONS	INTRODUCING
	READING PASSAGE	MEDARAM JATARA
	LIFE SKILLS	EMPATHY
LESSON THREE (POETRY)	TEXT	THE SCRIBE by WALTER DE LA MARE
	PRONUNCIATION	VOWEL SOUNDS: DIPHTHONGS
	GRAMMAR	TENSES
	VOCABULARY	HOMOPHONES & HOMONYMS
	SPELLING	USE OF 'TION' OR 'SION'
	CONVERSATIONS	DESCRIBING A PERSON/PLACE/EVENT
	READING PASSAGE	KALOJI
	LIFE SKILLS	CRITICAL THINKING & CREATIVE THINKING SKILLS
LESSON FOUR (DRAMA)	TEXT	THE NEVER-NEVER NEST by CEDRIC MOUNT
	PRONUNCIATION	PLOSIVES
	GRAMMAR	FRAMING QUESTIONS
	VOCABULARY	ONE-WORD SUBSTITUTES
	SPELLING	USE OF 'MENT'
	CONVERSATIONS	GIVING DIRECTIONS
	READING PASSAGE	KUNTALA WATERFALL
	LIFE SKILLS	DECISION-MAKING SKILL

1. AGS

2. D

3. ll

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6. D

AL QIRA'AT AL ARABIA AL OSMANIA - I

(for B.A., B.Sc., B.Com. & B.B.A.)

First year – Semester I & II

Under CBCS

Prepared by

Subject Committee

Dr. Syeda Talath Sultana – Prof. & Chairperson


Dr. Mehjabeen Akther – Prof. & Head

Dr. Mohammed Mustafa Shareef – Professor

Dr. Hafiz Syed Badiuddin Sabri – Professor

Osmania University

Hyderabad – T.S.


Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007

Title : Classical Prose, Grammar & Translation:

Unit – I : Classical Prose – I : Al Quran (Tafseer) Summary only 1. Suratul Balad 2. Suratul Shams	الوحدة الأولى : النثر القديم - ١ : القرآن الكريم (تفسير) ١ . سورة البلد ٢ . سورة الشمس
Unit – II : Classical Prose – II : Al Quran (Tafseer) Summary only 1. Suratul Lail 2. Suratul Duha	الوحدة الثانية : النثر القديم - ٢ : القرآن الكريم (تفسير) ١ . سورة الليل ٢ . سورة الضحى
Unit – III : Grammar – I : Al Nahwal Wazeh (Ibtadai Part I) : 1. Inna & its Sisters 2. Indicative mode of Mudhare 3. Subjunctive mood of Mudhare	الوحدة الثالثة : القواعد - ١ : النحو الواضح (الابتدائية – الجزء الأول) ١ . إن وأخواتها ٢ . رفع الفعل المضارع ٣ . نصب الفعل المضارع
Unit – IV : Grammar – II : Al Nahwal Wazeh (Ibtadai Part I) : 1. Jussive mood of Mudhare 2. Active Participles 3. Passive Participles	الوحدة الرابعة : القواعد - ٢ : النحو الواضح (الابتدائية – الجزء الأول) ١ . جزم الفعل المضارع ٢ . اسم الفاعل ٣ . اسم المفعول
Unit – V : Translation : 1. Al Arabiyatu Linnashiyeen - II from lesson 13 to 24.	الوحدة الخامسة : الترجمة : ١ . العربية للناشئين (الجزء الثاني) من الدرس الثالث عشر إلى الرابع والعشرين

Books Recommended :

1. Classical Prose – Al Quran – by any Tafseerul Quran.
2. Grammar – Al Nahwal Wazeh (Ibtadai) – I by Ali Jasim.
3. Al Arabiyatu Linnashiyeen.

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Osmania University, Hyderabad-500 007.

Title : Classical Prose, Grammar & Translation:

Unit – I : Classical Prose – I :

Al Quran (Tafseer)

1. Suratul Alaq
2. Suratul Teen

الوحدة الأولى : النثر القديم - ١ :

القرآن الكريم (تفسير)

- ١ . سورة العلق
- ٢ . سورة التين

Unit – II : Classical Prose – II :

Al Quran (Tafseer)

1. Suratul Inshirah
2. Suratul Ghashia

الوحدة الثانية : النثر القديم - ٢ :

القرآن الكريم (تفسير)

- ١ . سورة الإنشراح
- ٢ . سورة الغاشية

Unit – III : Grammar – I :

Al Nahwal Wazeh (Ibtadai Part I) :

1. Kinds of Kalima
2. Nominal Sentence
3. Verbal Sentence

الوحدة الثالثة : القواعد - ١ :

النحو الواضح (ابتدائية أول)

- ١ . تقسيم الكلمة
- ٢ . الجملة الاسمية
- ٣ . الجملة الفعلية

Unit – IV : Grammar – II :

Al Nahwal Wazeh (Ibtadai Part I) :

1. Past Tense
2. Present Tense
3. Kana Wa Aqawatuha

الوحدة الرابعة : القواعد - ٢ :

النحو الواضح (الابتدائية – الجزء الأول)

- ١ . الفعل الماضي
- ٢ . الفعل المضارع
- ٣ . كان وأخواتها

Unit – V : Translation :

1. Al Arabiyatu Linnashiyeen - II
from lesson 1 to 12.

الوحدة الخامسة : الترجمة :

١ . العربية للناشئين (الجزء الثاني)
من الدرس الأول إلى الدرس الثاني عشر

Books Recommended :

1. Classical Prose – Al Quran – by any Tafseerul Quran.
2. Grammar – Al Nahwal Wazeh (Ibtadai) – I by Ali Jasim.
3. Al Arabiyatu Linnashiyeen.

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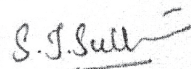
Professor Syeda Talath Sultana
CHAIRPERSON
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DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007.

Title : Classical Prose, Grammar & Translation :

Unit – I : Classical Prose – I : Kalilatu Wa Dimnah Chapter Babul Asad Wa Al Sour, from 1 to 8 paragraph only	الوحدة الأولى : النثر القديم - ١ : كليية ودمنة "باب الأسد والثور" من الفقرة الواحدة إلى الثامنة
Unit – II : Classical Prose – II : Kalilatu Wa Dimnah Chapter Babul Asad Wa Al Sour, from 9 to 15 paragraph only	الوحدة الثانية : النثر القديم - ٢ : كليية ودمنة "باب الأسد والثور" من الفقرة التاسعة إلى الخامسة عشرة
Unit – III : Grammar - I : Al Nahwal Wazeh (Ibtadai Part II) :	الوحدة الثالثة : القواعد - ١ : النحو الواضح (الابتدائية - الجزء الثاني)
١. تقسيم الفعل إلى صحيح الآخر ومعتل الآخر. ٢. المبني والمعرب. ٣. أحوال البناء للفعل الماضي. ٤. أحوال البناء للفعل المضارع.	
Unit – IV : Grammar - II : Al Nahwal Wazeh (Ibtadai Part II) :	الوحدة الرابعة : القواعد - ٢ : النحو الواضح (الابتدائية - الجزء الثاني)
١. أنواع الإعراب. ٢. تقسيم الجمع. ٣. الأسماء الخمسة وإعرابها.	
Unit – V : Translation : 1. Durusul Lught Al Arabia - II from lesson 11 to 20.	الوحدة الخامسة : الترجمة : ١. دروس اللغة العربية (الجزء الثاني) من الدرس الحادي عشر إلى العشرين

Books Recommended :

1. Classical Prose – Tafseerul Quran by any author.
2. Grammer – Al Nahwal Wazeh Ibtadai – I by Ali Jasim.
3. Translation – Durusul Lught Al Arabia – II by Dr. V. Abdur Rahim
4. Book Kalilatu Wa Dimnah by Ibn Al Muqaffa


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Title : Classical Prose, Grammar & Translation :

Unit – I : Classical Prose – I :

Kalilatu Wa Dimnah

Chapter Babul Asad Wa Al Sour,
from 16 to 20 paragraph only

الوحدة الأولى : النثر القديم - ١ :

كليلة ودمنة (عبد الله بن المقفع)

"باب الأسد والثور"

من الفقرة السادسة عشرة إلى العشرين

Unit – II : Classical Prose – II :

Kalilatu Wa Dimnah

Chapter Babul Asad Wa Al Sour,
from 21 to 25 paragraph only

الوحدة الثانية : النثر القديم - ٢ :

كليلة ودمنة (عبد الله بن المقفع)

"باب الأسد والثور"

من الفقرة الواحدة والعشرين إلى الخامسة والعشرين

Unit – III : Grammar - I :

Al Nahwal Wazeh (Ibtadai Part II) :

الوحدة الثالثة : القواعد - ١ :

النحو الواضح (الابتدائية - الجزء الثاني)

١. علامات التانيث في الأسماء
٢. علامات التانيث في الأفعال
٣. المفعول المطلق والمفعول لأجله
٤. نائب الفاعل

Unit – IV : Grammar - II :

Al Nahwal Wazeh (Ibtadai Part II) :

الوحدة الرابعة : القواعد - ٢ :

النحو الواضح (الابتدائية - الجزء الثاني)

١. الاسم الموصول
٢. الأفعال الخمسة
٣. ظرف الزمان والمكان
٤. المضاف والمضاف إليه

Unit – V : Translation :

1. Durusul Lught Al Arabia - II
from lesson 21 to 30.

الوحدة الخامسة : الترجمة :

١. دروس اللغة العربية (الجزء الثاني)
من الدرس الحادي والعشرين إلى الثلاثين

Books Recommended :

1. Classical Prose – Tafseerul Quran by any author.
2. Grammer – Al Nahwal Wazeh Ibtadai – I by Ali Jasim.
3. Translation – Durusul Lught Al Arabia – II by Dr. V. Abdur Rahim
4. Book Kalilatu Wa Dimnah by Ibn Al Muqaffa

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Osmania University, Hyderabad-500 007.

Title : Prose, Poetry & Translation :

Unit – I : Prose :

Al Mansoraat :

الوحدة الأولى : النثر :
المنثورات :

- ١ . الاعتراف بالنعمة – لمسلم بن الحجاج
- ٢ . شهادة من عدو – للبخاري
- ٣ . عمر رضي الله عنه في الحكم – الدميري

Unit – II : Poetry – I :

Muqtaratul Adab :

الوحدة الثانية : الشعر – ١ :
مختارات الأدب :

- ١ . الدنيا قتال – لأحمد شوقي
- ٢ . حسرة عالم – لحفني بك ناصف

Unit – III : Poetry – II :

Muqtaratul Adab :

الوحدة الثالثة : الشعر – ٢ :
مختارات الأدب :

- ١ . العلم والأخلاق – لحافظ إبراهيم
- ٢ . محاسن الفتاة – لباحثة البادية

Unit – IV : Translation – I :

1. Durusul Lught Al Arabia - III
from lesson 2 to 4.

الوحدة الرابعة : الترجمة – ١ :

١ . دروس اللغة العربية (الجزء الثالث)
من الدرس الثاني إلى الرابع

Unit – V : Translation – II :

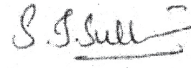
1. Durusul Lught Al Arabia - III
from lesson 5 to 6.

الوحدة الخامسة : الترجمة – ٢ :

١ . دروس اللغة العربية (الجزء الثالث)
من الدرس الخامس إلى السادس

Books Recommended :

1. Prose – Al Mansoraat by Mohd. Raba Hasani Al Nadvi.
2. Poetry – Muqtaratul Adab by Zaidan Badran.
3. Translation – Durusul Lught Al Arabia – III by Dr. V. Abdur Rahim


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Osmania University, Hyderabad-500 007.

Title : History, Grammar & Composition:

Unit – I : History of Arabic Literature : الوحدة الأولى : تاريخ الأدب العربي :
1. Tareeq-e- Adabiyat-e- Arabi ١. تاريخ أدبيات عربي
Complete Umayyad Period دور أموي مكم

Life History of Author / Poet

Unit – II : Grammar - I : الوحدة الثانية : القواعد – ١ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)

١. المبتدأ والخبر
٢. الفعل اللازم والفعل المتعدي
٣. اسم الفاعل واسم المفعول

Unit – III : Grammar - II : الوحدة الثالثة : القواعد – ٢ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)

١. الحال
٢. المنصرف وغير المنصرف
٣. العطف

Unit – IV : Grammar - III : الوحدة الرابعة : القواعد – ٣ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)

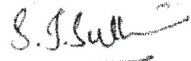
١. التوابع
٢. أدوات الاستفهام

Unit – V : Composition : الوحدة الخامسة : الإنشاء :
Arabic Articles : كتابة المقالات العربية

١. أهمية اللغة العربية
٢. أدب الأستاذ
٣. حب الوطن

Books Recommended :

1. History – History of Arabic Literature by Hasan Zayyat or Dr. Abul Fazal.
2. Grammar – Al Nahwal Wazeh by Ali Jasim.


Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
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Osmania University, Hyderabad-500 007.

Title : Prose, Poetry & Translation :

Unit – I : Prose :

Al Mansoraat Minal Adab Al Arabi :

الوحدة الأولى : النثر :

المنتورات من الأدب العربي (الجزء الثاني) :

لمحمد رابع الندوي

١. الشيخ أحمد السرهندي – لعبد الحى الحسني
٢. عمر بن عبد العزيز – لابن قتيبة الدينوري
٣. الكذب – لمصطفى لطفي المنفلوطي

Unit – II : Poetry – I :

Muqtaratul Adab (2 Poems only) :

الوحدة الثانية : الشعر – ١ :

مختارات الأدب (زيدان بدران) :

١. البننت – لأديب
٢. نهضة الشرق – لحافظ إبراهيم

Unit – III : Poetry – II :

Muqtaratul Adab (2 Poems only) :

الوحدة الثالثة : الشعر – ٢ :

مختارات الأدب (زيدان بدران) :

١. الشباب – لأحمد شوقي
٢. في الفخر – لبارودي

Unit – IV : Translation – I :

1. Durusul Lught Al Arabia - III
from lesson 7 to 8.

الوحدة الرابعة : الترجمة – ١ :

١. دروس اللغة العربية (الجزء الثالث)
من الدرس السابع إلى الثامن

Unit – V : Translation – II :

1. Durusul Lught Al Arabia - III
from lesson 9 to 11.

الوحدة الخامسة : الترجمة – ٢ :

١. دروس اللغة العربية (الجزء الثالث)
من الدرس التاسع إلى الحادي عشر

Books Recommended :

1. Prose – Al Mansoraat by Mohd. Raba Hasani Al Nadvi.
2. Poetry – Muqtaratul Adab by Zaidan Badran.
3. Translation – Durusul Lught Al Arabia – III by Dr. V. Abdur Rahim

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DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007

Title : History, Grammar & Composition:

Unit – I : History of Arabic Literature : الوحدة الأولى : تاريخ الأدب العربي :
1. Tareeq-e- Adabiyat-e- Arabi ١. تاريخ أدبيات عربي
(I & II Abbasi Period only) (دور عباسي – دور أول و دوم)

About the Abbasi Period only.
Life History of Poets & Authors

Unit – II : Grammar - I : الوحدة الثانية : القواعد – ١ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)
١. تقسيم الفعل إلى الصحيح والمعتل
٢. الضمير
٣. النعت

Unit – III : Grammar - II : الوحدة الثالثة : القواعد – ٢ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)
١. التوكيد
٢. المستثنى
٣. همزة الوصل والقطع

Unit – IV : Grammar - III : الوحدة الرابعة : القواعد – ٣ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)
١. الفعل المجرد والرباعي والمزيد فيه
٢. المنادى

Unit – V : Composition : الوحدة الخامسة : الإنشاء :
Arabic Articles (3 Essay) : كتابة المقالات العربية
١. حقوق الوالدين
٢. الرياضة البدنية
٣. الأخلاق زينة المرء

Books Recommended :

1. History – History of Arabic Literature by Hasan Zayyat or Dr. Abul Fazal.
2. Grammar – Al Nahwal Wazeh by Ali Jasim.

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Semester – I.

Unit – I : Classical Prose

- Lesson – 1 : Al Inshirah
2 : Al Teen

Unit – II : Modern Prose

- Lesson – 1 : Dialogues between two students who meet for the first time in the university.
2 : Cleanliness.

Unit – III : Poetry

- Poem – 1 : Lughati
2 : AL Qalam

Unit – IV : History of Arabic Literature.

- Lesson – 1 : Meezaath Al Lugha Al Arabia.
2 : Al Shair Wa Al Shoera fi Al Asr Al Jahili.
3 : Al Muallaqhaat Al Sabu
a – Imraul Qais
b – Tarfa
c – Zuhair Bin Abi Salma
d – Labeed Bin Rabiya
e – Amar Bin Kulsoom
f – Antarah
g – Haris Bin Halzah
4 : Al Khutab Wal Amsaal

Unit – V : Grammar

- Lesson – 1: Al Kalima Wa Aqsamuha
a – Ism
b – Fail
c - Harf
2 : Al Ism Wa Aqsamuha

S. J. Sultana

Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007.

KAKATIYA UNIVERSITY, WARANGAL. TS.
DEPARTMENT OF HINDI SYLLABUS
HINDI I SEMESTER

Unit I:	1. Utsaaha	Ramachandra shukla
	2. charitra ka sanghathan	'Babu gulaaba rai
	3. Bajaaara darshan	Jainendra kumar
	4. sadgati	Premchand (Katha Sindhu)
Unit II:	1. Bhaabhi	Mahaadevivarma
	2. Bharat mein sanskriti sangam	Ramdharisimha Dinakar
	3. Rashtra ka swaroop	Vasudeva sharan Agarwal
	4. chota jadugar	Jai Shankar Prasa (Katha Sindhu)
Unit III:	1. sach ka sauda	sudarshan (Katha Sindhu)
	2. Praaya chitt	Bhagavati charan varma (Katha Sindhu)
	3. Pardaa	Yashpal (Katha Sindhu)
	4. chief ki daavat	Bheeshma sahaani (Katha Sindhu)
Unit IV :	GRAMMER	
	1. Rewriting ofa sentences as directed based on Gender, Number, Tense, case and voice	
	2. correction of sentences	
	3. Usages of wordsa into sentences	
	4. official Hindi :	
	A. Administrative Terminology(Prashaasnika shabdavali) 100	
	B. Official Designationsa(Padnaam) 100 words	
	C. Translation ofa Hindi words into English	
	D. Trsanslation of English words into Hindi	

HINDI II SEMESTER

Unit I	1. Dharti ka swarg	Vishnu prabhakar
	2. Taayee	vishvambar nath Sharma` kaushik'
	3. And eke chilke	Mohan rakesh
	4. Dipty collectory	Amarkant (Katha Sindhu)
Unit II	1. Raajaneeti kaa bantwara	Hari Shankar parsai
	2. swaami Vivekananda	vamshidhar vidyalankar
	3. Paryaavaran aur Hum	Rajeeva garg
	4. Gadai Rangeya Raghav	(Katha Sindhu)
Unit III	1. Hansoo yaa roun	vinayaka rao vidyalankar (Katha Sindhu)
	2. Wapasi	Usha Priyamvada "
	3. seeva	Mamata kaaliya "
	4. Siliya	Susheels takbhore "
Unit IV :	Grammer	
	1. Sandhi vichched	
	2. Antonyms (vilom shabd)	
	3. Letter Writing : Persona! leeters, Official letters, Letter of complaints, Application for Appointment.	

Chairman
(Prof. Ch. Sanjeeva)
Chairman BOS Hindi
PK
31.10.16

Hindi I Semester, Model Paper

Time : 3 Hours

भाग - च

Marks = 80

1. किन्हीं चार (4) प्रश्नों का उत्तर दीजिए।

4x5=20

- उत्साह के भेद लिखिए।
- चरित्र में क्या क्या गुण आते हैं ?
- राष्ट्र का स्वरूप कैसा बनता है ?
- पंडित परमसुख ने क्या क्या मांगा ?
- चौधरी पीरबख्श अपनी इज्जत कैसे बचा लेता था ?
- छोटा जादूघर का स्वावलम्बन के उदाहरण दीजिए ।

भाग - च

निम्न लिखित प्रश्नों का उत्तर दीजिए ।

4x15=60

2. a) 'बाजार दर्शन' पाठ का सारांश अपने शब्दों में लिखिए
अथवा

15

b) उत्साह पाठ के विचारों पर अपने विचार प्रकट कीजिए।

3. a) 'भाभी' पाठ का सारांश लिखिए ।
अथवा

15

b) 'राष्ट्र का स्वरूप' पाठ का विवरण दीजिए।

4. a) सद्गति कहानी का सारांश लिखिए।
अथवा

15

b). चीफ की दावत कहानी पर अपने विचार व्यक्त कीजिए।

5. a) सूचना के अनुसार बदल कर लिखिए।

5x2=10

- वह काम कर रहा है। वचन बदल कर लिखिए।
- मोर नाचता है लिंग बदल कर लिखिए।
- जगन भोजन कर रहा है। पून भूत काल में लिखिए।
- शक्ति प्रदान कीजिए। सम्बोधन जोड़कर लिखिए।
- मैं गीत लिखता हूँ। वाच्य बदल कर लिखिए।

b) शुद्ध कीजिए

5x1=5

- राधा ने आम खायी ।
- बद बू आता है।

3. में ने दो रूपया दिया। 4. राम का भाषा अच्छी है।
5. उसने क्या बोला।

अथवा

- a) निम्न लिखित शब्दों को वाक्यों में प्रयोग कीजिए। 5x1=5
1. लालच, 2. धृति, 3. असबाब, 4. काठ, 5. अर्वाचीन
- b) निम्न लिखित हिन्दी प्रशानिक शब्दों को अंग्रेजी में अनुवाद कीजिए। 5x1=5
1. प्रशासन, 2. परिपत्र, 3. गोपनीय, 4. अग्रेषण, 5. अनुदान
- c) निम्न लिखित अंग्रेजी पदनामों को हिन्दी में अनुवाद कीजिए। 5x1=5
1. chairman, 2. Director, 3. Auditor,
4. vigilance officer, 5. Accountant

Sanjeena
(Prof. Dr. Sanjeena)
Chairman BOS Hindi)

Kakatiya University, Warangal
CBCS Pattern of BA., B.Sc., & B.Com
Syllabus
తెలుగు - ద్వితీయ భాష

I Semester

Unit -I (ప్రాచీన కవిత్వం)

- | | | | |
|----|-----------------|---|----------------------|
| 1. | శకుంతలోపాఖ్యానం | - | నన్నయ |
| 2. | గొడగూచి | - | పాల్కురికి సోమనాథుడు |
| 3. | త్యాగ నిరతి | - | కొరవి గోపరాజు |
| 4. | గజేంద్ర మోక్షము | - | బమ్మెర పోతన |

Unit -II (ఆధునిక కవిత్వం)


- | | | | |
|----|------------|---|--------------------|
| 1. | కాసులు | - | గురజాడ అప్పారావు |
| 2. | రాజు-కవి | - | డా॥ గుణ్ణం జాషువా |
| 3. | గంగిరెద్దు | - | డా॥ పల్లా దుర్గయ్య |
| 4. | జయభేరి | - | శ్రీశ్రీ |

Unit -III (వచన విభాగం)

- | | | | |
|----|------------------|---|--------------------------|
| 1. | యుగాంతం (కథానిక) | - | నెల్లూరి కేశవస్వామి |
| 2. | ఎంకన్న (కథానిక) | - | ఆచార్య పాకాల యశోదారెడ్డి |

Unit -IV (భాషా విభాగం)

- | | |
|----|---------|
| 1. | సంధులు |
| 2. | సమాసాలు |


19/5/16 19/5/16 19/5/16

19/5/16

B.A., B. Sc & B.Com FIRST YEAR -2016-2017
URDU SECOND LANGUAGE
“MUTALA – E – ADAB” (PART – I)
(compiled by Urdu Department, Osmania University. Hyd.)
Published in August 2008 by Urdu Academy – Hyderabad.

SEMESTER : I

PAPER – I

URDU PROSE & POETRY

UNIT: I

GHAZALS: Selected two Ghazals of every poet like Quli Qutub Shah – Wali Deccani – Siraj Aurangabadi – Meer Taqi Meer.

- | | |
|----------------------|--|
| 1. QULI QUTUB SHAH | 1. Suno Aaqilan Sab Ke Dunai Hai Fani. |
| | 2. Meri Sanwli manki piyari dise. |
| 2. WALI DECCANI | 1. Pi ke hote Na Kar Too Mah Ki Sana. |
| | 2. Sajjan ke bad Aalam mein Dagar nain. |
| 3. SIRAJ AURANGABADI | 1. Mujhku Ek dam kharar Nain Hargis. |
| | 2. Jo Tere gham ki Tamanna Na Kiya. |
| 4. MEER TAQI MEER | 1. Koei Nahin Jahan Mein Jo Andhogein nahin. |
| | 2. Hum se tuk Aage Zaman-e-mein Huwa Kya Kya Kuch. |

UNIT: II

POETRY:

- | | |
|------------------------|-----------------------|
| 1. TAWHEED | By Nazeer Akbarabadi. |
| 2. MUSTAQBIL | By Akber Allahabadi. |
| 3. FUNOON – E – LATIFA | By Allama Iqbal. |
| 4. BAARISH | By Zafar Ali khan. |

UNIT: III

HIKAYAAT : By Mazhar Ali Vila – Chand Muntaqab Hikayat.

UNIT: IV

DRAMA: By Imtiaz Ali Taaj & Begum Qudisia Zaida– Talash.

UNIT: V

SAFARNAMA: By Saleha Abed Hussain – Hindustan Jannat Nishan.

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

B.Sc. (Physics)- I Year

Semester – I

Paper – I:: Mechanics

Total: 48 hrs
(4 Hrs / week)

Unit – I

1. Vector Analysis (12)

Scalar and Vector fields, Gradient of a Scalar field and its physical significance. Divergence and Curl of a Vector field and related problems. Vector integration, line, surface and volume integrals. Stokes', Gauss's and Green's theorems- simple applications.

Unit – II

2. Mechanics of Particles (6)

Laws of motion, motion of variable mass system, motion of a rocket, multi-stage rocket, conservation of energy and momentum. Collisions in two and three dimensions, concept of impact parameter, scattering cross-section.

3. Mechanics of Rigid Bodies (6)

Definition of Rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum and inertial tensor. Euler's equation, precession of a top, Gyroscope.

Unit – III

4. Central Forces (12)

Central forces – definition and examples, conservative nature of central forces, conservative force as a negative gradient of potential energy, equation of motion under a central force, gravitational potential and gravitational field, motion under inverse square law, derivation of Kepler's laws, Coriolis force and its expressions.

Unit – IV

5. Special theory of Relativity (12)

Galilean relativity, absolute frames, Michelson-Morley experiment, Postulates of special theory of relativity. Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation. Concept of four vector formalism.

Note: Problems should be solved at the end of every chapter of all units.

Suggested Books

1. Berkeley Physics Course. Vol.1, **Mechanics** by C. Kittel, W. Knight, M.A. Ruderman - *Tata-McGraw hill Company Edition 2008.*
2. **Fundamentals of Physics.** Halliday/Resnick/Walker *Wiley India Edition 2007.*
3. **First Year Physics - Telugu Academy.**
4. **Introduction to Physics for Scientists and Engineers.** F.J. Ruche. *McGraw Hill.*
5. **Fundamentals of Physics** by Alan Giambattista et al *Tata-McGraw Hill Company Edition, 2008.*
6. **University Physics** by Young and Freeman, *Pearson Education, Edition 2005.*



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal

CBCS pattern in Semester System (w. e. from 2016-2017)

7. **Sears and Zemansky's University Physics** by Hugh D. Young, Roger A. Freedman *Pearson Education Eleventh Edition.*
8. **An introduction to Mechanics** by Daniel Kleppner & Robert Kolenkow. *The McGraw Hill Companies.*
9. **Mechanics.** Hans & Puri. *TMH Publications.*
10. **Engineering Physics.** R.K. Gaur & S.L. Gupta. *Dhanpat Rai Publications.*
11. **The Feynman Lectures in Physics, Vol.-1,** R P Feynman, RB Lighton and M Sands, BI Publications,
12. **Mechanics-P.K.** Srivastava - New Age International.

B.Sc. (Physics Practicals) – I year

Semester - I

Paper – I:: Mechanics Practicals

1. Measurement of errors –simple Pendulum.
2. Calculation of slope and intercept of a $Y = mX + C$ graph by theoretical method (simple pendulum experiment)
3. Study of a compound pendulum- determination of 'g' and 'k'.
4. Y' by uniform Bending
5. Y by Non-uniform Bending.
6. Moment of Inertia of a fly wheel.
7. Rigidity moduli by torsion Pendulum.
8. Determine surface tension of a liquid through capillary rise method.
9. Determination of Surface Tension of a liquid by any other method.
10. Determine of Viscosity of a fluid.

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastava.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

DSC-1A
BS:104

DIFFERENTIAL CALCULUS

Theory: 4 credits and Practicals: 1 credit
Theory: 4 hours/week and Practicals: 2 hours/week

Objective: the course is aimed at exposing the students to some basic notions in differential calculus.

Outcome: by the time students complete the course they realize wide ranging applications of the subject.

Unit – I

Successive differentiation:

Higher order derivatives, Calculation of the n th derivative, Some standard results, Determination of n th derivative of rational functions, The n th derivatives of the products of the powers of sines and cosines, Leibnitz's theorem, The n th derivative of the product of two functions.

Expansion of Functions:

Maclaurin's theorem, Taylor's theorem.

Mean Value Theorems:

Rolle's theorem, Lagrange's mean value theorem, Meaning of the sign of derivative, Graphs of hyperbolic functions, Cauchy's mean value theorem, Higher derivatives, Formal expansions of functions.

Unit – II

Indeterminate Forms:

Indeterminate forms, The indeterminate form $0/0$, The indeterminate form ∞/∞ , The indeterminate form $0 \cdot \infty$, The indeterminate form $\infty - \infty$, The indeterminate forms 0^0 , 1^∞ , ∞^0 .

Curvature and Evolutes:

Introduction, Definition of curvature, Length of arc as a function, Derivative of arc, Radius of curvature-cartesian equations, Newtonian method, Centre of curvature, Chord of curvature, Evolutes and involutes, Properties of the evolute.

Unit – III

Partial Differentiation – Homogeneous Functions – Total Derivative:

Introduction, Functions of two variables, Neighbourhood of a point (a, b) , Continuity of a Function of two variables, continuity at a point, Limit of a function of two variables, Partial derivatives, Geometrical representation of a function of two variables, Homogeneous functions, Theorem on total differentials; composite functions; differentiation of composite functions; implicit functions.

Unit – IV

Maxima and Minima:

Maxima and minima of function of two variables, Lagrange's method of undetermined multipliers.

Asymptotes:

Definition, Determination of asymptotes, Working rules of determining asymptotes, Asymptotes by inspection, Intersection of a curve and its asymptotes, Asymptotes by expansion, Position of a curve with respect to an asymptote, Asymptotes in polar co-ordinates.

Envelopes:

One parameter family of curves, Consider the family of straight lines, Definition, Determination of envelope, Theorem, To prove that, in general, the envelope of a family of curves touches each member of the family, If A, B, C are functions of x and y and m is a parameter then the envelope of $Am^2+Bm+C = 0$ is $B^2 = 4AC$, Two parameters connected by a relation, When the equation to a family of curves is not given, but the law is given in accordance with which any member of the family can be determined, Envelopes of polar curves, Envelopes of normals(Evolutes).

Text: Shanti Narayan and Mittal, Differential Calculus

References: William Anthony Granville, Percy F Smith and William Raymond Longley, Elements of the Differential and integral calculus

Joseph Edwards, Differential calculus for beginners

Smith and Minton, Calculus

Elis Pine, How to Enjoy Calculus

Hari Kishan, Differential Calculus

2.1.1 Practicals Question Bank

Differential Calculus

Unit-I

1. If $u = \tan^{-1} x$ prove that

$$(1 + x^2) \frac{d^2u}{dx^2} + 2x \frac{du}{dx} = 0$$

and hence determine the values of the derivatives of u when $x = 0$.

2. If $y = \sin(m \sin^{-1} x)$ show that

$$(1 - x^2)y_{n+2} = (2n + 1)xy_{n+1} + (n^2 - m^2)y_n$$

and find $y_n(0)$

3. If U_n denotes the n th derivative of $\frac{Lx+M}{x^2-2Bx+C}$, prove

$$\frac{x^2 - 2Bx + C}{(n+1)(n+2)} U_{n+2} + \frac{2(x-B)}{n+1} U_{n+1} + U_n = 0$$

4. If $y = x^2 e^x$, then

$$\frac{d^n y}{dx^n} = \frac{1}{2} n(n-1) \frac{d^2 y}{dx^2} - n(n-2) \frac{dy}{dx} + \frac{1}{2} (n-1)(n-2)y.$$

5. Determine the intervals in which the function

$$(x^4 + 6x^3 + 17x^2 + 32x + 32)e^{-x}$$

is increasing or decreasing.

6. Separate the intervals in which the function

$$\frac{(x^2 + x + 1)}{(x^2 - x + 1)}$$

is increasing or decreasing.

7. Show that if $x > 0$,

$$(i) \quad x - \frac{x^2}{2} < \log(1+x) < x - \frac{x^2}{2(1+x)}.$$

$$(ii) \quad x - \frac{x^2}{2} + \frac{x^3}{3(1+x)} < \log(1+x) < x - \frac{x^2}{2} + \frac{x^3}{3}.$$

8. Prove that

$$e^{ax} \sin bx = bx + abx^2 + \frac{3a^2b - b^3}{3!} x^3 + \dots + \frac{(a^2 + b^2)^{\frac{1}{2}n}}{n!} x^n \sin(n \tan^{-1} \frac{b}{a}) + \dots$$

9. Show that

$$\cos^2 x = 1 - x^2 + \frac{1}{3}x^4 - \frac{2}{45}x^6 \dots\dots\dots$$

10. Show that

$$e^{m \tan^{-1} x} = 1 + mx + \frac{m^2}{2!}x^2 + \frac{m(m^2 - 2)}{3!}x^3 + \frac{m^2(m^2 - 8)}{4!}x^4 + \dots$$

Unit-II

11. Find the radius of curvature at any point on the curves

(i) $y = c \cosh\left(\frac{x}{c}\right)$. (Catenary)

(ii) $x = a(\cos t + t \sin t), y = a(\sin t - t \cos t)$.

(iii) $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$. (Astroid)

(iv) $x = \frac{(a \cos t)}{t}, y = \frac{(a \sin t)}{t}$.

12. Show that for the curve

$$x = a \cos \theta(1 + \sin \theta), y = a \sin \theta(1 + \cos \theta),$$

the radius of curvature is a at the point for which the value of the parameter is $\frac{-\pi}{4}$.

13. Prove that the radius of curvature at the point $(-2a, 2a)$ on the curve $x^2y = a(x^2 + y^2)$ is $-2a$.

14. Show that the radii of curvature of the curve

$$x = ae^{\theta}(\sin \theta - \cos \theta), y = ae^{\theta}(\sin \theta + \cos \theta)$$

and its evolute at corresponding points are equal.

15. Show that the whole length of the evolute of the ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

is $4\left(\frac{a^2}{b} - \frac{b^2}{a}\right)$.

16. Show that the whole length of the evolute of the astroid

$$x = a \cos^3 \theta, y = a \sin^3 \theta$$

is $12a$

17. Evaluate the following:

(i) $\lim_{x \rightarrow 0} \frac{xe^x - \log(1+x)}{x^2}$

(ii) $\lim_{x \rightarrow 0} \frac{x \cos x - \log(1+x)}{x^2}$

(iii) $\lim_{x \rightarrow 0} \frac{e^x \sin x - x - x^2}{x^2 + x \log(1-x)}$

(iv) $\lim_{x \rightarrow 0} \left\{ \frac{1}{x} - \frac{1}{x^2} \log(1+x) \right\}$

18. If the limit of

$$\frac{\sin 2x + a \sin x}{x^8}$$

as x tends to zero, be finite, find the value of a and the limit.

19. Determine the limits of the following functions:

(i) $x \log(\tan x), (x \rightarrow 0)$

(ii) $x \tan(\pi/2 - x), (x \rightarrow 0)$

(iii) $(a - x) \tan(\pi x/2a), (x \rightarrow 0)$

20. Determine the limits of the following functions:

(i) $\frac{e^x - e^{-x} - x}{x^2 \sin x}, (x \rightarrow 0)$

(ii) $\frac{\log x}{x^3}, (x \rightarrow \infty)$

(iii) $\frac{1+x \cos x - \cosh x - \log(1+x)}{\tan x - x}, (x \rightarrow 0)$

(iv) $\frac{\log(1+x) \log(1-x) - \log(1-x^2)}{x^4}, (x \rightarrow 0)$

Unit-III

21. If $z = xyf(x/y)$ then show that

$$x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} = 2z$$

22. If $z(x+y) = x^2 + y^2$ then show that

$$\left(\frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \right)^2 = 4 \left(1 - \frac{\partial z}{\partial x} - \frac{\partial z}{\partial y} \right)$$

23. If $z = 3xy - y^3 + (y^2 - 2x)^{\frac{3}{2}}$, verify that

$$\frac{\partial^2 z}{\partial x \partial y} = \frac{\partial^2 z}{\partial y \partial x} \quad \text{and} \quad \frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial y^2} = \left(\frac{\partial^2 z}{\partial x \partial y} \right)^2$$

24. If $z = f(x+ay) + \varphi(x-ay)$, prove that

$$\frac{\partial^2 z}{\partial y^2} = a^2 \frac{\partial^2 z}{\partial x^2}.$$

25. If $u = \tan^{-1} \left(\frac{x^3+y^3}{x-y} \right)$, find

$$x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2}.$$

26. If $f(x, y) = 0, \varphi(y, z) = 0$, show that

$$\frac{\partial f}{\partial y} \cdot \frac{\partial \varphi}{\partial z} \cdot \frac{dz}{dx} = \frac{\partial f}{\partial x} \cdot \frac{\partial \varphi}{\partial y}.$$

27. If $x\sqrt{1-y^2} + y\sqrt{1-x^2} = a$, show that

$$\frac{d^2 y}{dx^2} = \frac{a}{(1-x^2)^{\frac{3}{2}}}.$$

28. Given that $f(x, y) \equiv x^3 + y^3 - 3axy = 0$, show that

$$\frac{d^2 y}{dx^2} \cdot \frac{d^2 x}{dy^2} = \frac{4a^6}{xy(xy - 2a^2)^3}.$$

29. If u and v are functions of x and y defined by

$$x = u + e^{-v} \sin u, y = v + e^{-v} \cos u,$$

prove that

$$\frac{\partial u}{\partial y} = \frac{\partial v}{\partial x}.$$

30. If $H = f(y - z, z - x, x - y)$; prove that,

$$\frac{\partial H}{\partial x} + \frac{\partial H}{\partial y} + \frac{\partial H}{\partial z} = 0.$$

Unit-IV

31. Find the minimum value of $x^2 + y^2 + z^2$ when

(i) $x + y + z = 3a$

(ii) $xy + yz + zx = 3a^2$

(iii) $xyz = a^3$

32. Find the extreme value of xy when

$$x^2 + xy + y^2 = a^2.$$

33. In a plane triangle, find the maximum value of

$$\cos A \cos B \cos C.$$

34. Find the envelope of the family of semi-cubical parabolas

$$y^2 - (x + a)^3 = 0.$$

35. Find the envelope of the family of ellipses

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

where the parameters a, b are connected by the relation

$$a + b = c;$$

c , being a constant.

36. Show that the envelope of a circle whose centre lies on the parabola $y^2 = 4ax$ and which passes through its vertex is the cissoid

$$y^2(2a + x) + x^3 = 0.$$

37. Find the envelope of the family of the straight lines $\frac{x}{a} + \frac{y}{b} = 1$ where a, b are connected by the relation

(i) $a + b = c$.

(ii) $a^2 + b^2 = c^2$.

(iii) $ab = c^2$.

c is a constant.

38. Find the asymptotes of

$$x^3 + 4x^2y + 4xy^2 + 5x^2 + 15xy + 10y^2 - 2y + 1 = 0.$$

39. Find the asymptotes of

$$y^3 + x^3 + y^2 + x^2 - x + 1 = 0.$$

40. Find the asymptotes of the following curves

(i) $xy(x + y) = a(x^2 - a^2)$

(ii) $y^3 - x^3 + y^2 + x^2 + y - x + 1 = 0$.

B.Sc I yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER I
Paper – I
Chemistry - I

Unit-I (Inorganic Chemistry)

15h (1 hr/week)

S1-I-1.s-block elements:

General Characteristics of groups I and II elements, Diagonal relationship between Li and Mg, Be and Al **2 h**

S1-I-2. p-block elements 1:

7 h

Group-13: Synthesis and structure of diborane and higher Boranes (B_4H_{10} and B_5H_9), Boron nitrogen compounds ($B_3N_3H_6$ and BN), Lewis acid nature of BX_3

Group – 14: Carbides-Classification – ionic, covalent, interstitial – synthesis. Structures and reactivity. Industrial application. Silicones – Preparation – a) direct silicon process b) use of Grignard reagent c) aromatic silylation. Classification – straight chain, cyclic and cross-linked.

Group – 15: Nitrides – Classification – ionic, covalent and interstitial. Reactivity – hydrolysis. Preparation and reactions of hydrazine, hydroxyl amine, phosphazenes.

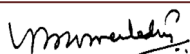
S1-I-3. General Principles of Inorganic qualitative analysis

6 h

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions- CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , PO_4^{3-} , BO_3^{3-} , CH_3COO^- , NO_3^- .

Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+} , Ag^+ , Pb^+) with flow chart and chemical equations. Principle involved in separation of group II & IV cations.

General discussion for the separation and identification of group II (Hg^{2+} , Pb^{2+} , Bi^{3+} , Cd^{2+} , Sb^{2+}), III (Al^{3+} , Fe^{3+}), IV (Mn^{2+} , Zn^{2+}) individual cations with flow chart and chemical equations. Application of concept of hydrolysis in group V cation analysis. General discussion for the separation and identification of group V individual cations (Ba^{2+} , Sr^{2+} , Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+} , NH_4^+).



Dean



Prof. Gade Dayakar, Chairperson, BOS in Chemistry, KU,

Page 3

Unit - II (Organic Chemistry)

15h (1 hr/week)

S1-O-1: Structural Theory in Organic Chemistry

6 h

Bond polarization: Factors influencing the polarization of covalent bonds, electro negativity – inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance -Mesomeric effect, application to (a) acidity of phenol. (b) acidity of carboxylic acids and basicity of anilines. Stability of carbo cations, carbanions and free radicals. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes.

Types of organic reactions: Addition reactions- electrophilic, nucleophilic and free radical. Substitution reactions – electrophilic, nucleophilic and free radical. Elimination and Rearrangement reactions– Examples.

S1-O-2: Acyclic Hydrocarbons

6 h

Alkanes– Methods of preparation: Corey-House reaction, Wurtz reaction, from Grignard reagent, Kolbe synthesis. Chemical reactivity - inert nature, free radical substitution, Halogenation example- reactivity, selectivity and orientation.

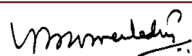
Alkenes - Preparation of alkenes (with mechanism) (a) by dehydration of alcohols (b) dehydrohalogenation of alkyl halides (c) by dehalogenation of 1,2dihalides, Zaitsev's rule. Properties: Addition of Hydrogen – heat of hydrogenation and stability of alkenes. trans-addition of halogen and its mechanism. Addition of HX, Markonikov's rule, addition of H₂O, HOX, H₂SO₄ with mechanism and addition of HBr in the presence of peroxide (anti – Markonikov's addition). Oxidation (cis – additions) – hydroxylation by KMnO₄, OsO₄, trans addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes – Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Acidity of terminal alkynes (formation of metal acetylides) preparation of higher alkynes, Chemical reactivity – electrophilic addition of X₂, HX, H₂O (tautomerism), Oxidation (formation of enediol, 1,2diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation)

S1-O-3: Alicyclic Hydrocarbons

3 h

Nomenclature, preparation by Freund's method, Dickmann, heating dicarboxylic metal salts. Properties – reactivity of cyclo propane and cyclo butane by comparing with alkanes. Stability of cycloalkanes – Baeyer strain theory, Sachse and Mohr predictions and Pitzer strain theory. Conformational structures of cyclopentane, cyclohexane.



Dean



Prof. Gade Dayakar, Chairperson, BOS in Chemistry, KU,

Page 4

Unit-III (Physical Chemistry)**15 h (1 hr/week)****S1-P-1: Atomic structure and elementary quantum mechanics****6 h**

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect, Limitations of classical mechanics, Compton effect, De Broglie's hypothesis. Heisenberg's uncertainty principle, Schrodinger's wave equation and its importance. Physical interpretation of the wave function, significance of ψ and ψ^2 , a particle in a box, energy levels, wave functions and probability densities. Schrodinger wave equation for H-atom. Separation of variables, radial and angular functions (only equation), hydrogen like wave functions, quantum numbers and their importance.

S1-P-2: Gaseous State**5 h**

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO₂. The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquefaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State**4 h**

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only). Liquid crystals, the mesomorphic state: Classification of liquid crystals into Smectic and Nematic, differences between liquid crystal and solid / liquid. Application of liquid crystals as LCD devices.

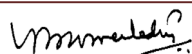
Unit – IV (General Chemistry)**15 h (1 hr/week)****S1-G-1 Chemical Bonding****11 h**

Ionic solids- lattice and solvation energy, solubility of ionic solids, Fajan's rule, polarity and polarizability of ions, covalent nature of ionic bond, covalent bond - Common hybridization and shapes of molecules.

Molecular orbital theory: Shapes and sign convention of atomic orbitals. Modes of overlapping. Concept of σ and π bonds. Criteria for orbital overlap. LCAO concept. Types of molecular orbitals- bonding, antibonding and non bonding. MOED of homonuclear diatomics - H₂, N₂, O₂, O₂⁻, O₂²⁻, F₂ (unhybridized diagrams only) and heteronuclear diatomics CO, CN⁻, NO, NO⁺ and HF. Bond order, stability and magnetic properties.

S1-G-2 Evaluation of analytical data**4 h**

Significant figures, accuracy and precision. Errors-classification of errors- determinate and indeterminate errors, absolute and relative errors, propagation of errors in mathematical operations – addition, subtraction, division and multiplication (with respect to determinate errors).



Dean



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Page 5

References:

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rdedn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L.Gaus 3rdedn Wiley Publishers 2001.Chem.
4. Vogel's Qualitative Inorganic Analysis by Svehla
5. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4thedn.
6. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
7. Inorganic Chemistry by Shriver and Atkins 3rdedn Oxford Press 1999.
8. Qualitative analysis by Welcher and Hahn.
9. Textbook of Inorganic Chemistry by R Gopalan
10. College Practical chemistry by V K Ahluwalia, SunithaDhingra and Adarsh Gulati

Unit- II

1. Text book of organic chemistry by Morrison and Boyd.
2. Text book of organic chemistry by Graham Solomons.
3. Text book of organic chemistry by Bruice Yuranis Powla.
4. Text book of organic chemistry by Soni.
5. General Organic chemistry by Sachin Kumar Ghosh.
6. Text book of organic chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry by Lewis Glasstone.

Unit IV

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rdedn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L.Gaus 3rdedn Wiley Publishers 2001.Chem
4. Analytical chemistry by G. L. David Krupadanam, D. Vijaya Prasad, K. Varaprasada Rao, K.L.N. Reddy and C. Sudhakar

Uncommented?

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Page 6

Laboratory Course

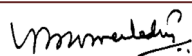
45h (3 h / week)

Paper I Qualitative Analysis - I

I. Preparations:

1. Tetrammine copper (II) sulphate,
2. Potash alum $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$,
3. Bis (dimethylglyoximato) nickel(II)

II. Analysis of two anions (one simple and one interfering)



Dean



Prof. Gade Dayakar, Chairperson, BOS in Chemistry, KU,

Page 7

B.Sc. with Computer Science Syllabus

I Semester, DSC 1A

Object Oriented Programming with C++

Unit I

Algorithm and its characteristics, pseudo code / flow chart, program.

Object Oriented Programming: Introduction, Generation of programming Languages, Programming Paradigms, Features of Object Oriented Programming, Merits and Demerits of Object Oriented Programming Language.

Basics of C++ Programming: Introduction, History, Structure, Writing the First C++ Program, Files used in a C++ Program, Compiling and Executing, Using Comments, Tokens, Characters Set, Keywords, Identifier, Data Types, Variables, Constants, Input and Output, Statements, Operators, Type Conversion and Type Casting,

Decision Control and Looping Statements: Introduction to Decision Control Statements, Conditional Branching Statements, Iterative Statements, Nested Loops, Break Statement, Continue Statement, Goto Statement, Avoiding Usage of Break, Continue, and Goto Statements

Unit II

Functions: Introduction, Need for Functions, Using Functions, Function Declaration or function, Prototype, Function Definition, Function Call, Return Statement, Passing Parameters to the Function, Default Arguments, Return by Reference, Passing Constants as Arguments, Variables Scope, Storage Classes, Inline Functions, Function Overloading, Recursive Functions, Recursion Versus Iteration, Function with Variable Number of Arguments

Arrays: Introduction, Declaration of Arrays, Accessing Elements of the Array, Storing Values in Arrays, Calculating the Length of Array, Operations that can be Performed on Arrays, One Dimensional Arrays for Inter Function Communication, Two Dimensional Arrays, Multi Dimensional Arrays,

Pointers: Defining Pointers, Declaring Pointer Variables, Pointer Expressions and Pointer Arithmetic, Null Pointers, Generic Pointers, Passing Arguments to Function Using Pointer, Pointer and Arrays, Passing Array to Function, Differences Between Array Name and Pointer, Pointer to function, Arrays of Function Pointers, Memory Allocation in C++, Dynamic Memory Allocation,

Unit III

Structure, Union, and Enumerated Data Types: Structure Declaration, Typedef Declaration, Initialization the Structures, Accessing the Members of a Structures, Union, Union Inside Structures, Enumerated Data Types.

B.Sc. with Computer Science Syllabus

Classes and Objects : Specifying a Class, Creating Objects, Accessing Object Members, Nested Member Functions, Making a Member Function Inline, Memory Allocation for Class and Objects, Returning Objects, this Pointer, Constant Parameters and Members, Pointers within a Class, Local Classes, Nested Classes in C++, Empty Classes, Friend Function, Friend Class, Bit-Field in Classes, Pointers and Class Members.

Constructors and Destructors: Constructor, Types of Constructors, Constructor with Default Arguments, Constructor Overloading, Destructors.

Unit IV

Operator overloading and Type Conversions : Scope of Operator Overloading, Syntax for Operator Overloading, Operators that can and cannot be Overloaded, Implementing Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Special Operators, Type Conversions.

Inheritance and Run-Time Polymorphism : Defining Derived Classes, Access Specifiers, Type of Inheritance, Single Inheritance, Constructors and Destructors in Derived Classes, Multi level Inheritance, Constructor in Multi Level Inheritance, Multiple Inheritance, Constructor and Destructor in Multiple Inheritance, Ambiguity in Multiple Inheritance, Hierarchical Inheritance, Constructors and Destructors in Hierarchical Inheritance, Hybrid Inheritance, Multi-path Inheritance, Virtual Base Classes, Object Slicing, Pointer to Derived Class, Run time Polymorphism, Virtual Functions, Pure Virtual Functions, Abstract Base Classes, Concept of Vtables, Virtual Constructor and Destructor.

Templates: Introduction, Use of templates, Function templates, Class templates.

Text Book:

1. Reema Thareja “Object Oriented Programming with C++” Oxford university Press, 2015

Recommended Books

1. E. Balagurusamy “Object Oriented Programming with C++” TMH, 6th edition, 2013.
2. Richard Johnson, *An Introduction to Object-Oriented Application Development*, Thomson Learning, 2006
3. B. Stroustrup, *The C++ Programming Language*, Addison Wesley, 2004.
4. Spoken Tutorial on “C++” as E-resource for Learning:- <http://spoken-tutorial.org>

B.Sc. with Computer Science Syllabus

Practical: Object Oriented Programming with C++

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

- 1) Write a program to test Arithmetic operators.
- 2) Write a program to Swap two numbers.
- 3) Write a program to demonstrate Switch statement.
- 4) Write a program to find roots of a quadratic equation.
- 5) Write a program to check whether the given number is palindrome or not.
- 6) Write a program to convert binary number to decimal number.
- 7) Write a program to print the following format.

1			
2	3		
4	5	6	
7	8	9	10
- 8) Write a program to search an element in a given list.
- 9) Write a program to perform addition of two Matrices.
- 10) Write a program to perform multiplication of two Matrices.
- 11) Write a program to find factorial of a given number using recursion.
- 12) Write a program to demonstrate Pointer arithmetic
- 13) Write a program to demonstrate Call-By-Value, Call-By-Address, Call-By-Reference.

B.Sc. with Computer Science Syllabus

- 14) Write a program to demonstrate Structure data type.
- 15) Write a program to demonstrate Enumerated data type.
- 16) Write a program to demonstrate inline functions.
- 17) Write a program to demonstrate Function Overloading.
- 18) Write a c++ program to demonstrate Class concept.
- 19) Write a c++ program on Constructor overloading.
- 20) Write a c++ program on Destructor.
- 21) Write a c++ program for copy constructor.
- 22) Write a c++ program to demonstrate Friend function.
- 23) Write a c++ program for Unary operator overloading (Friend function/Member function).
- 24) Write a c++ program for Binary operator overloading (Friend function/Member function).
- 25) Write a c++ program for Member Function overloading within a class
- 26) Write a c++ program for Single and Multilevel Inheritance.
- 27) Write a c++ program for Overriding of member functions.
- 28) Write a c++ program to demonstrate constructor calling mechanism in inheritance.
- 29) Write a c++ program for Multiple and Hybrid inheritance.
- 30) Write a c++ program to demonstrate pure virtual function implementation.

B.Sc (CBCS) Botany- I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants

DSC - 1A (4 hrs./week)

Theory Syllabus

Credits- 4
(60 hours)

UNIT - I

1. Brief account of Archaeobacteria, Actinomycetes. (4h)
2. Cyanobacteria: General characters, cell structure, thallus organisation and their significance as biofertilizers with special reference to *Oscillatoria*, *Nostoc* and *Anabaena*. (6h)
3. Lichens: Structure and reproduction; ecological and economic importance. (5h)

UNIT- II

4. Viruses: Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro. (7h)
- 5.. Bacteria: Structure, nutrition, reproduction and economic importance. An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice. (8h)
6. General account of Mycoplasma with reference to Little leaf of brinjal and Papaya leaf curl

UNIT-III

7. General characters, structure, reproduction and classification of algae (Fritsch) and thallus organization in algae. (3h)
8. Structure and reproduction of the following:
Chlorophyceae- *Volvox*, *Oedogonium* and *Chara*. (5h)
Phaeophyceae- *Ectocarpus* (2h)
Rhodophyceae- *Polysiphonia*. (3h)
9. Economic importance of algae in Agriculture and Industry. (2h)

UNIT-IV

10. General characters and classification of fungi (Ainsworth). (3h)
11. Structure and reproduction of the following:
(a) Mastigomycotina- *Albugo*
(b) Zygomycotina- *Mucor*
(c) Ascomycotina- *Saccharomyces* and *Penicillium*.
(d) Basidiomycotina- *Puccinia*
(e) Deuteromycotina- *Cercospora*. (10h)
12. Economic importance of fungi in relation to mycorrhizae and mushrooms. General account of mushroom cultivation (2h)

Soyus
A. C. e.

M. L. M.

References:

1. Alexopolous, J. and W. M. Charles. 1988. Introduction to Mycology. Wiley Eastern, New Delhi.
2. Mckane, L. and K. Judy. 1996. Microbiology – Essentials and Applications. McGraw Hill, New York.
3. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
4. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
5. Sambamurthy, A. V. S. S. 2006. A Textbook of Plant Pathology. I. K. International Pvt. Ltd., New Delhi.
6. Sambamurthy, A. V. S. S. 2006. A Textbook of Algae. I. K. International Pvt. Ltd., New Delhi.
7. Sharma, O. P. 1992. Textbook of Thallophyta. McGraw Hill Publishing Co., New Delhi.
8. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
9. Vashishta, B. R., A. K. Sinha and V. P. Singh. 2008. Botany for Degree Students: Algae. S. Chand & Company Ltd, New Delhi.
10. Vashishta, B. R. 1990. Botany for Degree Students: Fungi, S. Chand & Company Ltd, New Delhi.
11. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

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A. C. Dutta

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(m w)

**B.Sc (CBCS) Botany-I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants**

Theory Model Question Paper

Time : 2 hrs

Max. Marks: 40

Draw well-labeled diagrams wherever necessary.

1. Write short notes on any FOUR of the following: -

4 X 2 = 8M

- a. Heterocyst.
- b. Citrus Canker.
- c. Nucule
- d. Cleistothecium.
- e. Mycoplasma
- f. *Mucor*

II. Essay Questions:

4 X 8 = 32M

1. a. Briefly describe the structure and reproduction of *Oscillatoria*.
(OR)
b. Describe the cyanophycean cell structure.
2. a. Describe the structure and modes of transmission of plant viruses.
(OR)
b. Write an essay on economic importance of Bacteria.
3. a. Describe the life cycle of *Oedogonium* with the help of well- labelled diagram .
(OR)
b. Give an account on thallus organization in algae.
4. a. Describe the life cycle of *Albugo* with the help of well-labelled diagram
(OR)
b. Give a brief account on Mushroom cultivation.

Handwritten notes:
Fungi
Algae
B2
L(m m)

**B.Sc (CBCS) Botany-I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants**

Practical Syllabus

(45 hours)

1. Study of viruses and bacteria using electron micrographs (photographs). (3h)
2. Gram staining of Bacteria. (3h)
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
Viruses: Tobacco mosaic
Bacteria: Angular leaf spot of cotton and Rice tungro.
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya (3h)
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut. (6h)
4. Vegetative and reproductive structures of the following taxa:
Algae: *Oscillatoria*, *Nostoc*, *Volvox*, *Oedogonium*, *Chara*, *Ectocarpus*
and *Polysiphonia*. (6 h)
Fungi: *Albugo*, *Mucor*, *Saccharomyces*, *Penicillium*, *Puccinia* and *Cercospora* (6h)
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut. (9h)
6. Lichens: Different types of thalli and their external morphology (3 h).
7. Examination of important microbial, fungal and algal products:
Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc. (3h)
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies). (3h)

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**B.Sc (CBCS) Botany- I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants**

Practical Model Paper

Time : 2 1/2 hrs

Max. Marks: 25

1. Identify the given components 'A', 'B' & 'C' in the algal mixture .
Describe with neat labeled diagrams & give reasons for the classifications. **3 X 3 = 9M**
2. Classify the given bacterial culture 'D' using Gram – staining technique. **4M**
3. Take a thin transverse section of given diseased material 'E'.
Identify & describe the symptoms caused by the pathogen. **5M**
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons .
(Fungal-1, Bacteria-1 & Viral-1) **3 X 1 = 3M**
5. Comment on the given slides 'I' & 'J' .
(Algae-1 , Fungi-1) **2 X 1 = 2M**
6. Record **2M**

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A h

Bh
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B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

(With effect from 2016-2017)

I - SEMESTER

DSC-1A (Theory)

Animal Diversity – Invertebrates

Max. Marks: 80

UNIT – I

- 1.1 Kingdom Animalia, Brief history of Invertebrates.
- 1.2 Protozoa General characters and Classification up to classes with examples.
- 1.3 Type study of *Elphidium*, Life cycle of *Plasmodium*. Locomotion, Reproduction and Diseases of protozoans.
- 1.4 Porifera General characters, Classification of up to classes with examples.
- 1.5 Type study of *Sycon*; Canal system in sponges and Spicules.

UNIT – II

- 2.1 General characters and Classification of Cnidaria up to classes with examples.
- 2.2 Type study of *Obelia*, Polymorphism in hydrozoa; Corals and coral reef formation.
- 2.3 General characters and Classification of Platyhelminthes up to classes with examples.
- 2.4 Type study- *Schistosoma*; Parasitic Adaptations in Helminthes.
- 2.5 Nematelminthes General characters, Classification of Nematelminthes up to classes with examples; Type study of *Dracunculus*.

UNIT – III

- 3.1 Annelida General characters and Classification up to classes with examples.
- 3.2 Type study of *Hirudinaria granulosa*.
- 3.3 Evolutionary significance of Coelome and Coelomoducts and metamerism.
- 3.4 Arthropoda General characters and Classification of Arthropoda up to classes with examples.
- 3.5 Type study of Prawn; Mouth parts of Insects; Insect metamorphosis; *Peripatus* - Structure and affinities.

UNIT – IV

- 4.1 Mollusca General characters and Classification up to classes with examples.
- 4.2 Type study – *Pila*; Pearl formation; Torsion and detorsion in gastropods.
- 4.3 Echinodermata General characters and Classification of Echinodermata up to classes with examples.
- 4.4 Water vascular system in star fish; Echinoderm larvae and their significance.
- 4.5 Hemichordata General characters and Classification up to classes with examples; *Balanoglossus* - Structure and affinities.

Suggested Readings

- 1. L.H. Hyman** '*The Invertebrates*' Vol I, II and V. – M.C. Graw Hill Company Ltd.
- 2. Kotpal, R.L. 1988 - 1992** Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
- 3. E.L. Jordan and P.S. Verma** '*Invertebrate Zoology*' S. Chand and Company.
- 4. R.D. Barnes** '*Invertebrate Zoology*' by: W.B. Saunders CO., 1986.
- 5. Barrington. E.J.W.**, '*Invertebrate structure and Function*' by ELBS.
- 6 P.S. Dhama and J.K. Dhama.** Invertebrate Zoology. S. Chand and Co. New Delhi.
- 7. Parker, T.J. and Haswell** '*A text book of Zoology*' by, W.A., Mac Millan Co. London.
- 8. Barnes, R.D. (1982).** *Invertebrate Zoology*, V Edition”

ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
ZOOLOGY - PAPER - I
ANIMAL DIVERSITY - INVERTEBRATES

Max. Marks: 50

1. Study of museum slides / specimens / models (Classification of animals up to orders)

- i. **Protozoa:** *Amoeba, Paramecium, Paramecium Binary fission and Conjugation, Vorticella, Entamoeba histolytica, Plasmodium vivax*
- ii. **Porifera:** *Sycon, Spongilla, Euspongia, Sycon - T.S & L.S, Spicules, Gemmule*
- iii. **Coelenterata:** *Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula*
- iv. **Platyhelminthes:** *Planaria, Fasciola hepatica, Fasciola larval forms – Miracidium, Redia, Cercaria, Echinococcus granulosus, Taenia solium, Schistosoma haematobium*
- v. **Nemathelminthes:** *Ascaris (Male & Female), Dracunculus, Ancylostoma, Wuchereria*
- vi. **Annelida:** *Nereis, Aphrodite, Chaetopterus, Hirudinaria, Trochophore larva*
- vii. **Arthropoda:** *Cancer, Palaemon, Scorpion, Scolopendra, Sacculina, Limulus, Peripatus, Larvae - Nauplius, Mysis, Zoea, Mouth parts of male & female Anopheles and Culex, Mouthparts of Housefly and Butterfly.*
- viii. **Mollusca:** *Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus, Glochidium larva*
- ix. **Echinodermata:** *Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, Antedon, Bipinnaria larva*
- x. **Hemichordata:** *Balanoglossus, Tornaria larva*

2. Dissections:

Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst
Insect Mouth Parts

3. Laboratory Record work shall be submitted at the time of practical examination

4. An “**Animal album**” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

5. Computer aided techniques should be adopted – show virtual dissections

Suggested manuals:

1. Practical Zoology- Invertebrates S.S. Lal
2. Practical Zoology - Invertebrates P.S. Verma
3. Practical Zoology - Invertebrates K.P. Kurl

SYLLABUS

GENDER SENSITISATION

Unit – I (Theory) 1 credit – 1 hour of instruction per week.

1. Gender: Definition, Nature and Evolution, Culture, Tradition, Historicity.
2. Gender Spectrum: Biological, Sociological, Psychological Conditioning.
3. Gender based division of labour – domestic work and use value.
4. Gender, Human Rights and Parity (parallel progress of both genders).

Unit – II (Practical Activity) 1 credit – 2 hours of activity per week.

Group discussion, Presentation, Role play, Survey, Case studies, Group project based on following issues:

- Respect and Co-Existence.
- Social, Biological, Psychological, Political, Economic, Cultural, Health issues.
- Domestic Violence, Evc-teasing, Sexual Harassment.
- Real Life Experiences of Gender Interaction.
- Print and Electronic Media and Gender Inequalities.
- Contemporary Challenges.

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Department of English
Kakatiya University
UG II Semester

LESSON FIVE (SHORT FICTION)	TEXT	THE RELUCTANT PHILANTHROPIST by GOLLAPUDI SRINIVASA RAO
	PRONUNCIATION	FRICATIVES
	GRAMMAR	DISCOURSE MARKERS
	VOCABULARY	IDIOMS & PHRASES
	SPELLING	USE OF 'IE' AND 'EI'
	CONVERSATIONS	SEEKING INFORMATION
	READING PASSAGE	BATHUKAMMA
	LIFE SKILLS	PROBLEM-SOLVING SKILL
LESSON SIX (PROSE)	TEXT	HOW SHOULD ONE READ A BOOK by VIRGINIA WOOLF
	PRONUNCIATION	AFFRICATES & NASALS
	GRAMMAR	VOICE & DEGREES OF COMPARISON
	VOCABULARY	PHRASAL VERBS
	SPELLING	USE OF 'ABLE' & 'IBLE'
	CONVERSATIONS	ORGANIZING A MEETING/INVITING GUESTS
	READING PASSAGE	RAMAPPA
	LIFE SKILLS	EFFECTIVE COMMUNICATION SKILL
LESSON SEVEN (POETRY)	TEXT	AFTER BLENHEIM by ROBERT SOUTHEY
	PRONUNCIATION	LATERALS, SEMI-VOWELS
	GRAMMAR	REPORTING SPEECH & QUESTION TAGS
	VOCABULARY	LEXIS/WORD-BUILDING
	SPELLING	USE OF PREFIXES & SUFFIXES
	CONVERSATIONS	ORGANIZING A MEETING/PROPOSING A VOTE OF THANKS
	READING PASSAGE	BONALU
	LIFE SKILLS	INTER-PERSONAL RELATIONSHIPS
LESSON EIGHT (DRAMA)	TEXT	THE INFORMER by BERTOLT BRECHT
	PRONUNCIATION	SYLLABIC STRUCTURE
	GRAMMAR	COMMON ERRORS
	VOCABULARY	COLLOCATIONS
	SPELLING	
	CONVERSATIONS	
	READING PASSAGE	KINNERASANI
	LIFE SKILLS	COPING WITH STRESS AND EMOTIONS

1. Academy

2. Journal 3. Story

4. Hyphenated

5. S. Saijya Prasad 6. Drunk
12/4/16

AL QIRA'AT AL ARABIA AL OSMANIA - I

(for B.A., B.Sc., B.Com. & B.B.A.)

First year – Semester I & II

Under CBCS

Prepared by

Subject Committee

Dr. Syeda Talath Sultana – *Prof. & Chairperson*

Dr. Mehjabeen Akther – *Prof. & Head*

Dr. Mohammed Mustafa Shareef – *Professor*

Dr. Hafiz Syed Badiuddin Sabri – *Professor*

Osmania University

Hyderabad – T.S.

S. Talath
Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007

Title : Classical Prose, Grammar & Translation:

Unit – I : Classical Prose – I : Al Quran (Tafseer) Summary only 1. Suratul Balad 2. Suratul Shams	الوحدة الأولى : النثر القديم - ١ : القرآن الكريم (تفسير) ١ . سورة البلد ٢ . سورة الشمس
Unit – II : Classical Prose – II : Al Quran (Tafseer) Summary only 1. Suratul Lail 2. Suratul Duha	الوحدة الثانية : النثر القديم - ٢ : القرآن الكريم (تفسير) ١ . سورة الليل ٢ . سورة الضحى
Unit – III : Grammar – I : Al Nahwal Wazeh (Ibtadai Part I) : 1. Inna & its Sisters 2. Indicative mode of Mudhare 3. Subjunctive mood of Mudhare	الوحدة الثالثة : القواعد - ١ : النحو الواضح (الابتدائية - الجزء الأول) ١ . إن وأخواتها ٢ . رفع الفعل المضارع ٣ . نصب الفعل المضارع
Unit – IV : Grammar – II : Al Nahwal Wazeh (Ibtadai Part I) : 1. Jussive mood of Mudhare 2. Active Participles 3. Passive Participles	الوحدة الرابعة : القواعد - ٢ : النحو الواضح (الابتدائية - الجزء الأول) ١ . جزم الفعل المضارع ٢ . اسم الفاعل ٣ . اسم المفعول
Unit – V : Translation : 1. Al Arabiyatu Linnashiyeen - II from lesson 13 to 24.	الوحدة الخامسة : الترجمة : ١ . العربية للناشئين (الجزء الثاني) من الدرس الثالث عشر إلى الرابع والعشرين

Books Recommended :

1. Classical Prose – Al Quran – by any Tafseerul Quran.
2. Grammar – Al Nahwal Wazeh (Ibtadai) – I by Ali Jasim.
3. Al Arabiyatu Linnashiyeen.

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BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007.

Title : Classical Prose, Grammar & Translation:

Unit – I : Classical Prose – I :

Al Quran (Tafseer)

1. Suratul Alaq
2. Suratul Teen

الوحدة الأولى : النثر القديم - ١ :

القرآن الكريم (تفسير)

- ١ . سورة العلق
- ٢ . سورة التين

Unit – II : Classical Prose – II :

Al Quran (Tafseer)

1. Suratul Inshirah
2. Suratul Ghashia

الوحدة الثانية : النثر القديم - ٢ :

القرآن الكريم (تفسير)

- ١ . سورة الإنشراح
- ٢ . سورة الغاشية

Unit – III : Grammar – I :

Al Nahwal Wazeh (Ibtadai Part I) :

1. Kinds of Kalima
2. Nominal Sentence
3. Verbal Sentence

الوحدة الثالثة : القواعد - ١ :

النحو الواضح (ابتدائية أول)

- ١ . تقسيم الكلمة
- ٢ . الجملة الاسمية
- ٣ . الجملة الفعلية

Unit – IV : Grammar – II :

Al Nahwal Wazeh (Ibtadai Part I) :

1. Past Tense
2. Present Tense
3. Kana Wa Aqawatuha

الوحدة الرابعة : القواعد - ٢ :

النحو الواضح (الابتدائية – الجزء الأول)

- ١ . الفعل الماضي
- ٢ . الفعل المضارع
- ٣ . كان وأخواتها

Unit – V : Translation :

1. Al Arabiyatu Linnashiyeen - II
from lesson 1 to 12.

الوحدة الخامسة : الترجمة :

١ . العربية للناشئين (الجزء الثاني)
من الدرس الأول إلى الدرس الثاني عشر

Books Recommended :

1. Classical Prose – Al Quran – by any Tafseerul Quran.
2. Grammar – Al Nahwal Wazeh (Ibtadai) – I by Ali Jasim.
3. Al Arabiyatu Linnashiyeen.

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DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007.

Title : Classical Prose, Grammar & Translation :

Unit – I : Classical Prose – I :

Kalilatu Wa Dimnah

Chapter Babul Asad Wa Al Sour,
from 16 to 20 paragraph only

الوحدة الأولى : النثر القديم - ١ :

كليلة ودمنة (عبد الله بن المقفع)

"باب الأسد والثور"

من الفقرة السادسة عشرة إلى العشرين

Unit – II : Classical Prose – II :

Kalilatu Wa Dimnah

Chapter Babul Asad Wa Al Sour,
from 21 to 25 paragraph only

الوحدة الثانية : النثر القديم - ٢ :

كليلة ودمنة (عبد الله بن المقفع)

"باب الأسد والثور"

من الفقرة الواحدة والعشرين إلى الخامسة والعشرين

Unit – III : Grammar - I :

Al Nahwal Wazeh (Ibtadai Part II) :

الوحدة الثالثة : القواعد - ١ :

النحو الواضح (الابتدائية - الجزء الثاني)

١. علامات التانيث في الأسماء
٢. علامات التانيث في الأفعال
٣. المفعول المطلق والمفعول لأجله
٤. نائب الفاعل

Unit – IV : Grammar - II :

Al Nahwal Wazeh (Ibtadai Part II) :

الوحدة الرابعة : القواعد - ٢ :

النحو الواضح (الابتدائية - الجزء الثاني)

١. الاسم الموصول
٢. الأفعال الخمسة
٣. ظرف الزمان والمكان
٤. المضاف والمضاف إليه

Unit – V : Translation :

1. Durusul Lught Al Arabia - II
from lesson 21 to 30.

الوحدة الخامسة : الترجمة :

١. دروس اللغة العربية (الجزء الثاني)
من الدرس الحادي والعشرين إلى الثلاثين

Books Recommended :

1. Classical Prose – Tafseerul Quran by any author.
2. Grammer – Al Nahwal Wazeh Ibtadai – I by Ali Jasim.
3. Translation – Durusul Lught Al Arabia – II by Dr. V. Abdur Rahim
4. Book Kalilatu Wa Dimnah by Ibn Al Muqaffa

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Osmania University, Hyderabad-500 007.

Title : Prose, Poetry & Translation :

Unit – I : Prose :

Al Mansoraat :

الوحدة الأولى : النثر :
المنثورات :

- ١ . الاعتراف بالنعمة – لمسلم بن الحجاج
- ٢ . شهادة من عدو – للبخاري
- ٣ . عمر رضي الله عنه في الحكم – الدميري

Unit – II : Poetry – I :

Muqtaratul Adab :

الوحدة الثانية : الشعر – ١ :
مختارات الأدب :

- ١ . الدنيا قتال – لأحمد شوقي
- ٢ . حسرة عالم – لحفني بك ناصف

Unit – III : Poetry – II :

Muqtaratul Adab :

الوحدة الثالثة : الشعر – ٢ :
مختارات الأدب :

- ١ . العلم والأخلاق – لحافظ إبراهيم
- ٢ . محاسن الفتاة – لباحثة البادية

Unit – IV : Translation – I :

1. Durusul Lught Al Arabia - III
from lesson 2 to 4.

الوحدة الرابعة : الترجمة – ١ :

١ . دروس اللغة العربية (الجزء الثالث)
من الدرس الثاني إلى الرابع

Unit – V : Translation – II :

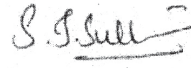
1. Durusul Lught Al Arabia - III
from lesson 5 to 6.

الوحدة الخامسة : الترجمة – ٢ :

١ . دروس اللغة العربية (الجزء الثالث)
من الدرس الخامس إلى السادس

Books Recommended :

1. Prose – Al Mansoraat by Mohd. Raba Hasani Al Nadvi.
2. Poetry – Muqtaratul Adab by Zaidan Badran.
3. Translation – Durusul Lught Al Arabia – III by Dr. V. Abdur Rahim


Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007.

Title : History, Grammar & Composition:

Unit – I : History of Arabic Literature : الوحدة الأولى : تاريخ الأدب العربي :

1. Tareeq-e- Adabiyat-e- Arabi
Complete Umayyad Period

١. تاريخ أدبيات عربي
دور أموي مكمّل

Life History of Author / Poet

Unit – II : Grammar - I : الوحدة الثانية : القواعد – ١ :

Al Nahwal Wazeh (Ibtadai Part III) :

النحو الواضح (الابتدائية – الجزء الثالث)

١. المبتدأ والخبر

٢. الفعل اللازم والفعل المتعدي

٣. اسم الفاعل واسم المفعول

Unit – III : Grammar - II : الوحدة الثالثة : القواعد – ٢ :

Al Nahwal Wazeh (Ibtadai Part III) :

النحو الواضح (الابتدائية – الجزء الثالث)

١. الحال

٢. المنصرف وغير المنصرف

٣. العطف

Unit – IV : Grammar - III : الوحدة الرابعة : القواعد – ٣ :

Al Nahwal Wazeh (Ibtadai Part III) :

النحو الواضح (الابتدائية – الجزء الثالث)

١. التوابع

٢. أدوات الاستفهام

Unit – V : Composition : الوحدة الخامسة : الإنشاء :

Arabic Articles :

كتابة المقالات العربية

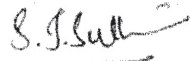
١. أهمية اللغة العربية

٢. أدب الأستاذ

٣. حب الوطن

Books Recommended :

1. History – History of Arabic Literature by Hasan Zayyat or Dr. Abul Fazal.
2. Grammar – Al Nahwal Wazeh by Ali Jasim.


Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007.

Title : Prose, Poetry & Translation :

Unit – I : Prose :

Al Mansoraat Minal Adab Al Arabi :

الوحدة الأولى : النثر :

المنتورات من الأدب العربي (الجزء الثاني) :

لمحمد رابع الندوي

١. الشيخ أحمد السرهندي – لعبد الحى الحسني
٢. عمر بن عبد العزيز – لابن قتيبة الدينوري
٣. الكذب – لمصطفى لطفى المنفلوطي

Unit – II : Poetry – I :

Muqtaratul Adab (2 Poems only) :

الوحدة الثانية : الشعر – ١ :

مختارات الأدب (زيدان بدران) :

١. البننت – لأديب
٢. نهضة الشرق – لحافظ إبراهيم

Unit – III : Poetry – II :

Muqtaratul Adab (2 Poems only) :

الوحدة الثالثة : الشعر – ٢ :

مختارات الأدب (زيدان بدران) :

١. الشباب – لأحمد شوقي
٢. في الفخر – لبارودي

Unit – IV : Translation – I :

1. Durusul Lught Al Arabia - III
from lesson 7 to 8.

الوحدة الرابعة : الترجمة – ١ :

١. دروس اللغة العربية (الجزء الثالث)
من الدرس السابع إلى الثامن

Unit – V : Translation – II :

1. Durusul Lught Al Arabia - III
from lesson 9 to 11.

الوحدة الخامسة : الترجمة – ٢ :

١. دروس اللغة العربية (الجزء الثالث)
من الدرس التاسع إلى الحادي عشر

Books Recommended :

1. Prose – Al Mansoraat by Mohd. Raba Hasani Al Nadvi.
2. Poetry – Muqtaratul Adab by Zaidan Badran.
3. Translation – Durusul Lught Al Arabia – III by Dr. V. Abdur Rahim

S. J. Sultana

Professor Syeda Talath Sultana
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF ARABIC
Osmania University, Hyderabad-500 007

Title : History, Grammar & Composition:

Unit – I : History of Arabic Literature : الوحدة الأولى : تاريخ الأدب العربي :
1. Tareeq-e- Adabiyat-e- Arabi ١. تاريخ أدبيات عربي
(I & II Abbasi Period only) (دور عباسي – دور أول و دوم)

About the Abbasi Period only.
Life History of Poets & Authors

Unit – II : Grammar - I : الوحدة الثانية : القواعد – ١ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)

١. تقسيم الفعل إلى الصحيح والمعتل
٢. الضمير
٣. النعت

Unit – III : Grammar - II : الوحدة الثالثة : القواعد – ٢ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)

١. التوكيد
٢. المستثنى
٣. همزة الوصل والقطع

Unit – IV : Grammar - III : الوحدة الرابعة : القواعد – ٣ :
Al Nahwal Wazeh (Ibtadai Part III) : النحو الواضح (الابتدائية – الجزء الثالث)

١. الفعل المجرد والرباعي والمزيد فيه
٢. المنادى

Unit – V : Composition : الوحدة الخامسة : الإنشاء :
Arabic Articles (3 Essay) : كتابة المقالات العربية

١. حقوق الوالدين
٢. الرياضة البدنية
٣. الأخلاق زينة المرء

Books Recommended :

1. History – History of Arabic Literature by Hasan Zayyat or Dr. Abul Fazal.
2. Grammar – Al Nahwal Wazeh by Ali Jasim.

S. Sultana
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Osmania University, Hyderabad-500 007.

Semester – II

Unit – I : Classical Prose

Lesson – 1 : Al Qadr

2 : Al Zilzal

Unit – II : Modern Prose

Lesson – 1 : Industrial exhibition.

2 : Nizam VII – Mir Osman Ali Khan.

Unit – III : Poetry

Poem – 1 : Al Bintu

2 : AL Nasheed al – Watani

Unit – IV : History of Arabic Literature.

Lesson – 1 : Rise of Islam.

2 : Effect of Quran & Islam on Arabic Literature.

3 : Poetry in Islamic Period


4 : Compilation of the Holy Quran – e – Majeed.

Unit – V : Grammar

Lesson – 1: Al Murakkab Al Mufeed.

2 : Al Murrakkab Al Naqis.

* * * * *


Professor Syeda Talath Sultana
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KAKATIYA UNIVERSITY, WARANGAL. TS.
DEPARTMENT OF HINDI SYLLABUS
HINDI I SEMESTER

Unit I:	1. Utsaaha	Ramachandra shukla
	2. charitra ka sanghathan	'Babu gulaaba rai
	3. Bajaaara darshan	Jainendra kumar
	4. sadgati	Premchand (Katha Sindhu)
Unit II:	1. Bhaabhi	Mahaadevivarma
	2. Bharat mein sanskriti sangam	Ramdharisimha Dinakar
	3. Rashtra ka swaroop	Vasudeva sharan Agarwal
	4. chota jadugar	Jai Shankar Prasa (Katha Sindhu)
Unit III:	1. sach ka sauda	sudarshan (Katha Sindhu)
	2. Praaya chitt	Bhagavati charan varma (Katha Sindhu)
	3. Pardaa	Yashpal (Katha Sindhu)
	4. chief ki daavat	Bheeshma sahaani (Katha Sindhu)
Unit IV :	GRAMMER	
	1. Rewriting ofa sentences as directed based on Gender, Number, Tense, case and voice	
	2. correction of sentences	
	3. Usages of wordsa into sentences	
	4. official Hindi :	
	A. Administrative Terminology(Prashaasnika shabdavali) 100	
	B. Official Designationsa(Padnaam) 100 words	
	C. Translation ofa Hindi words into English	
	D. Trsanslation of English words into Hindi	

HINDI II SEMESTER

Unit I	1. Dharti ka swarg	Vishnu prabhakar
	2. Taayee	vishvambar nath Sharma` kaushik'
	3. And eke chilke	Mohan rakesh
	4. Dipty collectory	Amarkant (Katha Sindhu)
Unit II	1. Raajaneeti kaa bantwara	Hari Shankar parsai
	2. swaami Vivekananda	vamshidhar vidyalankar
	3. Paryaavaran aur Hum	Rajeeva garg
	4. Gadai Rangeya Raghav	(Katha Sindhu)
Unit III	1. Hansoo yaa roun	vinayaka rao vidyalankar (Katha Sindhu)
	2. Wapasi	Usha Priyamvada "
	3. seeva	Mamata kaaliya "
	4. Siliya	Susheels takbhore "
Unit IV :	Grammer	
	1. Sandhi vichched	
	2. Antonyms (vilom shabd)	
	3. Letter Writing : Persona! leeters, Official letters, Letter of complaints, Application for Appointment.	

Chairman
(Prof. Ch. Sanjeeva)
Chairman BOS Hindi
PK
31.10.16

kakatiya university, warangal. TS
Department of Hindi

Hindi II Semester, Model Paper
-----*****-----

Time : 3 Hours

भाग - क

Marks : 80

1. निम्नलिखित में से किन्हीं चार प्रश्नों का उत्तर दीजिए ? 4x5=20
- जर्मन पर्यटक ने लेखक से क्या कहा ?
 - विवेकानंद के अनुसार भारत कब जागृत होगा ?
 - नरोत्तम जी पत्नी से क्या बोले ?
 - गजाधर बाबू की अपने बेटे से क्या कहती है ?
 - रामेश्वरी बुखार में रह कर क्या कहती है ?
 - किन किन शहरों में सल्फर डैयाक्सैड अधिक है ?

भाग - च

निम्न लिखित प्रश्नों का उत्तर दीजिए ।

4x15=60

- 2 a) कश्मीर को धरती का स्वर्ग क्यों कहते हैं ? 15
अथवा
b) 'राजनीति का बंटवारा' पाठ का सारांश अपने शब्दों में लिखिए ।
- 3 a) ताई कहानी की विशेषता अपने शब्दों में लिखिए ? 15
अथवा
b) पर्यावरण की रक्षा पर अपने विचार व्यक्त कीजिए ।
- 4 a) वापसी कहानी के आधार पर आधुनिक परिवार पर प्रकाश डालिए । 15
अथवा
b) गदल कहानी में वर्णित गदल की निर्भीकता पर प्रकाश डालिए ।
- 5 a) निम्न लिखित सन्धियों का नाम बताकर विच्छेद कीजिए। 15
1. मनस्ताप, 2. अहंकार 3. स्वागत 4. रवीन्द्र 5. महोदय
अथवा
b) i) निम्न लिखित शब्दों के विलोम शब्द लिखिए। 10x1=10
1. पूर्ण 2. भीतर 3. तेज 4. बुरा 5. कठिन
ii) 6. सूखा 7. अन्धरा 8. प्रचीन 9. कायरता 10. हर्ष
d) जिलाधीश के नाम पर नौकरी के लिए आवेदन पत्र लिखिए ।

Neeraj
(Prof. Sach Sanyal)
Chairman BOS Hindi
J. 10.16

Kakatiya University, Warangal
CBCS Pattern of BA., B.Sc., & B.Com
Syllabus

తెలుగు ద్వితీయ భాష

II Semester

Unit - I (ప్రాచీన కవిత్వం)

- | | | | |
|----|----------------------|---|--------------------|
| 1. | సంవరణుడి తపస్సు | - | అద్దంకి గంగాధరుడు |
| 2. | శ్రీ రంగక్షేత్ర మహిమ | - | సారంగు తమ్మయ |
| 3. | హనుమత్ సందేశము | - | మొల్ల |
| 4. | సుభాషితములు | - | వినుగు లక్ష్మణ కవి |

Unit II (ఆధునిక కవిత్వం)


- | | | | |
|---|----------------|---|--------------------------|
| 1 | అంతర్జాడము | - | దాశరథి కృష్ణమాచార్యులు |
| 2 | 'ప్ర' పంచపదులు | - | డా॥ సి నారాయణరెడ్డి |
| 3 | రోడ్డు రోలర్ | - | ఆచార్య పేర్వారం జగన్నాథం |
| 4 | అల్పిదా | - | కౌముది |

Unit III (వచన విభాగం)

- | | | | |
|---|---------------------------|-------------------------|--------------------------------|
| 1 | మామిడి పండు | - | (వ్యాసం) సురవరం ప్రతాపరెడ్డి |
| 2 | మా ఊరు పోయింది- | (జ్ఞాపకాలు) | దేవులపల్లి వేంకట కృష్ణశాస్త్రి |
| 3 | ఇది ఒక కళే, పేరులు దారులు | గుర్తుంచుకోవడం (వ్యాసం) | - శ్రీమతి నందగిరి ఇందిరాదేవి |

Unit IV (ఉపవాచకం)

- | | | | |
|---|------------|---|--------------------------------|
| 1 | రుద్రమదేవి | - | బద్దిరాజు సీతారామచంద్ర రాయశర్మ |
|---|------------|---|--------------------------------|



19/5/16 19/5/16 19/5/16 19/5/16

FACULTY OF ARTS
B.A., I Year EXAMINATION
TELUGU

Modern Language - DSC - 1B

Paper - II

(Model Paper)

Time : Three hours

Maximum : 80 Marks

1 ఈ కింది వానిలో ఒక దానికి ప్రతిపదార్థ తాత్పర్యం రాయండి (12)

ఎ) సుందరి రానిచో నెదురు సూచుచు నుండనే పట్టి: వచ్చుచో
నిందుని భాస్వ చక్కదనమే కని చొక్కుచు నుండఁ బట్టి: నీ
సందడి చేతనే యరుగ సాగెను బ్రొ: ట్లింక వేళ యెప్పుడో
సందె, జపంబు, నర్తనలు సల్పట కా కపట త్రి దండికిన్?

లేదా

బి) భవ దుఃఖాంబుధి మగ్న మానసజన వ్రాతంబులున్ శాంతి సౌ
ఖ్య వికాసంబును చెందునట్లుగ నసంఖ్యాకం బశోకావనీ
ధవ సంపాదిత ధార్మికాంశముల సూత్రంబుల్ శిలాశాసన
స్థ విశేషంబులుగాగ నల్లసిలు విద్వల్లోక సుత్యంబులై

2 ఈ కింది వాటిలో 'అ' భాగం నుండి రెండింటికి, 'ఆ' భాగం నుండి రెండింటికి
సందర్భసహిత వాఖ్యలు రాయండి. 2x3=6

'అ' భాగం

ఎ) అట్ల సేయు మనుచు నతఁడు సేయి సూప

బి) చిలుక మాటకు నవ్వు సొలపుదెట

సి) కెస్ బండ్లకును మౌక్తికమువ వేలబోసినట్లు

డి) దాసన చుట్టమా గేబకి ?

'ఆ' భాగం

ఎ) అనాథ బాలికలపై ఆప్యాయత ఒలకబోసి

బి) వృక్షనమేమొ బోధి వృక్షమయ్యె

సి) శాశ్వతమున్ బొనలించె ధర్మముల్

డి) మలయమారుతం మందగించిపోయింది

3. ఈ కింది ప్రశ్నలలో ఏదైనా ఒక ప్రశ్నకు సమాధానం రాయండి. 12

ఎ) అర్జునుని సుభద్ర పరిచర్య చేసిన విధం తెలుపండి.

లేదా

బి) దాశరథి శతకంలో కంచర్ల గోపన్న వెలుబుచ్చిన భక్తిని, అర్చిని వివరించండి.

4 ఈ కింది ప్రశ్నలలో ఏదైనా ఒక ప్రశ్నకు సమాధానం రాయండి. 12

ఎ) అశోకుడు తన రాజ్యంలో శాంతి స్థాపనకు చేసిన కృషిని వివరించండి.

లేదా

బి) 'మానవ సంగీతం' లో కవి వినిపించిన మానవీయ భావనలు తెలుపండి.

5 ఈ కింది ప్రశ్నలలో ఏదైనా ఒక ప్రశ్నకు సమాధానం రాయండి. 12

ఎ) ఆనాటి గురువుల శిష్య వాత్సలయం ఎలాంటిదో

మీ పాఠ్యభాగం ఆధారంగా నిరూపించండి.

లేదా

బి) తెలుగు కవిత్వంలో భావుకతపై చేరా అభిప్రాయాలను వివరించండి.

2x10=20

6 ఈ కింది ప్రశ్నలలో ఏదైనా రెండు ప్రశ్నలకు సమాధానాలు రాయండి.

ఎ) దశరథుని విలాపాన్ని మరణాన్ని వివరించండి.

బి) ప్రతిమా నాటకంలోని స్త్రీ పాత్రలను పరిచయం చేయండి.

సి) ప్రతిమా నాటకంలోని తృతీయాంక ప్రాధాన్యాన్ని వివరించండి.

డి) నాటక లక్షణాలను సోదాహరణంగా రాయండి.



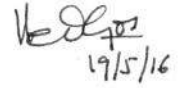

19/5/16




19/5


19/5


19-5-2016


19/5/16

B.A., B. Sc & B.Com FIRST YEAR - 2016-2017
URDU SECOND LANGUAGE
“MUTALA – E – ADAB” (PART – I)
(compiled by Urdu Department, Osmania University. Hyd.)
Published in August 2008 by Urdu Academy – Hyderabad.

SEMESTER : II

PAPER – II

URDU PROSE & POETRY

UNIT : I

GHAZALS: Selected two Ghazals of every poet Hyder Ali Aatish – Mirza Ghalib – Khaja Altaf Hussain Hali – Maqboom Mohiuddin.

- | | |
|--------------------------------|--|
| 1. HYDER ALI AATISH | 1. Soon To Sahi Jahan Mein Hai Tera Fasana Kya. |
| | 2. Khusha wa dil ke ho jis dil mein Aarzoo Teri. |
| 2. MIRZA GHALIB | 1. Koyi Din Gar Zindagani Aur hai. |
| | 2. Koi ko deke dil koi Nawasaje Fughan Kyun Ho. |
| 3. KHAJA ALTAF HUSSAIN
HALI | 1. Mujhe-wo Taab-e Zabt-e-shikayat kahan Hai. |
| | 2. Dekhna Her Tarafna Majlis main. |
| 4. MAQDOOM MOHIUDDIN | 1. Aap ki Yaad Aati Rahi Raat bhar |
| | 2. Zindagi Moutiyoun ki Dhalakti ladi. |

UNIT : II

POETRY:

- | | |
|-------------------------|----------------------|
| 1. PREET KA GEET | By Hafeez Jalandhari |
| 2. AAY SHAREEF INSAANAU | By Sahir Ludhyanavi |
| 3. AB KE BARAS | By Shaaz Tamkanat |

UNIT : III

SWANEH : By Khaja Altaf Hussain Hali– Mirza Ghalib ke Aqlaq – o – Adab.

UNIT : IV

INSHAIYA : By Mushtaq Ahmed Yousufi – Padhye Gar Beemar.

UNIT : V

AFSANA: By Qurratul ain Hyder – Yeh Ghazi Yeh Tere Purasrar Bande.
KHAKA : By Mujtaba Hussain – Sulaiman Areeb.

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

B.Sc. (Physics)- I Year Semester – II Paper II:: Waves and Oscillations

Total: 48 hrs
(4 Hrs / week)

Unit – I

Fundamentals of Vibrations (12)

Simple harmonic oscillator, and solution of the differential equation– Physical characteristics of SHM, torsion pendulum, - measurements of rigidity modulus , compound pendulum, measurement of 'g', combination of two mutually perpendicular simple harmonic vibrations of same frequency and different frequencies, Lissajous figures

Unit – II

Damped and forced oscillations (12)

Damped harmonic oscillator, solution of the differential equation of damped oscillator. Energy considerations, comparison with undamped harmonic oscillator, logarithmic decrement, relaxation time, quality factor, differential equation of forced oscillator and its solution, amplitude resonance, velocity resonance. Coupled Oscillators.

Unit – III

Vibrating Strings (12)

Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at ends, overtones, energy transport, transverse impedance

Unit – IV

Vibrations of bars (12)

Longitudinal vibrations in bars- wave equation and its general solution. Special cases (i) bar fixed at both ends ii) bar fixed at the mid point iii) bar free at both ends iv) bar fixed at one end. Transverse vibrations in a bar- wave equation and its general solution. Boundary conditions, clamped free bar, free-free bar, bar supported at both ends, Tuning fork.

Note: Problems should be solved at the end of every chapter of all units.

Suggested Books

1. Berkeley Physics Course. Vol.1, **Mechanics** by C. Kittel, W. Knight, M.A. Ruderman - *Tata-McGraw hill Company Edition 2008.*
2. **Fundamentals of Physics.** Halliday/Resnick/Walker *Wiley India Edition 2007.*
3. **First Year Physics - Telugu Academy.**
4. **Introduction to Physics for Scientists and Engineers.** F.J. Ruche. *McGraw Hill.*
5. **Fundamentals of Physics** by Alan Giambattista et al *Tata-McGraw Hill Company Edition, 2008.*
6. **University Physics** by Young and Freeman, *Pearson Education, Edition 2005.*



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal

CBCS pattern in Semester System (w. e. from 2016-2017)

7. **Sears and Zemansky's University Physics** by Hugh D. Young, Roger A. Freedman *Pearson Education Eleventh Edition.*
8. **An introduction to Mechanics** by Daniel Kleppner & Robert Kolenkow. *The McGraw Hill Companies.*
9. **Mechanics.** Hans & Puri. *TMH Publications.*
10. **Engineering Physics.** R.K. Gaur & S.L. Gupta. *Dhanpat Rai Publications.*
11. **The Feynman Lectures in Physics, Vol.-1,** R P Feynman, RB Lighton and M Sands, BI Publications,
12. **Mechanics-P.K.** Srivastava - New Age International.

B.Sc. (Physics Practicals) – I year

Semester - II

Paper – II ::Waves and Oscillations Practicals

1. Study of damping of an oscillating disc in Air and Water logarithmic decrement.
2. Study of Oscillations under Bifilar suspension-Verification of axis theorems
3. Study of oscillations of a mass under different combination of springs-Series and parallel.
4. Verification of Laws of a stretched string (Three Laws).
5. Determination of frequency of a bar-Melde's experiment.
6. Observation of Lissajous figures from CRO-Frequency ratio.Amplitude and phase difference of two waves.
7. Volume Resonator –determination of frequency of a tuning fork.
8. Velocity of Transverse wave along a stretched string.
9. Study of damping of a bar pendulum-damping factor
10. Study of coupled oscillator-resonance

Note: Minimum of eight experiments should be performed .Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, Anchal Srivastav.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

2.2 Differential Equations

DSC-1B

BS:204

Theory: 4 credits and Practicals: 1 credits
Theory: 4 hours /week and Practicals: 2 hours /week

Objective: The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

Outcome: After learning the course the students will be equipped with the various tools to solve few types differential equations that arise in several branches of science.

Unit- I

Differential Equations of first order and first degree: Exact differential equations - Integrating Factors - Change in variables - Total Differential Equations - Simultaneous Total Differential Equations - Equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$. Differential Equations first order but not of first degree: Equations Solvable for y - Equations Solvable for x - Equations that do not contain x (or y)- Clairaut's equation.

Unit- II

Higher order linear differential equations: Solution of homogeneous linear differential equations with constant coefficients - Solution of non-homogeneous differential equations $P(D)y = Q(x)$ with constant coefficients by means of polynomial operators when $Q(x) = be^{ax}, b \sin ax/b \cos ax, bx^k, Ve^{ax}$.

Unit- III

Method of undetermined coefficients - Method of variation of parameters - Linear differential equations with non constant coefficients - The Cauchy - Euler Equation.

Unit- IV

Partial Differential equations- Formation and solution- Equations easily integrable - Linear equations of first order - Non linear equations of first order - Charpit's method - Homogeneous linear partial differential equations with constant coefficient - Non homogeneous linear partial differential equations - Separation of variables.

Text:

- Zafar Ahsan, *Differential Equations and Their Applications*

References:

- Frank Ayres Jr, *Theory and Problems of Differential Equations*.
 - Ford, L.R ; *Differential Equations*.
 - Daniel Murray, *Differential Equations*.
 - S. Balachandra Rao, *Differential Equations with Applications and Programs*.
 - Stuart P Hastings, J Bryce McLead; *Classical Methods in Ordinary Differential Equations*.
-

2.2.1 Practicals Question Bank

Differential Equations

Unit-I

Solve the following differential equations:

1. $y' = \sin(x + y) + \cos(x + y)$
2. $x dy - y dx = a(x^2 + y^2) dy$
3. $x^2 y dx - (x^3 + y^3) dy = 0$
4. $(y + z) dx + (x + z) dy + (x + y) dz = 0$
5. $y \sin 2x dx - (1 + y^2 + \cos^2 x) dy = 0$
6. $y + px = p^2 x^4$
7. $yp^2 + (x - y)p - x = 0$
8. $\frac{dx}{y-zx} = \frac{dy}{yz+x} = \frac{dz}{(x^2+y^2)}$
9. $\frac{dx}{x(y^2-z^2)} = \frac{dy}{y(z^2-x^2)} = \frac{dz}{z(x^2-y^2)}$
10. Use the transformation $x^2 = u$ and $y^2 = v$ to solve the equation $axy p^2 + (x^2 - ay^2 - b)p - xy = 0$

Unit-II

Solve the following differential equations:

11. $D^2 y + (a + b) Dy + aby = 0$
12. $D^3 y - D^2 y - Dy - 2y = 0$
13. $D^3 y + Dy = x^2 + 2x$
14. $y'' + 3y' + 2y = 2(e^{-2x} + x^2)$
15. $y^{(5)} + 2y''' + y' = 2x + \sin x + \cos x$
16. $(D^2 + 1)(D^2 + 4)y = \cos \frac{x}{2} \cos \frac{3x}{2}$
17. $(D^2 + 1)y = \cos x + xe^{2x} + e^x \sin x$
18. $y'' + 3y' + 2y = 12e^x$
19. $y'' - y = \cos x$
20. $4y''' - 5y' = x^2 e^x$

Unit-III

Solve the following differential equations:

21. $y'' + 3y' + 2y = xe^x$
22. $y'' + 3y' + 2y = \sin x$
23. $y'' + y' + y = x^2$
24. $y'' + 2y' + y = x^2e^{-x}$
25. $x^2y'' - xy' + y = 2 \log x$
26. $x^4y''' + 2x^3y'' - x^2y' + xy = 1$
27. $x^2y'' - xy' + 2y = x \log x$
28. $x^2y'' - xy' + 2y = x$

Use the reduction of order method to solve the following homogeneous equation whose one of the solution is given:

29. $y'' - \frac{2}{x}y' + \frac{2}{x^2}y = 0, y_1 = x$
30. $(2x^2 + 1)y'' - 4xy' + 4y = 0, y_1 = x$

Unit-IV

31. Form the partial differential equation, by eliminating the arbitrary constants from $z = (x^2 + a)(y^2 + b)$.
32. Find the differential equation of the family of all planes whose members are all at a constant distance r from the origin.
33. Form the differential equation by eliminating arbitrary function F from $F(x^2 + y^2, z - xy) = 0$.

Solve the following differential equations:

34. $x^2(y - z)p + y^2(z - x)q = z^2(x - y)$
35. $x(z^2 - y^2)p + y(x^2 - z^2)q = z(y^2 - x^2)$
36. $(p^2 - q^2)z = x - y$
37. $z = px + qy + p^2q^2$
38. $z^2 = pqxy$
39. $z^2(p^2 + q^2) = x^2 + y^2$
40. $r + s - 6t = \cos(2x + y)$

B.Sc I yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER II Paper II
Chemistry - II

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S2-I-1 p-block Elements -II

7 h

Oxides: Types of oxides (a) Normal- acidic, basic amphoteric and neutral (b) Mixed (c) sub oxide (d) peroxide (e) superoxide. Structure of oxides of C, N, P, S and Cl - reactivity, thermal stability, hydrolysis.

Oxy acids: Structure and acidic nature of oxyacids of B, C, N, P, S and Cl. Redox properties of oxyacids of Nitrogen: HNO_2 (reaction with FeSO_4 , KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$), HNO_3 (reaction with H_2S , Cu), HNO_4 (reaction with KBr, Aniline), $\text{H}_2\text{N}_2\text{O}_2$ (reaction with KMnO_4). Redox properties of oxyacids of Potassium: H_3PO_2 (reaction with HgCl_2), H_3PO_3 (reaction with AgNO_3 , CuSO_4). Redox properties of oxyacids of Sulphur: H_2SO_3 (reaction with KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$), H_2SO_4 (reaction with Zn, Fe, Cu), $\text{H}_2\text{S}_2\text{O}_3$ (reaction with Cu, Au), H_2SO_5 (reaction with KI, FeSO_4), $\text{H}_2\text{S}_2\text{O}_8$ (reaction with FeSO_4 , KI)

Interhalogens- classification- general preparation- structures of AB , AB_3 , AB_5 and AB_7 type and reactivity. Poly halides- definition and structure of ICl_2^- , ICl_4^- and I_3^- . Comparison of Pseudohalogens with halogens.

S2-I-2 Chemistry of Zero group elements

2 h

General preparation, structure, bonding and reactivity of Xenon compounds – Oxides, Halides and Oxy-halides. Clathrate compounds and Anomalous behavior of He (II)

S2-I-3 Chemistry of d-block elements

6 h

Characteristics of d-block elements with special reference to electronic configuration variable valence, ability to form complexes, magnetic properties & catalytic properties. Stability of various oxidation states and SRP Comparative treatment of second and third transition series with their 3d analogues. Study of Ti, Cr and Cu triads. Titanium triad – electronic configuration and reactivity of +3 and +4 states – oxides and halides. Chromium triad – reactivity of +3 and +6 states. Copper triad – reactivity of +1, +2 and +3 states.

Unit - II (Organic chemistry)

15 h (1 hr/week)

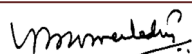
S2-O-1: Aromatic Hydrocarbons

7h

Concept of aromaticity – definition, Huckel's rule – application to Benzenoids and Non – Benzenoids (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation).

Preparations: From acetylene, phenols, benzene carboxylic acids and sulphonic acids

Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation, and halogenation, Friedel Craft's alkylation (polyalkylation) and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - carboxy, nitro, nitrile, carbonyl and sulphonic acid & halo groups.



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Prof. Gade Dayakar, Chairperson, BOS in Chemistry, KU,

Page 8

S2-O-2: Arenes and Polynuclear Aromatic Hydrocarbons**3 h**

Preparation of alkyl benzenes by Friedel Craft's alkylation, Friedel Craft's acylation followed by reduction, Wurtz-Fittig reaction. Chemical reactivity: Ring substitution reactions, side chain substitution reactions and oxidation.

Polynuclear hydrocarbons – Structure of naphthalene and anthracene (Molecular Orbital diagram and resonance energy) Reactivity towards electrophilic substitution. Nitration and sulphonation as examples.

S2-O-3: Halogen compounds**5 hrs**

Nomenclature and classification: alkyl (primary, secondary, tertiary), aryl, aralkyl, allyl, vinyl, benzyl. Chemical reactivity - reduction, formation of RMgX, Nucleophilic substitution reactions – classification into S_N^1 and S_N^2 . Mechanism and energy profile diagrams of S_N^1 and S_N^2 reactions. Stereochemistry of S_N^2 (Walden Inversion) 2-bromobutane, S_N^1 (Racemisation) 1-bromo-1-phenylpropane explanation of both by taking the example of optically active alkyl halide. Structure and reactivity – Ease hydrolysis - comparison of alkyl, vinyl, allyl, aryl, and benzyl halides.

Unit – III (Physical Chemistry)**15 h (1 hr/week)****S2-P-1: Solutions****5 h**

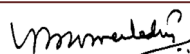
Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes HCl-H₂O and C₂H₅OH - H₂O systems. Fractional distillation, Partially miscible liquids- Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems. Lower upper consolute temperatures. Effect of impurity on consolute temperature. Immiscible liquids and steam distillation. Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law with solvent extraction.

S2-P-2: Dilute Solutions & Colligative Properties**5 h**

Dilute Solutions, Colligative Properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis - laws of osmotic pressure, its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, Van'thoff factor, degree of dissociation and association of solutes.

S2-P-3: Solid state Chemistry**5 h**

Laws of Crystallography – (i) Law of Constancy of interfacial angles (ii) Law of Symmetry, Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Derivation of Bragg's equation, Determination of structure of NaCl, KCl & CsCl (Bragg's method and Powder method).



Dean



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Page 9

Unit – IV (General Chemistry)

15 h (1 hr/week)

S2-G-1: Theory of Quantitative Analysis

5 hours

Volumetric Analysis: Introduction, standard solutions, indicators, end point, titration curves, Types of titrations: i) neutralization titration- principle, theory of acid base indicators, titration curves and selection of indicators- strong acid - strong base, strong acid –weak base, weak acid- strong base and weak acid –weak base.

Gravimetric analysis- Introduction, nucleation, precipitation, growth of precipitate, filtration and washing, drying and incineration of precipitate, coprecipitation and post precipitation. Determination of Ni^{2+}

S3-G-2: Theories of bonding in metals:

5 h

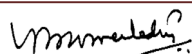
Valence bond theory, Explanation of metallic properties and its limitations, Free electron theory, thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors n-type and p-type, extrinsic & intrinsic semiconductors, and insulators.

S2-G-3: Material Science

5 h

Classification of materials- classification as metals, ceramics, organic polymers, composites, biological materials etc. The property of super conductivity of materials.

Super conducting materials- elements, alloys and compounds. Properties of super conductors- zero resistivity, Meisener effect and thermal properties. Composites- meaning of composites, advanced composites, classification –particle reinforced fiber reinforced and structural composites general characters of composite materials-Particle- reinforced composites – large particle and dispersion- strengthened composite. Fiber reinforced composites (continuous and discontinuous fiber composites).



Dean



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Page 10

References

Unit I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rdedn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L.Gaus 3rdedn
4. Wiley Publishers 2001.Chem
5. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
6. Inorganic Chemistry by Shriver and Atkins 3rdedn Oxford Press 1999.
7. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4thedn.
8. Textbook of inorganic chemistry by R Gopalan

Unit II

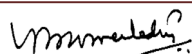
1. Text book of organic chemistry by Morrison and Boyd.
2. Text book of organic chemistry by Graham Solomons.
3. Text book of organic chemistry by BruiceYuranisPowla.
4. Text book of organic chemistry by Soni.
5. General Organic chemistry by Sachinkumar Ghosh.
6. Text book of organic chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara.
3. Text Book of Physical Chemistry by Puri and Sharma
4. Text Book of Physical Chemistry by K. L. Kapoor
5. Physical Chemistry through problems by S.K. Dogra.
6. Elements of Physical Chemistry by Lewis and Glasstone.
7. Material science by Kakani&Kakani

Unit IV

1. Vogel's Text Book of Quantitative Analysis by G.H.Jeffery, J.Bassett, J.Mendham and R.C. Denney 5thedn Addison Wesley Longman Inc. 1999.
2. Quantitative Analysis by Day and Underwood Prentice Hall (India) VI Edn..
3. Nano: The Essentials by T. Pradeep, McGraw-Hill Education.
4. Chemistry of nanomaterials: Synthesis, Properties and applications by CNR Rao et.al.
5. Nanostructured Materials and Nanotechnology, edited by Hari Singh Nalwa, Academic Press
6. College Practical chemistry by V K Ahluwalia, SunithaDhingra and Adarsh Gulati



Dean



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Page 11

Laboratory Course

45hrs (3 h / week)

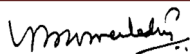
Paper II - Qualitative Analysis - II

I Semi micro analysis of mixtures

Analysis of two anions and two cations in the given mixture.

Anions: CO_3^{2-} , SO_3^{2-} , S^{2-} , Cl^- , Br^- , I^- , CH_3COO^- , NO_3^- , PO_4^{3-} , BO_3^{3-} , SO_4^{2-}

Cations: Ag^+ , Pb^{2+} , Hg^+ , Hg^{2+}
 Pb^{2+} , Bi^{3+} , Cd^{2+} , Cu^{2+} , $\text{As}^{3+/5+}$, $\text{Sb}^{3+/5+}$, $\text{Sn}^{2+/4+}$
 Al^{3+} , Cr^{3+} , Fe^{3+}
 Zn^{2+} , Ni^{2+} , Co^{2+} , Mn^{2+}
 Ca^{2+} , Sr^{2+} , Ba^{2+}
 Mg^{2+} , NH_4^+



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Page 12

B.Sc. with Computer Science Syllabus

II Semester, DSC 1B

Data Structures and File Processing

Unit I

Basic data Structure: Introduction to Data Structures, Types of Data Structures, and Introduction to Algorithms, Pseudocode, and Relationship among data, data structures, and algorithms, Implementation of data structures, Analysis of Algorithms.

Stacks: Concept of Stacks and Queues, Stacks, Stack Abstract Data Type, Representation of Stacks Using Sequential Organization (Arrays), Multiple Stacks, Applications of Stack, Expression Evaluation and Conversion, Polish notation and expression conversion, Processing of Function Calls, Reversing a String with a Stack, Recursion.

Memory Management: Garbage collection algorithms for equal sized blocks, storage allocation for objects with mixed size, buddy systems

Unit II

Recursion: Introduction, Recurrence, Use of Stack in Recursion, Variants of Recursion, Recursive Functions, Iteration versus Recursion.

Queues: Concept of Queues, Queue as Abstract Data Type, Realization of Queues Using Arrays, Circular Queue, Multi-queues, Deque, Priority Queue, Applications of Queues,

Linked Lists: Introduction, Linked List, Linked List Abstract Data Type, Linked List Variants, Doubly Linked List, Circular Linked List, Representation of Sparse Matrix Using Linked List, Linked Stack, Linked Queue, Generalized Linked List, More on Linked Lists.

Unit III

Trees: Introduction, Types of Trees, Binary Tree, Binary Tree Abstract Data Type, Realization of a Binary Tree, Insertion of a Node in Binary Tree, Binary Tree Traversal, Other Tree Operations, Binary Search Tree, Threaded Binary Tree, Applications of Binary Trees.

Searching and Sorting: Searching, Search Techniques, Sorting, Multiway Merge and Polyphase Merge, Comparison of All Sorting Methods, Search Trees: Symbol Table, Optimal Binary Search Tree, AVL Tree (Height-balanced Tree).

B.Sc. with Computer Science Syllabus

Unit IV

Hashing: Introduction, Key Terms and Issues, Hash Functions, Collision Resolution Strategies, Hash Table Overflow, Extendible Hashing, Dictionary, Skip List, Comparison of Hashing and Skip Lists.

Heaps: Basic Concepts, Implementation of Heap, Heap as Abstract Data Type, Heap Applications,

Indexing and Multiway Trees: Introduction, Indexing, Types of Search Trees
Files: Introduction, External Storage Devices, File Organization, Sequential File Organization, Direct Access File Organization, Indexed Sequential File Organization, Linked Organization.

Text books:

1. Varsha H. Patil “ Data structures using C++” Oxford university press, 2012
2. M.T. Goodrich, R. Tamassia and D. Mount, *Data Structures and Algorithms in C++*, John Wiley and Sons, Inc., 2011.

Recommended Books

1. Adam Drozdek “Data structures and algorithm in C++” Second edition, 2001
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, *Introduction to Algorithms*, 2nd Ed., Prentice-Hall of India, 2006.
3. Robert L. Kruse and A.J. Ryba, *Data Structures and Program Design in C++*, Prentice Hall, Inc., NJ, 1998.
4. B. Stroustrup, *The C++ Programming Language*, Addison Wesley, 2004
5. D.E. Knuth, *Fundamental Algorithms* (Vol. I), Addison Wesley, 1997

B.Sc. with Computer Science Syllabus

Practical: Data Structures and File Processing

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Write C++ programs to implement the following using an array
 - a) Stack ADT
 - b) Queue ADT
2. Write a C++ program to implement Circular queue using array.
3. Write C++ programs to implement the following using a single linked list.
 - a) Stack ADT
 - b) Queue ADT
4. Write a C++ program to implement Circular queue using Single linked list.
5. Write a C++ program to implement the double ended queue ADT using double linked list.
6. Write a C++ program to solve tower of hanoi problem recursively
7. Write C++ program to perform the following operations:
 - a) Insert an element into a binary search tree.
 - b) Delete an element from binary search tree.
 - c) Search for a key in a binary search tree.
8. Write C++ programs for the implementation of BFS and DFS.
9. Write a C++ program that uses non-recursive functions to traverse a binary tree.

B.Sc. with Computer Science Syllabus

- a)Pre-order
- b)In-order
- c)Post-order

10. Write a C++ program to find height of a tree.

11 Write a C++ program to find MIN and MAX element of a BST.

12 Write a C++ program to find Inorder Successor of a given node.

13. Write C++ programs to perform the following operations on B-Trees and AVL Trees.

- a)Insertion
- b)Deletion

14 Write C++ programs for sorting a given list of elements in ascending order using the following sorting methods.

- a)Quick sort
- b)Merge sort

15. Write a C++ program to find optimal ordering of matrix multiplication.

16. Write a C++ program that uses dynamic programming algorithm to solve the optimal binary search tree problem

17. Write a C++ program to implement Hash Table

18. Write C++ programs to perform the following on Heap

- a)Build Heap
- b)Insertion
- c)Deletion

19. Write C++ programs to perform following operations on Skip List

- a)Insertion
- b)Deletion

20. Write a C++ program to Heap sort using tree structure.

U.G. I year Semester-II - (B.Sc/B.A./B.Com) CBCS

Environmental Studies

AECC-2 (2 hrs./week)

Credits – 2

(30 hours)

UNIT - I : Ecosystem, Biodiversity & Natural Resources

(15 hrs.)

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity , Genetic, Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu)
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation , Rain water harvesting & Watershed management.

UNIT – II: Environmental Pollution , Global Issues & Legislation

(15 hrs.)

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-
(a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

❖ Field Study:

(5 hours)

- Pond Ecosystem
- Forest Ecosystem

REFERENCES:

- Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
- A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana

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AECC-2

Environmental Studies

Credits – 2

THEORY MODEL PAPER

TIME: 1 ½ HOURS

MAX MARKS: 15

SECTION-A

Answer the following in short:

3x1=3marks

1. Food chains
2. Genetic Diversity
3. Ill – effects of Fire- works

SECTION-B

Answer the following essays:

2x6=12marks

1 (a) Define Environmental Studies & write an essay on scope & importance of Environmental Studies

OR

(b) Write in detail about Energy resources.

2 (a) Write the Causes, Effects & Control measures of Air Pollution

OR

(b) Describe the role of Information technology in environment and human health

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BS2

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**B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany**

DSC-1B (4 hrs./week)	Theory Syllabus	Credits- 4 (60 hours)
UNIT-I		
	1. Bryophytes: General characters and classification.	(3h)
	2. Structure, reproduction, life cycle and systematic position of <i>Marchantia</i> , <i>Anthoceros</i> and <i>Polytrichum</i> . (Development stages are not required).	(10h)
	3. Evolution of Sporophyte in Bryophytes.	(2h)
UNIT-II		
	4. Pteridophytes: General characters and classification (Sporne's)	(3h)
	5. Structure, reproduction, life cycle and systematic position of <i>Rhynia</i> , <i>Lycopodium</i> , <i>Equisetum</i> and <i>Marsilea</i> .	(10h)
	6. Stelar evolution, heterospory and seed habit in Pteridophytes.	(2h)
UNIT-III		
	7. Gymnosperms: General characters, structure, reproduction and classification (Sporne's).	(4h)
	8. Distribution and economic importance of Gymnosperms.	(3h)
	9. Morphology of vegetative and reproductive parts, systematic position and life cycle of <i>Pinus</i> and <i>Gnetum</i> .	(8 h)
UNIT-IV.		
	10. Palaeobotany: Introduction, Fossils and fossilization ; Importance of fossils.	(8 h)
	11. Geological time scale;	(4 h)
	12. Bennettitales: General account.	(3 h)

Page 1
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1/11/2020

References:

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
2. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
3. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
4. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany - Pteridophyta (Vascular Cryptogams). . Chand & Company Ltd, New Delhi.
5. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
6. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
7. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
8. Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. Botany for Degree Students: Bryophyta. S. Chand & Company Ltd, New Delhi.
9. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany for Degree Students: Gymnosperms. Chand & Company Ltd, New Delhi.
10. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

Bogues
A. C. Dutta

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B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

Theory Model Question Paper

Time : 2 hrs

Max. Marks: 40

Draw well-labeled diagrams wherever necessary.

1 . Write short notes on any FOUR of the following: -

4 X 2 = 8M

- a. Gemma cup.
- b. Protostele .
- c. *Pinus* pollen grain.
- d. *Ptilophyllum*.
- e. *Anthoceros* thallus
- f. Fossilization

II . Essay Questions:

4 X 8 = 32M

1. a. Write about the structure & evolution of sporophyte in *Anthoceros* .
(OR)
b. Describe the gametophores of *Marchantia* .
2. a. Describe the anatomy of *Equisetum* stem & add a note on its ecological adaptations .
(OR)
b. Discuss in detail the internal structure of the sporocarp of *Marsilea* .
- 3.a. Describe the anatomy of *Pinus* needle with a well labeled diagram.
(OR)
b. Give an account of general characters of Gymnosperms.
4. a. Describe the general characters of Bennettitales .
(OR)
b. Write about economic importance of Gymnosperms.

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**B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany**

(45 hours)

Practical Syllabus – 2016

1. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Bryophytes: *Marchantia*, *Anthoceros* and *Polytrichum*. (9 h)
2. Study of Morphology (vegetative and reproductive structures) and anatomy of the following Pteridophytes: *Lycopodium*, *Equisetum* and *Marsilea*. (9 h)
3. Study of Anatomical features of *Lycopodium* stem, *Equisetum* stem and *Marsilea* petiole & rhizome by preparing double stained permanent mounts. (12h)
4. Study of Morphology (vegetative and reproductive structures) of the following taxa: Gymnosperms: *Pinus* and *Gnetum*. (6 h)
5. Study of Anatomical features of *Pinus* needle and *Gnetum* stem by preparing double stained permanent mounts. (6h)
6. Fossil forms using permanent slides / photographs: *Rhynia* and *Cycadeoidea*. (3h)

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A. J.
B.R. (M.M.)

B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

Practical Model Paper

Time : 2 1/2 hrs

Max. Marks: 25

1 . Prepare a double stained permanent mount of the given material ' A ' (Pteridophyte)

Draw diagram & give reasons for identification.

7M

2 . Prepare a double stained permanent mount of the given material ' B ' (Gymnosperms)

Draw diagram & give reasons for identification.

8M

3 . Identify the given specimens C , D , E & F (Bryophyte – 2 , Pteridophyte – 1 & Gymnosperm – 1)

4 X 1 =4M

4 . Identify the given slides G , H , I & J (Bryophyte – 2 , Pteridophyte – 1

& Gymnosperm – 1)

4 X 1 =4M

5 . Record

2M

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A. c. e.

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(or m)

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

(With effect from 2016-2017)

II - SEMESTER

DSC-1B (Theory)

Ecology, Zoogeography and Animal Behavior

Max. Marks: 80

UNIT – I

- 1.1 Ecosystem structure and functions.
- 1.2 Types of Ecosystems –Aquatic and Terrestrial.
- 1.3 Biogeochemical cycles - Nitrogen, Carbon, Phosphorus and Water.
- 1.4 Energy flow in ecosystem; Food chain, food web and ecological pyramids.
- 1.5 Animal Associations - Mutualism, commensalism, parasitism, competition, predation.

UNIT – II

- 2.1 Concept of Species, Population dynamics and Growth curves.
- 2.2 Community Structure and dynamics; Ecological Succession.
- 2.3 Ecological Adaptations.
- 2.4 Environmental Pollution – Sources, Effect and Control measures of Air, Water, Soil and Noise pollution.
- 2.5 Wildlife conservation - National parks and Sanctuaries of India, Endangered species. Biodiversity and hotspots of Biodiversity in India.

UNIT – III

- 3.1 Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities.
- 3.2 Wallace line
- 3.3 Discontinuous distribution.
- 3.4 Continental Drift

UNIT – IV

- 4.1 Types of Behaviour- Innate and Acquired, Instinctive and Motivated behavior.
- 4.2 Taxes, Reflexes, Tropisms.
- 4.3 Physiology and phylogeny of learning, trial and error learning, Imprinting, habituation, Classical conditioning, Instrumental conditioning.
- 4.4 Social behavior, Communication, Pheromones.
- 4.5 Biological rhythms, Biological clocks, Circadian rhythms.

Suggested Readings

M.P.Arora, '*Ecology*' Himalaya Publishing company.

P.D.Sharma, '*Environmental Biology*'.

P.R.Trivedi and Gurdeep Raj. '*Environmental Ecology*'

Buddhadev Sarma and Tej Kumar, '*Indian Wildlife Threats and Preservation*

Chapman J.L. and Reiss M.J, '*Ecology Principles and Applications*, Second Ed., Cambridge University Press, London.

Benny Joseph, '*Environmental Studies*, TATA McGraw Hill Com., New Delhi.

Eugene P. Odum, '*Fundamentals of Ecology* Third Ed., NataraJ Publishers, Dehradun.

Veer Bala Rastogi, "Ecology and Animal Distribution"

P.K. Gupta, "Text Book of Ecology and Environment"

Bhatnagar and Bansal, "Ecology and Wildlife biology"

Dasmann, "Wild life Biology"

Reena Mathur, "Animal Behaviour"

Alocock, "Animal Behaviour- an Evolutionalry Approach"

B.Sc. PRACTICAL SYLLABUS FOR II SEMESTER
ZOOLOGY - Core Paper – II
Ecology, Zoogeography and Animal Behavior

Max. Marks: 50

1. Determination of pH of Soil and Water
2. Estimation of salinity (chlorides) of water in given samples.
3. Estimation of Carbonates and bicarbonates in the given water samples.
4. Estimation of dissolved oxygen of pond water, sewage water and effluents.
5. Identification of Zooplankton from a nearby water body.
6. Study of Pond Ecosystem / local polluted site - Report submission
7. Study of at least 3 endangered or threatened wild animals of India through photographs / specimens / models
8. Field visit to Zoo Park to study the management, behavior and enumeration of wild animals.
9. Identification of Zoogeographical realms from the Map and identify specific fauna of respective regions.
10. Observe the response of invertebrates in different lightening conditions

Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals

1. **Robert Desharnais, Jeffrey Bell**, 'Ecology Student Lab Manual, Biology Labs'
2. **Darrell S Vodopich**, 'Ecology Lab Manual'

KAKATIYA UNIVERSITY
B.Sc. I YEAR SEMESTER-II
Ability Enhancement Compulsory Course (AECC)
Basic Computer Skills

FUNDAMENTALS OF COMPUTERS

Unit-I:

Introduction to Computers: what is a computer, characteristics of Computers, Generations of Computers, Classifications of Computers, Basic Computer organization, Applications of Computers. Input and Output Devices: Input devices, Output devices, Softcopy devices, Hard copy devices. Computer Memory and Processors: Introduction, Memory Hierarchy, Processor, Registers, Cache memory, primary memory, secondary storage devices, magnetic tapes, floppy disks, hard disks, optical drives, USB flash drivers, Memory cards, Mass storage devices, Basic processors architecture.

Unit-II:

Number System and Computer Codes: Binary number system, working with binary numbers, octal number system, hexadecimal number system, working with fractions, signed number representation in binary form, BCD code, and other codes. Boolean algebra and logic gates: Boolean algebra, Venn diagrams, representation of Boolean functions, logic gates, logic diagrams and Boolean expressions using karnaugh map. Computer Software: Introduction to computer software, classification of computer software, system software, application software, firmware, middleware, acquiring computer software, design and implementation of correct, efficient and maintainable programs.

Text: ReemaThareja, Fundamentals of Computers.

References

1. V.Rajaraman, 6th Edition Fundamentals of Computers, NeeharikaAdabala.
2. Anita Goel, Computer Fundamentals.

DEPARTMENT OF ENGLISH
KAKATIYA UNIVERSITY
ENGLISH TEXT BOOK (ENGLISH FOR ACCOMPLISHMENT) FOR
B.A., B.Com., B.Sc., B.B.M. & B.C.A. III SEMESTER

UNIT ONE (SHORT FICTION)	TEXT	The Touch By Abburi Chayadevi
	Grammar	Concord
	Etymology	Word Origin
	Reading Comprehension	P.V.Narasimha Rao
	Writing	Letter Writing
	Language Skills	Listening Skills: Types of Listening, Barriers to Effective Listening
	Communication & Soft Skills	Brain Storming
UNIT TWO (PROSE)	Text	To Students by M K Gandhi
	Grammar	Words and Their Forms
	Etymology	Fun with Words
	Reading Comprehension	Basara, Badradri
	Writing	Note-making / Note-taking
	Language Skills	Speaking Skills: Conversation Skills
	Communication & Soft Skills	JAM
UNIT THREE (POETRY)	Text	The Bat Messenger by Jashuva
	Grammar	Finding out correct option/ error
	Etymology	Loan Words
	Reading Comprehension	Perini
	Writing	Essay Writing
	Language Skills	Reading Skills: Skimming and Scanning
	Communication & Soft Skills	Oral Presentation
UNIT FOUR (DRAMA)	Text	Ramanujan by Partap Sehgal
	Grammar	Finding out correct order/ jumbled words
	Etymology	Derivations
	Reading Comprehension	Mimicry
	Writing	Expansion of Idea/ Proverb
	Language Skills	Writing Skills: Paragraph Writing
	Communication & Soft Skills	Dialogue Writing


DEAN
Faculty of Arts
Kakatiya University
WARANGAL-506 009


Chairman
Board of Studies in English
Kakatiya University
WARANGAL-506009 (TS)

Unit I : कबीरदास, सूरदास, तुलसीदास

unit II: मैथिली शरणगुप्त - नवयुवकों से.

अयोध्यासिंह उपाध्याय 'हरिऔध' - फूल और कांटा

जयशंकर प्रसाद - भारत

सुमित्रानंदन पंत- - जीवन का अधिकार

सुभद्राकुमारी चौहान - मेरा नया बचपन

unit III: हिंदी साहित्य का इतिहास

आदिकाल- नामकरण, परिस्थितियाँ, और प्रवृत्तियाँ ।

भक्तिकाल-नामकरण, परिस्थितियाँ, और प्रवृत्तियाँ ।

unit IV: हिंदी साहित्य का इतिहास - निम्न लिखित रचनाकार और कवियों का संक्षिप्त अध्ययन ।

चंदबर्दायी, कबीरदास, सूरदास, तुलसीदास, जयशंकर प्रसाद,

सुमित्रा नंदनपंत, भारतेंदु हरिश्चंद्र,

मैथिलीशरण गुप्त, रामधारीसिंह 'दिनकर'।

Unit V: निबंध लेखन- निम्न लिखित सामाजिक, राजनैतिक साहित्यिक विषयों पर निबंध लेखन ।

- 1) साहित्य और समाज
- 2) विद्यार्थि और राजनीति
- 3) विज्ञान: वरदान या अभिशाप
- 4) आधुनिक शिक्षा और नारी
- 5) शिक्षा पर भ्रूंडलीकरण का प्रभाव
- 6) जीवन में स्वच्छता का महत्व
- 7) आज की शिक्षा नीति
- 8) भारतीय संस्कृति
- 9) पर्यावरण और प्रदूषण
- 10) समाज में नारी का स्थान

Prakash
Dean
Faculty of Arts
Kakatiya University
Warangal-508 009

DEPARTMENT OF TELUGU, FACULTY OF ARTS
KAKATIYA UNIVERSITY, WARANGAL
B.A., II Year Syllabus - 2017-2018
Second Language
SEMESTER - III

UNIT - I ప్రాచీన కవిత్వం

1. ధర్మజుని వాక్యాతుర్వం
(ఉద్యోగ పర్వం, తృతీయాశ్వాసం 3-34) - తిక్కన
2. విభీషణ శరణాగతి (రంగనాథ రామాయణం)- గోనబుద్ధారెడ్డి
3. గుణనిధి కథ - శ్రీనాథుడు

UNIT - II ఆధునిక కవిత్వం

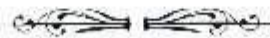
1. రైతు ప్రశస్తి (రైతు రామాయణం) - వాసమామలై జగన్నాథాచార్యులు
2. గుడిసెలు కాలిపోతున్నై - బోయి భీమన్న
3. ఆర్తగీతం - దేవరకొండ బాలగంగాధర తిలక్

UNIT - III వచన విభాగం

1. అర్ధరాత్రి అరుణోదయం (జీవనయానం) - దాశరథి రంగాచార్య
2. సి.పి. బ్రౌన్ సాహిత్య సేవ - జానుమట్టి హనుమచ్ఛాస్త్రి
3. కొండమల్లెలు (కథ) - ఇల్లిందుల సరస్వతీదేవి

UNIT - IV వచన విభాగం

1. చలిచీమలు (సాంఘిక నాటకం) : పి.వి రమణ




Dean
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Warangal-506 009

B.A., B. Sc & B.Com SECOND YEAR – 2016-2017
URDU SECOND LANGUAGE
“MUTALA – E – ADAB” (PART – II)
(compiled by Urdu Department, Osmania University. Hyd.)
Published in August 2008 by Urdu Academy – Hyderabad.

SEMESTER : III

PAPER – III

URDU POETRY & PROSE

UNIT :I

MASNAVI : - Amn Nama by Jaan Nisar Akhtar.

UNIT :II

QASIDA : - Dar Shaan – e – Hameedud Dawla by Zauq Dehelvi .

UNIT :III

DAASTAN : - Intequab – e – Sabras by Mulla Wajhi (Selected from “Sabras”).

UNIT :IV

NOVEL : - NasooH ki Saleem Se Guftagoo by Deputy Nazeer Ahmed (Selected from “Taubatun NasooH”).

UNIT :V

INSHAIYA : - Zauqu – e – chai Noshi – By Maulana Azad (Selected form “Ghubar – e – Khatir”).

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

**B.Sc. (Physics)- II Year
Semester – III
Paper – III:: Thermal Physics
(w.e.f the academic year 2017-18)**

**Total: 48 hrs
(4 Hrs / week)**

Unit – I

1. Kinetic theory of gases: (4)

Introduction – Deduction of Maxwell's law of distribution of molecular speeds, Transport Phenomena – Viscosity of gases – thermal conductivity – diffusion of gases.

2. Thermodynamics: (8)

Basics of Thermodynamics-Kelvin's and Clausius statements – Thermodynamic scale of temperature – Entropy, physical significance – Change in entropy in reversible and irreversible processes – Entropy and disorder – Entropy of universe – Temperature- Entropy (T-S) diagram – Change of entropy of a perfect gas-change of entropy when ice changes into steam.

Unit – II

3. Thermodynamic potentials and Maxwell's equations: (6)

Thermodynamic potentials – Derivation of Maxwell's thermodynamic relations – Clausius-Clayperon's equation – Derivation for ratio of specific heats – Derivation for difference of two specific heats for perfect gas. Joule Kelvin effect – expression for Joule Kelvin coefficient for perfect and Vanderwaal's gas.

4. Low temperature Physics: (6)

Joule Kelvin effect – liquefaction of gas using porous plug experiment. Joule expansion – Distinction between adiabatic and Joule Thomson expansion – Expression for Joule Thomson cooling – Liquefaction of helium, Kapitza's method – Adiabatic demagnetization – Production of low temperatures – Principle of refrigeration, vapour compression type.

Unit – III

5. Quantum theory of radiation: (12)

Black body-Ferry's black body – distribution of energy in the spectrum of Black body – Wein's displacement law, Wein's law, Rayleigh-Jean's law – Quantum theory of radiation - Planck's law – deduction of Wein's law, Rayleigh-Jeans law, Stefan's law from Planck's law.Measurement of radiation using pyrometers – Disappearing filament optical pyrometer – experimental determination – Angstrom pyroheliometer - determination of solar constant, effective temperature of sun.

Unit – IV

6. Statistical Mechanics: (12)

Introduction, postulates of statistical mechanics. Phase space, concept of ensembles and some known ensembles ,classical and quantum statistics and their differences, concept of probability, Maxwell-Boltzmann's distribution law -Molecular energies in an ideal gas- Maxwell-Boltzmann's velocity distribution law, Bose-Einstein Distribution law, Fermi-Dirac Distribution law, comparison of three distribution laws, Application of B-E distribution to Photons-Planks radiation formula, Application of Fermi-Dirac statistics to white dwarfs and Neutron stars.

NOTE: Problems should be solved at the end of every chapter of all units.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug, 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

Suggested books

1. **Fundamentals of Physics.** Halliday/Resnick/Walker.C. *Wiley India Edition 2007.*
2. **Second Year Physics – Telugu Academy.**
3. **Modern Physics** by R. Murugesan and Kiruthiga Siva Prasath (for statistical Mechanics) *S. Chand & Co.*
4. **Modern Physics** by G. Aruldhas and P. Rajagopal, *Eastern Economy Education.*
5. Berkeley Physics Course. Volume-5. **Statistical Physics** by F. Reif. *The McGraw-Hill Companies.*
6. **An Introduction to Thermal Physics** by Daniel V. Schroeder. *Pearson Education Low Price Edition.*
7. **Thermodynamics** by R.C. Srivastava, Subit K. Saha & Abhay K. *Jain Eastern Economy Edition.*
8. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand & Co. Publications.*
9. **Feynman’s Lectures on Physics** Vol. 1,2,3 & 4. *Narosa Publications.*
10. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*
12. B.B. Laud “**Introduction to statistics Mechanics**”(Macmillan 1981)
13. F.Reif:”**Statistical Physics** “(Mcgraw-Hill,1998)
14. K.Haug: ”**Statistical Physics** “(Wiley Eastern 1988)

B.Sc. (Physics Practicals) – II year Semester - III

Paper – III:: Thermal Physics Practicals

1. Co-efficient of thermal conductivity of a bad conductor by Lee’s method.
2. Measurement of Stefan’s constant.
3. Specific heat of a liquid by applying Newton’s law of cooling correction.
4. Heating efficiency of electrical kettle with varying voltages.
5. Calibration of thermo couple
6. Cooling Curve of a metallic body
7. Resistance thermometer
8. Thermal expansion of solids
9. Study of conversion of mechanical energy to heat.
10. Determine the Specific of a solid (graphite rod)

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, “A laboratory manual for undergraduate classes” (Vani Publishing House, New Delhi).
2. S.P. Singh, “Advanced Practical Physics” (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. “Practical Physics” R.K Shukla, Anchal Srivastava



Dr. B. Venkatram Reddy
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Date: 24th Aug., 2016 & 5th June, 2017

Theory: 4 credits and Practical 1 credit
Theory: 4 hours/week and Practicals : 2 hours/ week

Objective : The course is aimed at exposing the students to the foundations of analysis which will be useful in understanding various physical phenomena.

Outcome: After the completion of the course students will be in a position to appreciate beauty and applicability of the course.

Unit- I

Sequences- Limits of sequences- A Discussion about Proofs- Limit Theorems for Sequences – Monotone Sequences and Cauchy Sequences

Unit- II

Subsequences- Lim sup's and Lim inf's Series- Alternating Series and Integrals Tests.
Continuity : Continuous functions- Properties of Continuous functions.

Unit – III

Sequence and Series of Functions: Power Series- Uniform Convergence – More on Uniform Convergence- Differentiation and Integration of Power Series (Theorems in this section without Proofs)

Unit – IV

Integration : The Riemann Integral- Properties of Riemann Integral- Fundamental Theorem of Calculus.

Text : Kenneth A Ross, Elementary Analysis- The Theory of Calculus

References :

William F.Trench: Introduction to Real Analysis

Lee Larson: Introduction to Real Analysis

Shanti Narayan and Mittal: Mathematical Analysis

Brian S. Thomson, Judith B. Bruckner, Andrew M. Bruckner: Elementary Real Analysis

Sudhir R. Ghorpade Balmohan V. Limaye: A Course in Calculus and Real Analysis

2.5.1 Practicals Question Bank

Real Analysis

Unit-I

1. For each sequence below, determine whether it converges and, if it converges, give its limit. No proofs are required.

(a) $a_n = \frac{n}{n+1}$

(b) $b_n = \frac{n^2+3}{n^2-3}$

(c) $c_n = 2^{-n}$

(d) $t_n = 1 + \frac{2}{n}$

(e) $x_n = 73 + (-1)^n$

(f) $s_n = (2)^{\frac{1}{n}}$

2. Determine the limits of the following sequences, and then prove your claims.

(a) $a_n = \frac{n}{n^2+1}$

(b) $b_n = \frac{7n-19}{3n+7}$

(c) $c_n = \frac{4n+3}{7n-5}$

(d) $d_n = \frac{2n+4}{5n+2}$

(e) $s_n = \frac{1}{n} \sin n$

3. Suppose $\lim a_n = a$, $\lim b_n = b$, and $s_n = \frac{a_n^3+4a_n}{b_n^2+1}$. Prove $\lim s_n = \frac{a^3+4a}{b^2+1}$ carefully, using the limit theorems.

4. Let $x_1 = 1$ and $x_{n+1} = 3x_n^2$ for $n \geq 1$.

(a) Show if $a = \lim x_n$, then $a = \frac{1}{3}$ or $a = 0$.

(b) Does $\lim x_n$ exist? Explain.

(c) Discuss the apparent contradiction between parts (a) and (b).

5. Which of the following sequences are increasing? decreasing? bounded?

(a) $\frac{1}{n}$

(b) $\frac{(-1)^n}{n^2}$

(c) n^5

(d) $\sin(\frac{n\pi}{7})$

(e) $(-2)^n$

(f) $\frac{n}{3^n}$

6. Let (s_n) be a sequence such that $|s_{n+1} - s_n| < 2^{-n}$ for all $n \in \mathbb{N}$. Prove (s_n) is a Cauchy sequence and hence a convergent sequence.

7. Let (s_n) be an increasing sequence of positive numbers and define $\sigma_n = \frac{1}{n}(s_1 + s_2 + \dots + s_n)$. Prove (σ_n) is an increasing sequence.

8. Let $t_1 = 1$ and $t_{n+1} = [1 - \frac{1}{4n^2}].t_n$ for $n \geq 1$.

(a) Show $\lim t_n$ exists.

(b) What do you think $\lim t_n$ is?

- (e) $\limsup s_n + \limsup t_n$, (f) $\liminf(s_n t_n)$,
 (g) $\limsup(s_n t_n)$.

15. Determine which of the following series converge. Justify your answers.

- (a) $\sum \frac{n^4}{2^n}$ (b) $\sum \frac{2^n}{n!}$
 (c) $\sum \frac{n^2}{3^n}$ (d) $\sum \frac{n!}{n^4+3}$
 (e) $\sum \frac{\cos^2 n}{n^2}$ (f) $\sum_{n=2}^{\infty} \frac{1}{\log n}$

16. Prove that if $\sum a_n$ is a convergent series of nonnegative numbers and $p > 1$, then $\sum a_n^p$ converges.

17. Show that if $\sum a_n$ and $\sum b_n$ are convergent series of nonnegative numbers, then $\sum \sqrt{a_n b_n}$ converges.

Hint: Show $\sqrt{a_n b_n} \leq a_n + b_n$ for all n .

18. We have seen that it is often a lot harder to find the value of an infinite sum than to show it exists. Here are some sums that can be handled.

- (a) Calculate $\sum_{n=1}^{\infty} (\frac{2}{3})^n$ and $\sum_{n=1}^{\infty} (-\frac{2}{3})^n$.
 (b) Prove $\sum_{n=1}^{\infty} \frac{1}{n(n+1)} = 1$. Hint: Note that $\sum_{k=1}^n \frac{1}{k(k+1)} = \sum_{k=1}^n [\frac{1}{k} - \frac{1}{k+1}]$.
 (c) Prove $\sum_{n=1}^{\infty} \frac{n-1}{2^{n+1}} = \frac{1}{2}$. Hint: Note $\frac{k-1}{2^{k+1}} = \frac{k}{2^k} - \frac{k+1}{2^{k+1}}$.
 (d) Use (c) to calculate $\sum_{n=1}^{\infty} \frac{n}{2^n}$.

19. Determine which of the following series converge. Justify your answers.

- (a) $\sum_{n=2}^{\infty} \frac{1}{\sqrt{n \log n}}$ (b) $\sum_{n=2}^{\infty} \frac{\log n}{n}$
 (c) $\sum_{n=4}^{\infty} \frac{1}{n(\log n)(\log \log n)}$ (d) $\sum_{n=2}^{\infty} \frac{\log n}{n^2}$

20. Show $\sum_{n=2}^{\infty} \frac{1}{n(\log n)^p}$ converges if and only if $p > 1$.

UNIT-III

21. For each of the following power series, find the radius of convergence and determine the exact interval of convergence.

- (a) $\sum n^2 x^n$ (b) $\sum (\frac{x}{n})^n$
 (c) $\sum (\frac{2^n}{n^2}) x^n$ (d) $\sum (\frac{n^3}{3^n}) x^n$
 (e) $\sum (\frac{2^n}{n!}) x^n$ (f) $\sum (\frac{1}{(n+1)^{2 \cdot 2^n}}) x^n$

(g) $\sum (\frac{3^n}{n \cdot 4^n}) x^n$

(h) $\sum (\frac{(-1)^n}{n^2 \cdot 4^n}) x^n$

22. For $n = 0, 1, 2, 3, \dots$, let $a_n = \lceil \frac{4+2(-1)^n}{5} \rceil^n$.

(a) Find $\limsup (a_n)^{1/n}$, $\liminf (a_n)^{1/n}$, $\limsup |\frac{a_{n+1}}{a_n}|$ and $\liminf |\frac{a_{n+1}}{a_n}|$.

(b) Do the series $\sum a_n$ and $\sum (-1)^n a_n$ converge? Explain briefly.

23. Let $f_n(x) = \frac{1+2\cos^2 nx}{\sqrt{n}}$. Prove carefully that (f_n) converges uniformly to 0 on \mathbb{R} .

24. Prove that if $f_n \rightarrow f$ uniformly on a set S , and if $g_n \rightarrow g$ uniformly on S , then $f_n + g_n \rightarrow f + g$ uniformly on S .

25. Let $f_n(x) = \frac{x^n}{n}$. Show (f_n) is uniformly convergent on $[-1, 1]$ and specify the limit function.

26. Let $f_n(x) = \frac{n+\cos x}{2n+\sin^2 x}$ for all real numbers x .

(a) Show (f_n) converges uniformly on \mathbb{R} . Hint: First decide what the limit function is; then show (f_n) converges uniformly to it.

(b) Calculate $\lim_{n \rightarrow \infty} \int_2^7 f_n(x) dx$. Hint: Don't integrate f_n .

27. Show $\sum_{n=1}^{\infty} \frac{1}{n^2} \cos nx$ converges uniformly on \mathbb{R} to a continuous function.

28. Show $\sum_{n=1}^{\infty} \frac{x^n}{n^2 2^n}$ has radius of convergence 2 and the series converges uniformly to a continuous function on $[-2, 2]$.

29. (a) Show $\sum \frac{x^n}{1+x^n}$ converges for $x \in [0, 1)$

(b) Show that the series converges uniformly on $[0, a]$ for each $a, 0 < a < 1$.

30. Suppose $\sum_{k=1}^{\infty} g_k$ and $\sum_{k=1}^{\infty} h_k$ converge uniformly on a set S . Show $\sum_{k=1}^{\infty} (g_k + h_k)$ converges uniformly on S .

UNIT-IV

31. Let $f(x) = x$ for rational x and $f(x) = 0$ for irrational x .

(a) Calculate the upper and lower Darboux integrals for f on the interval $[0, b]$.

(b) Is f integrable on $[0, b]$?

32. Let f be a bounded function on $[a, b]$. Suppose there exist sequences (U_n) and (L_n) of upper and lower Darboux sums for f such that $\lim(U_n - L_n) = 0$. Show f is integrable and $\int_a^b f = \lim U_n = \lim L_n$.

33. A function f on $[a, b]$ is called a step function if there exists a partition $P = \{a = u_0 < u_1 < \dots < u_m = b\}$ of $[a, b]$ such that f is constant on each interval (u_{j-1}, u_j) , say $f(x) = c_j$ for x in (u_{j-1}, u_j) .

(a) Show that a step function f is integrable and evaluate $\int_a^b f$.

(b) Evaluate the integral $\int_0^4 P(x) dx$ for the postage-stamp function.

34. Show $|\int_{-2\pi}^{2\pi} x^2 \sin^8(e^x) dx| \leq \frac{16\pi^3}{3}$.

35. Let f be a bounded function on $[a, b]$, so that there exists $B > 0$ such that $|f(x)| \leq B$ for all $x \in [a, b]$.

(a) Show

$$U(f^2, P) - L(f^2, P) \leq 2B[U(f, P) - L(f, P)]$$

for all partitions P of $[a, b]$. Hint: $f(x)^2 - f(y)^2 = [f(x) + f(y)][f(x) - f(y)]$

(b) Show that if f is integrable on $[a, b]$, then f^2 also is integrable on $[a, b]$.

36. Calculate

(a) $\lim_{x \rightarrow 0} \frac{1}{x} \int_0^x e^{t^2} dt$

(b) $\lim_{h \rightarrow 0} \frac{1}{h} \int_3^{3+h} e^{t^2} dt.$

37. Show that if f is a continuous real-valued function on $[a, b]$ satisfying $\int_a^b f(x)g(x)dx = 0$ for every continuous function g on $[a, b]$, then $f(x) = 0$ for all x in $[a, b]$.



**Skill Enhancement Course – I - FOR ALL SCIENCE FACULTY B.Sc., II
YEAR, III Semester
DEPARTMENTS**

COMPUTER BASICS AND AUTOMATION

Credits: 2

Theory: 2 hours/week

Marks - 50

Unit –I BASICS OF COMPUTERS

- 1.2 Introduction to computers- Computer parts and Characteristics of computer.
- 1.2. Generations of Computers, Classification of Computers, Basic computer organization.
- 1.3. Applications of Computer. Input and Output Devices- Input Devices, Output Devices.
- 1.4. Soft Copy Devices, Hard Copy Devices. Computer Memory and Processors.

Unit – II OFFICE AUTOMATION

- 1.1. Desktop - Word - Creation of files and folders, recycle Bin.
- 1.2. Web browser, Office Automation System, need for Office Automation System.
- 1.3. Excel – Tables, graphs
- 1.4. PowerPoint, Access to files and folders.

Text Book:

- 1. Reema Thareja “Fundamentals of Computers” Oxford University Press 2015.

References:

- 1. A. Goel, Computer Fundamentals, Pearson Education, 2010.
- 2. Spoken Tutorial on “Linux (Ubuntu), LibreOffice (Writer, Calc, Impress), Firefox”, as E-resource for Learning. <http://spoken-tutorial.org>

B.Sc II yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER III
Paper-III
Chemistry - III

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S3-I-1: Chemistry of f-block elements:

6 h

Chemistry of Lanthanides: Position in periodic table, Electronic structure, oxidation state, ionic and atomic radii- lanthanide contraction- cause and consequences, anomalous behavior of post lanthanides-complexation- type of donor ligands preferred. Magnetic properties- paramagnetism. Colour and spectra, f-f transitions – occurrence and separation – ion exchange method, solvent extraction.

Chemistry of actinides- general features – electronic configuration, oxidation state, actinide contraction, colour and complex formation. Comparison with lanthanides.

S3-I-2: Symmetry of molecules

5 h

Symmetry operations and symmetry elements in molecules. Definition of Axis of symmetry types of C_n , Plane of symmetry (σ_h , σ_v , σ_d) Center of symmetry and improper rotational axis of symmetry (S_n). Explanation with examples.

S3-I-3: Non – aqueous solvents

4 h

Classification and characteristics of a solvent. Reactions in liquid ammonia – physical properties, auto-ionisation, examples of ammonium acids and ammonium bases. Reactions in liquid ammonia – precipitation, neutralization, solvolysis, solvation - solutions of metals in ammonia, complex formation, redox reactions. Reactions in HF – autoionisation, reactions in HF – precipitation, acid – base reactions, protonation.

Unit - II (Organic chemistry) 15 h (1 hr/week)

S3-O-1: Alcohols

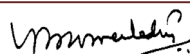
6 hrs

Preparation: 1°, 2° and 3° alcohols using Grignard reagent, Ester hydrolysis, Reduction of Carbonyl compounds, carboxylic acids and esters. Physical properties: H-bonding, Boiling point and Solubility. Reactions with Sodium, $HX/ZnCl_2$ (Lucas reagent), esterification, oxidation with PCC, alk. $KMnO_4$, acidic dichromates, conc. HNO_3 and Oppenauer oxidation.

Diols: Pinacol - pinacolone rearrangement

Phenols: Preparation: (i) from diazonium salts of anilines, (ii) from benzene sulphonic acids and (iii) Cumenehydroperoxide method.

Properties: Acidic nature, formation of phenoxide and reaction with R-X, electrophilic substitution nitration, halogenation and sulphonation. Reimer-Tiemann reaction, Gattermann-Koch reaction, Azo-coupling reaction, Schotten-Bouman reaction, Houben-Hoesch condensation, $FeCl_3$ reaction.



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Page 13

S3-O-2: Ethers and epoxides**2hrs**

Nomenclature, preparation by (a) Williamson's synthesis (b) from alkenes by the action of conc. H_2SO_4 . Physical properties – Absence of Hydrogen bonding, insoluble in water, low boiling point. Chemical properties – inert nature, action of conc. H_2SO_4 and HI.

S3-O-3 Carbonyl compounds**7 h**

Nomenclature of aliphatic and aromatic carbonyl compounds and isomerism.

Preparation of aldehydes & ketones from acid chloride, 1,3-dithianes, nitriles and from carboxylic acids. Special methods of preparing aromatic aldehydes and ketones by (a) Oxidation of arenes (b) Hydrolysis of benzal halides Physical properties – absence of Hydrogen bonding. Keto-enol tautomerism, polarisability of carbonyl groups, reactivity of the carbonyl groups in aldehydes and ketones. Chemical reactivity: Addition of (a) NaHSO_3 (b) HCN (c) RMgX (d) NH_3 (e) RNH_2 (f) NH_2OH (g) PhNHNH_2 (h) 2,4DNP (Schiff bases). Addition of H_2O to form hydrate (unstable), comparison with chloral hydrate (stable), addition of alcohols - hemiacetal and acetal formation. Base catalysed reactions with mechanism- Aldol, Cannizzaro reaction, Perkin reaction, Benzoin condensation, haloform reaction, Knoevenagel condensation. Oxidation reactions – KMnO_4 oxidation and auto oxidation, reduction – catalytic hydrogenation, Clemmenson's reduction, Wolf-kishner reduction, Meerwein-Ponndorf-Verly reduction, reduction with LAH, NaBH_4 . Analysis – 2,4-DNP test, Tollen's test, Fehling's test, Schiff's test, haloform test (with equations).

UNIT – III (Physical Chemistry)**15 hr (1h / week)****S3-P-1: Phase Rule****6 h**

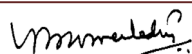
Statement and meaning of the terms – Phase, Component and degrees of freedom, Gibb's Phase rule, phase equilibria of one component system – water system. Phase equilibria of two-component system – Solid-Liquid equilibria, simple eutectic – Pb-Ag system, desilverisation of lead. Solid solutions – compound with congruent melting point – Mg-Zn system and incongruent melting point – NaCl- H_2O system.

S3-P-2: Colloids & surface chemistry**9 h**

Definition of colloids. Classification of colloids. Solids in liquids (sols): preparations and properties – (including Kinetic, Optical and Electrical stability of colloids) Protective action. Hardy-Schultz law, Gold number. Liquids in liquids (emulsions): Types of emulsions, preparation and emulsifier. Liquids in solids (gels); Classification, preparations and properties, General applications of colloids.

Micelles: Classification of surface active agents. Surfactant action, micellization and micellar interactions, Structure of micelles – spherical and lamellar. Critical micellar concentration (CMC). Factors affecting the CMC of surfactants. Counter ion binding to micelles.

Adsorption: Types of adsorption, Factors influencing adsorption. Freundlich adsorption isotherm. Langmuir theory of unilayer adsorption isotherm. Applications.



Dean



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Page 14

Unit –IV (General Chemistry)

15 h (1h/week)

S3-G-1: Nanomaterials:

3h

Nano structured materials – Definition, size, description of graphene, fullerenes, carbon nano tubes. Synthetic techniques, bottom-up-sol-gel method, top-down, electro deposition method. Production of carbon nano tubes – arc discharge, laser vaporization methods. General applications of nano materials.

S3-G-2: Stereochemistry of carbon compounds

10 h

Isomerism: Definition of isomers. Classification of isomers: Constitutional and Stereoisomers - definition and examples. Constitutional isomers: chain, functional and positional isomers. Stereoisomers: enantiomers and diastereomers – definitions and examples.

Optical activity: Definition, wave nature of light, plane polarised light, optical rotation and specific rotation, chiral centers. Chiral molecules: definition and criteria - absence of plane, center and S_n axis of symmetry – asymmetric and dissymmetric molecules. Examples of asymmetric molecules (Glyceraldehyde, Lactic acid, Alanine) and dissymmetric molecules (trans-1,2-dichlorocyclopropane). Molecules with constitutionally symmetrical chiral carbons (Tartaric acid) Molecules with constitutionally unsymmetrical chiral carbons (2,3-dibromopentane) Number of enantiomers and mesomers - calculation. D, L & R, S configuration for asymmetric and dissymmetric molecules (Allenes, spiro compounds and biphenyls), Cahn-Ingold-Prelog rules. Racemic mixture, Racemisation and Resolution techniques. Geometrical isomerism with reference to alkenes and cyclo alkanes– cis, trans and E, Z configuration.

S3-G-3: Conformational analysis

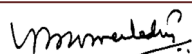
2 h

Classification of stereoisomers based on energy. Definition and examples of conformational and configurational isomers. Conformational analysis of ethane, n-butane, 1,2-dichloroethane, 2-chloroethanol and methylcyclohexane

Referances:

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rdedn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L.Gaus 3rdedn Wiley Publishers 2001.
4. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4thedn.
5. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
6. Inorganic Chemistry by Shriver and Atkins 3rdedn Oxford Press 1999.
7. Textbook of Inorganic Chemistry by R Gopalan
8. College Practical chemistry by V K Ahluwalia, SunithaDhingra and Adarsh Gulati



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Page 15

Unit- II

1. Text book of organic chemistry by Soni.
2. General Organic chemistry by Sachin Kumar Ghosh.
3. Text book of organic chemistry by Morrison and Boyd.
4. Text book of organic chemistry by Graham Solomons.
5. Text book of organic chemistry by Bruce Yuranis Powla.
6. Text book of organic chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Colloidal and surface chemistry , M. Satake, Y. Hayashi, Y.Mido, S.A.Iqbal and M.S.sethi
6. Material science by Kakani&Kakani

Unit IV

1. Text book of organic chemistry by Morrison and Boyd
2. Text book of organic chemistry by Graham solomons
3. Text book of organic chemistry by Sony
4. Text book of organic chemistry by Bruice yuranis Powla
5. General Organic chemistry by Sachinkumar Ghosh

Uncommented?

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Page 16

Laboratory Course

Paper III- Quantitative Analysis - I

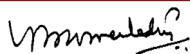
45hrs (3 h / week)

Acid - Base titrations

1. Estimation of Carbonate in Washing Soda.
2. Estimation of Bicarbonate in Baking Soda.
3. Estimation of Carbonate and Bicarbonate in the Mixture.
4. Estimation of Alkali content in Antacid using HCl.

Redox Titrations

1. Determination of Fe(II) using $K_2Cr_2O_7$
2. Determination of Fe(II) using $KMnO_4$ with sodium oxalate as primary standard.
3. Determination of Cu(II) using $Na_2S_2O_3$ with $K_2Cr_2O_7$ as primary standard



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Page 17

References:

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications
2. 1996.
3. Concise Inorganic Chemistry by J.D. Lee 3rdedn.
4. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L.Gaus 3rdedn Wiley Publishers 2001.
5. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4thedn.
6. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
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3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry byLewisGlasstone.
8. Industrial Electrochemistry, D. Pletcher, Chapman & Hall

Unit IV

1. Text book of organic chemistry by Morrison and Boyd
2. Text book of organic chemistry by Graham solomons
3. Fundamentals of organic synthesis and retrosynthetic analysis
4. by Ratna Kumar Kar
5. Organic synthesis by Dr. Jagadamba Singh and Dr. L.D.S. Yadav
6. Stereochemistry of organic compounds by D. Nasipuri
7. Organic chemistry by Clayden, Greeves, Warren and Wothers
8. Fundamentals of Asymmetric Synthesis by G. L. David Krupadanam

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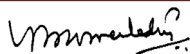
Page 21

Laboratory Course

Paper IV- Quantitative Analysis - II

45hrs (3h/ week)

1. Conductometry titrations:
 - i) Strong acid Vs Strong base;
 - ii) Weak acid Vs Strong base.
2. Potentiometry titration:
 - i) Strong acid Vs Strong base;
 - ii) Weak acid Vs Strong base.
3. Estimation of Nickel by back titration (Standard MgSO_4 solution will be given)
4. Estimation of Barium as Barium Sulphate



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Page 22

B.Sc. with Computer Science Syllabus

III Semester, DSC 1C

Database Management System

Unit I

Introduction: Database-System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Database Users and Administrators.

Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.

Unit II

Database Design and the E-R Model: Overview of the Design Process, The Entity-Relationship Model, Constraints, Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features, Alternative Notations for Modeling Data, Other Aspects of Database Design.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional-Dependency Theory, Decomposition Using Multivalued Dependencies, More Normal Forms, Database-Design Process.

Unit III

Database-System Architectures: Centralized and Client –Server Architectures, Server System Architectures, Parallel Systems, Distributed Systems, Network Types.

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Modification of the Database.

Unit IV

Intermediate SQL: Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

B.Sc. with Computer Science Syllabus

Advanced SQL: Accessing SQL From a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Text book:

1. A. Silberschatz, H. Korth and S. Sudarshan, *Database System Concepts*, 6th Ed., Tata McGraw Hill, 2011

References:

1. J. Morrison, M. Morrison and R. Conrad, *Guide to Oracle 10g*, Thomson Learning, 2005.
2. Loney and Koch, *Oracle 10g: The Complete Reference*, Tata McGraw Hill, 2006.
3. David Flanagan, Java Script, *The Definitive Guide*, O'Reilly Media, 2006.
4. Marty Hall, Larry Brown, and Yaakov Chaikin, *Core Servlets and Java Server Pages: Core Technologies* (Vol. II), 2nd Ed., Sun Microsystems Press, 2006.
5. S.K. Singh, *Database Systems Concepts, Design and Applications*, Pearson Education 2006.
6. Spoken Tutorial on "MySQL" as E-resource for Learning:- <http://spoken-tutorial.org>

B.Sc. with Computer Science Syllabus

Practical: Database Management System

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Create a database having two tables with the specified fields, to computerize a library system of a Delhi University College.

LibraryBooks (Accession number, Title, Author, Department, PurchaseDate, Price)

IssuedBooks (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
 - b) Delete the record of book titled “Database System Concepts”.
 - c) Change the Department of the book titled “Discrete Maths” to “CS”.
 - d) List all books that belong to “CS” department.
 - e) List all books that belong to “CS” department and are written by author “Navathe”.
 - f) List all computer (Department=“CS”) that have been issued.
 - g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.
2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks(rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
 - b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper 2.
 - c) List all students who live in “Delhi” and have marks greater than 60 in paper 1.
 - d) Find the total attendance and total marks obtained by each student.
 - e) List the name of student who has got the highest marks in paper 2.
3. Create the following tables and answer the queries given below:

B.Sc. with Computer Science Syllabus

Customer (CustID, email, Name, Phone, ReferrerID)

Bicycle (BicycleID, DatePurchased, Color, CustID, ModelNo)

BicycleModel (ModelNo, Manufacturer, Style)

Service (StartDate, BicycleID, EndDate)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
 - b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
 - c) List the bicycles purchased by the customers who have been referred by customer "C1".
 - d) List the manufacturer of red colored bicycles.
 - e) List the models of the bicycles given for service.
4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

EMPLOYEE (Person_Name, Street, City)

WORKS (Person_Name, Company_Name, Salary)

COMPANY (Company_Name, City)

MANAGES (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
 - b) Alter table employee, add a column "email" of type varchar(20).
 - c) Find the name of all managers who work for both Samba Bank and NCB Bank.
 - d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
 - e) Find the names of all employees who live in the same city as the company for which they work.
 - f) Find the highest salary, lowest salary and average salary paid by each company.
 - g) Find the sum of salary and number of employees in each company.
 - h) Find the name of the company that pays highest salary.
5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.

B.Sc. with Computer Science Syllabus

- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Delhi.
- j) Get part numbers for part supplied by a supplier in Allahabad to a project in Chennai.
- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

References:

1. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Seed Plants and their Systematics, Structure, Development and Reproduction in Flowering Plants. S. Chand & Company Ltd, New Delhi.
2. Rastogi, R. R. and B. N. Mehrotra. 1993. Compendium of Indian Medicinal Plants. Vol. I & Vol. II. CSIR, Publication and Information Directorate, New Delhi.
3. Sivarajan, V. V. and I. Balasubramanian. 1994. Ayurvedic Drugs and their Plant Sources. Oxford and IBH, New Delhi.
4. Stace, C. A. 1989. Plant Taxonomy and Biostatistics (2nd Ed.). Edward Arnold, London.
5. Singh, G. 1999. Plant Systematics: Theory and Practice. Oxford and IBH, New Delhi.
6. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.
7. Davis, P. H. and V. H. Heywood. 1963. Principles of Angiosperm Taxonomy. Oliver and Boyd, London.
8. Heywood, V. H. 1965. Plant Taxonomy. ELBS, London.
9. Heywood, V. H. and D. M. Moore (Eds). 1984. Current Concepts in Plant Taxonomy. Academic Press, London.
10. Jain, S. K. and V. Mudgal. 1999. A Handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehradun.
11. Jeffrey, C. 1982. An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge.
12. London.
13. Joshi, S. G. 2000. Medicinal Plants. Oxford and IBH, New Delhi.
14. Kokate, C. and Gokeale- Pharmacognacy- Nirali Prakashan, New Delhi.
15. Lad, V. 1984. Ayurveda – The Science of Self-healing. Motilal Banarasidass, New Delhi.
16. Lewis, W. H. and M. P. F. Elwin Lewis. 1976. Medical Botany. Plants Affecting Man's Health. A Wiley Inter science Publication. John Wiley and Sons, New York.
- 17.

Boyer
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B.Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany

Theory Model Question Paper

Time: 2 hrs

Max. Marks: 40

Draw well-labeled diagrams wherever necessary.

1. Write short notes on any FOUR of the following: -

4 X 2 = 8M

- a. Artificial system of classification.
- b. Floral structure of Cucurbitaceae .
- c. Role of AYUSH and CIMAP.
- d. Active principles of *Phyllanthus niruri*.
- e. Herbarium
- f. *Aloe vera*

II. Essay Questions:

4 X 8 = 32M

1 a. Discuss in detail the Bentham and Hooker's system of classification and add a note on its merits and de-merits .

(OR)

b. Write an account on Chemotaxonomy.

2 a. Write salient features of the sub-family Fabaceae with a note on its economic importance .

(OR)

b. Discuss in detail the important characters of Asteraceae family with a note on its advanced characters.

3 a. Discuss the outline of Ayurvedic system of medicine.

(OR)

b. Write in detail organoleptic evaluation of *Ocimum sanctum* and its medicinal importance .

4 a. Discuss the morphological aspects of *Rauwolfia serpentina* and Discuss its medicinal importance .

(OR)

b. Write an account on methods of collection, processing and storage practices associated with Crude drugs.

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B.Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany

Practical syllabus

(45 hours)

1. Systematic study of locally available plants belonging to the families prescribed in theory syllabus
(Minimum of one plant representative for each family) (24h)
2. Demonstration of herbarium techniques. (3 h)
3. Identification, medicinal value & active principle present in the following plants : Tulasi (*Ocimum sanctum*), Karakaya (*Terminalia chebula*), Kalabanda (*Aloe vera*). (6 h)
4. Ethnomedicinal value/practice of the following plants :
Aswagandha (*Withania somnifera*), Sarpagandha (*Rauwolfia serpentina*), Amla (*Phyllanthus emblica*) and
Brahmi (*Bacopa monnieri*). (6h)
5. Pharmacognosy:
Powder analysis : Pippalu (*Piper longam*), Nela usiri (*Phyllanthus niruri*),
Study of Organoleptic (sectional study) of the following:
Tippateega (*Tinospora cordifolia*) and Turmeric (*Curcuma longa*). (6h)
6. Candidate have to submit at least 30 herbarium sheets

Prayas
A. b. e.

B. S.

1/1/20

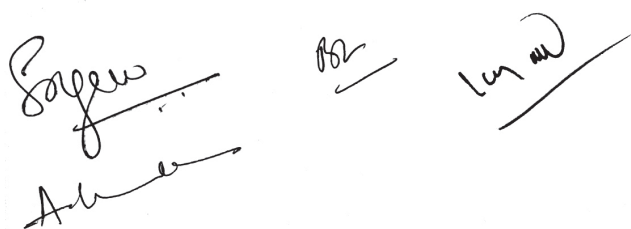
B.Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany

Practical Model Paper

Time: 2 1/2 hrs

Max. Marks: 25

- | | |
|---|----|
| 1. Technical description of the given plant twig ' A ' | 9M |
| 2. Identify the given material ' B ' & write its medicinal properties | 3M |
| 3. Identify the specimen ' C ' & write organoleptic evaluation | 3M |
| 4. Identify the given material D ' & discuss the ethno medicinal value of it. | 3M |
| 5. Identify the given material ' E ' . Write the active principle and uses | 3M |
| 6. Herbarium | 2M |
| 7. Record | 2M |


The image shows three handwritten signatures or initials in black ink. On the left, there is a large signature that appears to be 'Soyew' with a horizontal line underneath it, and another signature below it that is partially obscured. In the center, there are the initials 'BR' with a horizontal line underneath. On the right, there is a signature that appears to be 'Luy' with a horizontal line underneath.

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS
(With effect from 2016-2017)
III - SEMESTER
DSC-1C (Theory)
Animal Diversity- Vertebrates and Developmental Biology

Max. Marks: 80

UNIT – I

- 1.1 Salient features of Urochordata; Retrogressive metamorphosis and its significance in Urochordata.
- 1.2 Salient features and affinities of Cephalochordata.
- 1.3 General characters of Cyclostomata; Comparison of the *Petromyzon* and *Myxine*.
- 1.4 General characters and classification of Chordata upto orders with examples.
- 1.5 General characters and Classification of Fishes up to order level with examples; *Scoliodon* – Respiratory, Circulatory and Nervous system; Types of Scales and types of Fins.

UNIT – II

- 2.1 Amphibia General characters and Classification up to orders with examples.
- 2.2 *Rana tigrina* - Respiratory, Circulatory and Nervous system; Parental care in amphibia, Neotony.
- 2.3 General characters and Classification of Reptilia up to orders with examples; *Calotes* – Respiratory system, Circulatory and Nervous system.
- 2.4 Temporal fosse in reptiles and its evolutionary importance.
- 2.5 Distinguished characters of Poisonous and Non-poisonous snakes; Rhynchocephalia.

UNIT – III

- 3.1 Aves General characters and Classification up to orders with examples.
- 3.2 *Columba livia* -Digestive system, Circulatory systems, Respiratory system and Nervous system.
- 3.3 Migration in Birds; Flight adaptation in Birds
- 3.4 Mammalia General characters and Classification up to orders with examples; Rabbit –Digestive, Respiratory, Circulatory and Nervous system.
- 3.5 Dentition in mammals; Aquatic adaptations in Mammals.

UNIT – IV

- 4.1 Gametogenesis (Spermatogenesis and Oogenesis); Fertilization.
- 4.2 Types of eggs; Types of cleavages.
- 4.3 Development of Frog up to formation of primary germ layers.
- 4.4 Formation of Foetal membrane in chick embryo and their functions.
- 4.5 Types and functions of Placenta in mammals; Regeneration in Turbellaria and Lizards.

Suggested Readings:

- 1. E.L.Jordan and P.S. Verma** '*Chordate Zoology*' -. S. Chand Publications.
- 2. Mohan P.Arora.** '*Chordata – I*, Himalaya Publishing House Pvt.Ltd.
- 3. Marshal, Parker and Haswell** '*Text book of Vertebrates*'. ELBS and McMillan, England.
- 4. Alfred Sherwood Romer.** Thomas S. Pearson '*The Vertebrate Body*, Sixth edition, CBS college Publishing, Saunders College Publishing
- 5. George C. Kent, Robert K. Carr.** *Comparative Anatomy of the Vertebrates*, 9th ed. McGraw Hill.
- 6. Kenneth Kardong** *Vertebrates: Comparative Anatomy, Function and Evolution*, 4th ed, 'McGraw Hill.
- 7. J.W. Young,** *The Life of Vertebrates*, 3rd ed, Oxford University press.
- 8. Harvey Pough F, Christine M. Janis, B. Heiser,** *Vertebrate Life*, Pearson, 6th ed, Pearson Education Inc.2002.

ZOOLOGY PRACTICAL SYLLABUS
III SEMESTER - ZOOLOGY
Animal Diversity- Vertebrates and Developmental Biology

Max. Marks: 50

Study of museum slides / specimens / models (Classification of animals up to orders)

1. **Protochordata:** *Amphioxus*, *Amphioxus* T.S. through pharynx
2. **Cyclostomata:** *Petromyzon*, *Myxine*, *Ammocoetus larva*
3. **Pisces:** *Sphyrna*, *Pristis*, *Torpedo*, *Channa*, *Pleuronectes*, *Hippocampus*, *Exocoetus*, *Echieneis*, *Labeo*, *Catla*, *Clarius*, *Auguilla*, *Protopterus*, Scales: Placoid, Cycloid, Ctenoid
4. **Amphibia:** *Ichthyophis*, *Amblystoma*, *Siren*, *Hyla*, *Rachophous*, *Bufo*, *Rana*, Axolotal larva
5. **Reptilia :** *Draco*, *Chamaeleon*, *Gecko*, *Uromastix*, *Vipera russeli*, *Naja*, *Bungarus*, *Enhydrina*, *Typhlops*, *Testudo*, *Trionyx*, *Crocodylus*, *Ptyas*.
6. **Aves:** *Archaeopteryx*, *Passer*, *Psittacula*, *Bubo*, *Alcedo*, *Columba*, *Corvus*, *Pavo*, Collection and study of different types of feathers: Quill, Contour, Filoplume, Down
7. **Mammalia:** *Ornithorynchus*, *Tachyglossus*, *Pteropus*, *Funambulus*, *Manis*, *Loris*, Hedgehog;

Histology: T.S. of Liver, Pancreas, Kidney, Stomach, Intestine, Lungs Artery, Vein, Bone T.S., Spinal cord.

Osteology :

1. Rabbit – Axial skeleton system (bones of Skull and Vertebral Column)
2. Varanus, Pigeon and Rabbit – Appendicular skeleton system (bones of limbs and girdles)

Dissections of *Labeo/Tilapia*:

1. Digestive system.
2. Brain, Weberian ossicles
3. V, VII, IX, X cranial nerves

Embryology

1. Study of T.S. of Testis and Ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8, 16 cell stages); Morula, Blastula
3. Study of chick embryos of 18 hours, 24 hours, 33 hours and 48 hours of incubation

Laboratory Record work shall be submitted at the time of practical examination

An “**Animal album**” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

Computer aided virtual dissections.

Suggested manuals

1. **S.S.Lal**, Practical Zoology – Vertebrata
2. **P.S.Verma**, A manual of Practical Zoology – Chordata
3. **Freeman & Bracegirdle**, An atlas of embryology

DEPARTMENT OF ENGLISH
KAKATIYA UNIVERSITY
ENGLISH TEXT BOOK (ENGLISH FOR ACCOMPLISHMENT) FOR
B.A., B.Com., B.Sc., B.B.M. & B.C.A. IV SEMESTER

UNIT FIVE (SHORT FICTION)	Text	Arjun by Mahaswetha Devi
	Grammar	Sentence Completion
	Etymology	Compounding
	Reading Comprehension	Dr Samala Sadashiva
	Writing	E-correspondence
	Language Skills	Listening Skills: Strategies for Effective Listening
	Communication & Soft Skills	Role Play
UNIT SIX (PROSE)	Text	Women by Ismat
	Grammar	Cloze Test
	Etymology	Onomatopoeia
	Reading Comprehension	Elgandal Fort, Vemulawada
	Writing	Report Writing
	Language Skills	Speaking Skills: Public Speaking
	Communication & Soft Skills	Debates
UNIT SEVEN (POETRY)	Text	Father Returning Home by Dilip Chitre
	Grammar	Synthesis of Sentences: Simple to Compound, Compound to Simple
	Etymology	Sound Symbolism
	Reading Comprehension	Art Forms: Pambarthi, Nirmal
	Writing	Creative Writing

	Language Skills	Reading Skills: Intensive Reading and Extensive Reading
	Communication & Soft Skills	Group Discussion (GD)
UNIT EIGHT (DRAMA)	text	Jatara by Arjun Deo Charan
	Grammar	Synthesis of Sentences: Simple to Complex, Complex to Simple
	Etymology	Etymology of Phrases
	Reading Comprehension	Folklore
	Writing	Résumé/ CV
	Language Skills	Writing Skills: Paraphrasing
	Communication & Soft Skills	Mock Interviews


DEAN
 Faculty of Arts
 Kakatiya University
 WARANGAL-506 009


 Chairman
 Board of Studies in English
 Kakatiya University
 WARANGAL-506009 (TS)

kakatiya university B.A, B.COM, B.SC (IV semester)
HINDI SYLLABUS
काकतीय विश्वविद्यालय, बी.ए, बी.काम, बी एस.सी (IV semester)
हिंदी पाठ्यांश

काव्य निधि (IV semester)

unit I : मीराबाई, रहीम, बिहारी ।

unit II : सूर्यकान्त त्रिपाठी 'निराला' - भगवान बुद्ध के प्रति
महादेवी वर्मा - वे मुस्कुराते फूल नहीं
रामधारी सिंह 'दिनकर' - कलम और तलवार
हरिवंश राय बच्चन - तू, क्यों बैठ गया है पथ पर
अज्ञेय - अनुभव परिपक्व

unit III: हिंदी साहित्य का इतिहास ।

शृंगार काल - नामकरण, परिस्थितियाँ, और प्रवृत्तियाँ

आधुनिक काल - a) भारतेंदुयुग, द्विवेदी युग, छायावाद, प्रगतिवाद, प्रयोगवाद

b) हिंदी गद्य का विकास, हिंदी कहानी, उपन्यास और नाटक।

unit IV : निम्न लिखित रचनाकार व कवियों का संक्षिप्त अध्ययन।

मीराबाई, रहीम, बिहारी, महावीरप्रसाद द्विवेदी, प्रेमचंद,

निराला, महादेवीवर्मा, हरिवंशराय बच्चन, अज्ञेय ।

Unit V : अंग्रेजी या तेलुगु से हिंदी में अनुवाद करना।



PonAb
Dean
Dean
Faculty of Arts
Kakatiya University
Warangal-506 009

B.A., B. Sc & B.Com SECOND YEAR – 2016-2017
URDU SECOND LANGUAGE
“MUTALA – E – ADAB” (PART – II)
(compiled by Urdu Department, Osmania University. Hyd.)
Published in August 2008 by Urdu Academy – Hyderabad.

SEMESTER : IV

PAPER – IV

URDU POETRY & PROSE

UNIT : I

MARISA - Garmi Ka Saman by Meer Anees.

UNIT : II

1. RUBAIYAT -
1. Anees – Pursan Kue Kab Jawhar – e – Zati Ka hai.
Anees – Duniya bhi Ajab Saray – e – Fani Dekhi.
 2. Hali – Duniya – e – Duniyako Naqshe Fani Samjho.
Hali – Yaro Nahin Waqt Aaram ka Yeh.
 3. Rawaan – Iflas accha Na Fikr – e – Daulat acchi.
Rawan – Aazad Zameer Huwa Fakhiri Yeh Hai.
 4. Amjad – Koshish hai apni Tamam Sataesh ke liye.
Amjad – Kam Zarf Agar daulat – o – Zar Pata hai.
2. QATAAT -
1. Akbar Allahabadi – Chod literature ko apni history ko bhool Ja.
 2. Allama Iqbal - Andaz – e – Bayan Gar che bahot shookh Nahin hai.

UNIT : III

1. KHUTOOT - Two Letters by Safia Akhtar (Selected from “Zere – Lab”).
2. MAZMOON - Qadeem Urdu Mein Natural Shaeri – By Naseeruddin Hashmi.
(Selected from “Qadeem Deccani ke Chand Tah queeqi mazameen”).

UNIT : IV

SATIRE - Murda Badast Zinda – By Mirza Farhatulla Baig (Selected from Mazameen –e – Farath part II).

UNIT : V

REPORTAZ - Kulhind Conference By Izhar Asar.

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

B.Sc. (Physics) - II Year
Semester – IV
Paper – IV:: Optics
(w.e.f the academic year 2017-18)

Total: 48 hrs
(4 Hrs / week)

Unit I: Interference: (12)

Principle of superposition – coherence – temporal coherence and spatial coherence – conditions for Interference of light.

Interference by division of wave front: Fresnel's biprism – determination of wave length of light. Determination of thickness of a transparent material using Biprism – change of phase on reflection – Lloyd's mirror experiment.

Interference by division of amplitude: Oblique incidence of a plane wave on a thin film due to reflected and transmitted light (Cosine law) – Colours of thin films – Non-reflecting films – interference by a plane parallel film illuminated by a point source – Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film) – Determination of diameter of wire-Newton's rings in reflected light with and without contact between lens and glass plate, Newton's rings in transmitted light (Haidinger Fringes) – Determination of wave length of monochromatic light – Michelson Interferometer – types of fringes – Determination of wavelength of monochromatic light, Difference in wavelength of sodium D_1, D_2 lines and thickness of a thin transparent plate.

Unit II: Diffraction: (12)

Introduction – Distinction between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction:- Diffraction due to single slit and circular aperture – Limit of resolution – Fraunhofer diffraction due to double slit – Fraunhofer diffraction pattern with N slits (diffraction grating).

Resolving Power of grating – Determination of wave length of light in normal and oblique incidence methods using diffraction grating.

Fresnel diffraction-Fresnel's half period zones – area of the half period zones –zone plate – Comparison of zone plate with convex lens – Phase reversal zone plate – diffraction at a straight edge – difference between interference and diffraction.

Unit III: Polarization (12)

Polarized light : Methods of Polarization, Polarization by reflection, refraction, Double refraction, selective absorption , scattering of light – Brewster's law – Malus law – Nicol prism polarizer and analyzer – Refraction of plane wave incident on negative and positive crystals (Huygen's explanation) – Quarter wave plate, Half wave plate – Babinet's compensator – Optical activity, analysis of light by Laurent's half shade polarimeter.

Unit IV: Aberrations and Fiber Optics : (12)

Introduction – Monochromatic aberrations, spherical aberration, methods of minimizing spherical aberration, coma, astigmatism and curvature of field, distortion. Chromatic aberration – the achromatic doublet – Removal of chromatic aberration of a separated doublet.

Fiber Optics : Introduction – Optical fibers – Types of optical fibers – Step and graded index fibers – Rays and modes in an optical fiber – Fiber material – Principles of optical fiber communication and advantages of optical fiber communication.

NOTE: Problems should be solved at the end of every chapter of all units.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug, 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

Suggested books

1. **Optics** by Ajoy Ghatak. *The McGraw-Hill companies.*
2. **Optics** by Subramaniam and Brijlal. *S. Chand & Co.*
3. **Fundamentals of Physics.** Halliday/Resnick/Walker. *C. Wiley India Edition 2007.*
4. **Optics and Spectroscopy.** R. Murugesan and Kiruthiga Siva Prasath. *S. Chand & Co.*
5. **Second Year Physics – Telugu Academy.**
6. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand & Co. Publications.*
7. **Feynman’s Lectures on Physics** Vol. 1,2,3 & 4. *Narosa Publications.*
8. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*
9. K. Ghatak, **Physical Optics’**
10. D.P. Khandelwal, **Optical and Atomic Physics’** (Himalaya Publishing House, Bombay,1988)
11. Jenkins and White: **‘Fundamental of Optics’** (McGraw-Hill)
12. Smith and Thomson: **‘Optics’** (John Wiley and sons).

B.Sc. (Physics Practicals) – II year Semester - IV Paper – IV:: Optics Practicals

1. Thickness of a wire using wedge method.
2. Determination of wavelength of light using Biprism.
3. Determination of Radius of curvature of a given convex lens by forming Newton’s rings.
4. Resolving power of grating.
5. Study of optical rotation-polarimeter.
6. Dispersive power of a prism
7. Determination of wavelength of light using diffraction grating minimum deviation method.
8. Wavelength of light using diffraction grating – normal incidence method.
9. Resolving power of a telescope.
10. Refractive index of a liquid and glass (Boys Method).
11. Pulfrich refractometer – determination of refractive index of liquid.
12. Wavelength of Laser light using diffraction grating.

Note: Minimum of eight experiments should be performed Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books

1. D.P. Khandelwal, “A laboratory manual for undergraduate classes” (Vani Publishing House, New Delhi).
2. S.P. Singh, “Advanced Practical Physics” (Pragati Prakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. “Practical Physics” R.K Shukla, Anchal Srivastav.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

2.8 Algebra

DSC-1D

BS:404

Theory: 4 credits and Practicals: 1 credits
Theory: 4 hours /week and Practicals: 2 hours /week

Objective: The course is aimed at exposing the students to learn some basic algebraic structures like groups, rings etc.

Outcome: On successful completion of the course students will be able to recognize algebraic structures that arise in matrix algebra, linear algebra and will be able to apply the skills learnt in understanding various such subjects.

Unit- I

Groups: Definition and Examples of Groups- Elementary Properties of Groups-Finite Groups; Subgroups -Terminology and Notation -Subgroup Tests - Examples of Subgroups Cyclic Groups: Properties of Cyclic Groups - Classification of Subgroups Cyclic Groups-Permutation Groups: Definition and Notation -Cycle Notation-Properties of Permutations -A Check Digit Scheme Based on D_5 .

Unit- II

Isomorphisms ; Motivation- Definition and Examples -Cayley's Theorem Properties of Isomorphisms -Automorphisms-Cosets and Lagrange's Theorem Properties of Cosets 138 - Lagrange's Theorem and Consequences-An Application of Cosets to Permutation Groups -The Rotation Group of a Cube and a Soccer Ball -Normal Subgroups and Factor Groups ; Normal Subgroups-Factor Groups -Applications of Factor Groups -Group Homomorphisms - Definition and Examples -Properties of Homomorphisms -The First Isomorphism Theorem.

Unit- III

Introduction to Rings: Motivation and Definition -Examples of Rings -Properties of Rings -Subrings -Integral Domains : Definition and Examples -Characteristics of a Ring -Ideals and Factor Rings; Ideals -Factor Rings -Prime Ideals and Maximal Ideals.

Unit- IV

Ring Homomorphisms: Definition and Examples-Properties of Ring- Homomorphisms -The Field of Quotients Polynomial Rings: Notation and Terminology.

Text:

- Joseph A Gallian, *Contemporary Abstract algebra (9th edition)*

References:

- Bhattacharya, P.B Jain, S.K.; and Nagpaul, S.R, *Basic Abstract Algebra*
 - Fraleigh, J.B, *A First Course in Abstract Algebra.*
 - Herstein, I.N, *Topics in Algebra*
 - Robert B. Ash, *Basic Abstract Algebra*
 - I Martin Isaacs, *Finite Group Theory*
 - Joseph J Rotman, *Advanced Modern Algebra*
-

2.8.1 Practicals Question Bank

Algebra

Unit-I

1. Show that $\{1, 2, 3\}$ under multiplication modulo 4 is not a group but that $\{1, 2, 3, 4\}$ under multiplication modulo 5 is a group.
2. Let G be a group with the property that for any x, y, z in the group, $xy = zx$ implies $y = z$. Prove that G is Abelian.
3. Prove that the set of all 3×3 matrices with real entries of the form

$$\begin{pmatrix} 1 & a & b \\ 0 & 1 & c \\ 0 & 0 & 1 \end{pmatrix}$$

is a group under multiplication.

4. Let G be the group of polynomials under addition with coefficients from Z_{10} . Find the orders of $f(x) = 7x^2 + 5x + 4$, $g(x) = 4x^2 + 8x + 6$, and $f(x) + g(x)$
5. If a is an element of a group G and $|a| = 7$, show that a is the cube of some element of G .
6. Suppose that $\langle a \rangle$, $\langle b \rangle$ and $\langle c \rangle$ are cyclic groups of orders 6, 8, and 20, respectively. Find all generators of $\langle a \rangle$, $\langle b \rangle$, and $\langle c \rangle$.
7. How many subgroups does Z_{20} have? List a generator for each of these subgroups.
8. Consider the set $\{4, 8, 12, 16\}$. Show that this set is a group under multiplication modulo 20 by constructing its Cayley table. What is the identity element? Is the group cyclic? If so, find all of its generators.
9. Prove that a group of order 4 cannot have a subgroup of order 3.
10. Determine whether the following permutations are even or odd.
 - a. (135)
 - b. (1356)
 - c. (13567)
 - d. (12)(134)(152)
 - e. (1243)(3521).

Unit-II

11. Show that the mapping $a \rightarrow \log_{10} a$ is an isomorphism from R^+ under multiplication to R under addition.
12. Show that the mapping $f(a + bi) = a - bi$ is an automorphism of the group of complex numbers under addition.
13. Find all of the left cosets of $\{1, 11\}$ in $U(30)$.

14. Let C^* be the group of nonzero complex numbers under multiplication and let $H = \{a + bi \in C^* / a^2 + b^2 = 1\}$. Give a geometric description of the coset $(3 + 4i)H$. Give a geometric description of the coset $(c + di)H$.
15. Let $H = \left\{ \begin{pmatrix} a & b \\ 0 & d \end{pmatrix} / a, b, d \in R, ad \neq 0 \right\}$. Is H a normal subgroup of $GL(2, R)$?
16. What is the order of the factor group $\frac{Z_{60}}{\langle 5 \rangle}$?
17. Let $G = U(16)$, $H = \{1, 15\}$, and $K = \{1, 9\}$. Are H and K isomorphic? Are G/H and G/K isomorphic?
18. Prove that the mapping from R under addition to $GL(2, R)$ that takes x to

$$\begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$$

is a group homomorphism. What is the kernel of the homomorphism?

19. Suppose that f is a homomorphism from Z_{30} to Z_{30} and $\text{Ker } f = \{0, 10, 20\}$. If $f(23) = 9$, determine all elements that map to 9.
20. How many Abelian groups (up to isomorphism) are there
- of order 6?
 - of order 15?
 - of order 42?
 - of order pq , where p and q are distinct primes?
 - of order pqr , where p , q , and r are distinct primes?

Unit-III

21. Let $M_2(Z)$ be the ring of all 2×2 matrices over the integers and let $R = \left\{ \begin{pmatrix} a & a \\ b & b \end{pmatrix} / a, b \in Z \right\}$. Prove or disprove that R is a subring of $M_2(Z)$.
22. Suppose that a and b belong to a commutative ring R with unity. If a is a unit of R and $b^2 = 0$, show that $a + b$ is a unit of R .
23. Let n be an integer greater than 1. In a ring in which $x^n = x$ for all x , show that $ab = 0$ implies $ba = 0$.
24. List all zero-divisors in Z_{20} . Can you see a relationship between the zero-divisors of Z_{20} and the units of Z_{20} ?
25. Let a belong to a ring R with unity and suppose that $a^n = 0$ for some positive integer n . (Such an element is called nilpotent.) Prove that $1 - a$ has a multiplicative inverse in R .
26. Let d be an integer. Prove that $Z[\sqrt{d}] = \{a + b\sqrt{d} / a, b \in Z\}$ is an integral domain.
27. Show that Z_n has a nonzero nilpotent element if and only if n is divisible by the square of some prime.

28. Find all units, zero-divisors, idempotents, and nilpotent elements in $Z_3 \oplus Z_6$.
29. Find all maximal ideals in
- Z_8 .
 - Z_{10} .
 - Z_{12} .
 - Z_n .
30. Show that $R[x]/\langle x^2 + 1 \rangle$ is a field.

Unit-IV

31. Prove that every ring homomorphism f from Z_n to itself has the form $f(x) = ax$, where $a^2 = a$.
32. Prove that a ring homomorphism carries an idempotent to an idempotent.
33. In Z , let $A = \langle 2 \rangle$ and $B = \langle 8 \rangle$. Show that the group A/B is isomorphic to the group Z_4 but that the ring A/B is not ring-isomorphic to the ring Z_4 .
34. Show that the number 9, 897, 654, 527, 609, 805 is divisible by 99.
35. Show that no integer of the form $111, 111, 111, \dots, 111$ is prime.
36. Let $f(x) = 4x^3 + 2x^2 + x + 3$ and $g(x) = 3x^4 + 3x^3 + 3x^2 + x + 4$, where $f(x), g(x) \in Z_5[x]$. Compute $f(x) + g(x)$ and $f(x).g(x)$.
37. Let $f(x) = 5x^4 + 3x^3 + 1$ and $g(x) = 3x^2 + 2x + 1$ in $Z_7[x]$. Determine the quotient and remainder upon dividing $f(x)$ by $g(x)$.
38. Let $f(x)$ belong to $Z_p[x]$. Prove that if $f(b) = 0$, then $f(b^p) = 0$.
39. Is the mapping from Z_{10} to Z_{10} given by $x \rightarrow 2x$ a ring homomorphism?
40. Determine all ring homomorphisms from Z to Z .

**Skill Enhancement Course - II- B.Sc., II YEAR, IV Semester
FOR ALL SCIENCE FACULTY DEPARTMENTS
MULTIMEDIA AND APPLICATIONS**

**Credits: 2 Theory: 2 hours/week
Marks - 50**

Unit - I FONTS AND IMAGES

- 1.1.Multimedia: Introduction to multimedia, components, uses of multimedia, Multimedia applications, virtual reality.
- 1.2.Text: Fonts and Faces, Using Text in Multimedia, Font Editing and Design Tools, Hypermedia & Hypertext.
- 1.3.Images: Still Images – bitmaps, vector drawing, 3D drawing and rendering, natural, light and colors, computerized colors, color palettes, image file formats.

Unit – II AUDIO AND VIDEO

- 2.1.Sound: Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats.
- 2.2Video: How video works, analog video, digital video, video file formats, video shooting and editing.
- 2.3Animation: Principle of animations, animation techniques, animation file formats.

References:

- 1. Tay Vaughan, —Multimedia: Making it work, TMH, Eighth edition.2011
- 2. Ralf Steinmetz and KlaraNaharstedt, —Multimedia: Computing, Communications Applications, Pearson.2012
- 3. Keyes, —Multimedia Handbook, TMH,2000.
- 4. K. Andleigh and K. Thakkar, —Multimedia System Design, PHI.2013

S4-O-2: Synthesis based on Carbanions**3h**

Acidity of α -Hydrogens of withdrawing groups, structure of carbanion. Preparation of Acetoacetic ester (ethylacetoester) by Claisen condensation and synthetic application of Acetoacetic ester. (a) Acid hydrolysis and ketonic hydrolysis: Butanone, 3-Methyl 2-butanone. Preparation of (i) monocarboxylic acids ii) dicarboxylic acids (b) malonic ester – synthetic applications. Preparation of (i) substituted mono carboxylic acids and (ii) substituted dicarboxylic acids.

S4-O-3 Nitro hydrocarbons:**6 h**

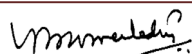
Nomenclature and classification of nitro hydrocarbons. Structure. Tautomerism of nitroalkanes leading to aci and keto form. Preparation of Nitroalkanes. Reactivity - halogenation, reaction with HNO_2 (Nitrous acid), Nef reaction, Mannich reaction, Michael addition and reduction. Aromatic Nitro hydrocarbons: Nomenclature, Preparation of Nitrobenzene by Nitration. Physical properties, chemical reactivity – orientation of electrophilic substitution on nitrobenzene. Reduction reaction of Nitrobenzenes in different media.

Unit – III (Physical Chemistry)**15 hr (1h / week)****S4-P-1: Electrochemistry & EMF****15 h**

Electrical transport – conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of specific and equivalent conductance with dilution. Migration of ions and Kohlrausch's law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number, definition and determination by Hittorf's method for attackable electrodes. Applications of conductivity measurements: Determination of degree of dissociation, determination of K_a of acids, determination of solubility product of a sparingly soluble salt, conductometric titrations.

Electrolyte and Galvanic cells – reversible and irreversible cells, conventional representation of electrochemical cells. EMF of a cell and its measurement. Computation of EMF. Types of reversible electrodes- the gas electrode, metal-metal ion, metal-insoluble salt and redox electrodes. Electrode reactions, Nernst equation, cell EMF and single electrode potential, standard Hydrogen electrode – reference electrodes (calomel electrode) – standard electrode potential, sign conventions, electrochemical series and its significance.

Applications of EMF measurements, Calculation of thermodynamic quantities of cell reactions (ΔG , ΔH and K). Determination of pH using hydrogen electrode, glass electrode and quinhydrone electrode, Solubility product of AgCl. Potentiometric titrations.



Dean



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Page 19

Unit –IV (General Chemistry)

15 h (1h/week)

S4-G-1: Pericyclic Reactions

5 h

Concerted reactions, Molecular orbitals of ethene, 1,3-butadiene and allyl radical. Symmetry properties, HOMO, LUMO, Thermal and photochemical pericyclic reactions. Types of pericyclic reactions – electrocyclic, cycloaddition and sigmatropic reactions – one example each and their explanation by FMO theory.

S4-G-2: Synthetic Strategies

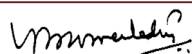
5 h

Terminology – Target molecule (TM), Disconnection approach – Retrosynthesis, Synthon, Synthetic equivalent (SE), Functional group interconversion (FGI), Linear, Convergent synthesis. Retrosynthetic analysis of the following molecules: 1) acetophenone 2) cyclohexene and 3) phenylethylbromide.

S4-G-3: Asymmetric synthesis

5 h

Definition and classification of stereoselective reactions: substrate, product stereoselective reactions, enantio and diastereo selective reactions. Stereospecific reaction – definition – example – dehalogenation of 1,2-dibromides induced by iodide ion. Enantioselective reactions – definition – example – Reduction of Ethylacetoacetate by Yeast. Diastereoselective reaction-definition-example: Acid catalysed dehydration of 1-phenylpropanal and Grignard addition to 2-phenyl propanal. Definition and explanation of enantiomeric excess and diastereomeric excess.



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Page 20

References:

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications
2. 1996.
3. Concise Inorganic Chemistry by J.D. Lee 3rdedn.
4. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L.Gaus 3rdedn Wiley Publishers 2001.
5. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4thedn.
6. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
7. Inorganic Chemistry by Shriver and Atkins 3rdedn Oxford Press 1999.
8. Textbook of Inorganic Chemistry by R Gopalan

Unit- II

1. Text book of organic chemistry by Soni.
2. General Organic chemistry by Sachin Kumar Ghosh.
3. Text book of organic chemistry by Morrison and Boyd.
4. Text book of organic chemistry by Graham Solomons.
5. Text book of organic chemistry by BruiceYuranisPowla.
6. Text book of organic chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry byLewisGlasstone.
8. Industrial Electrochemistry, D. Pletcher, Chapman & Hall

Unit IV

1. Text book of organic chemistry by Morrison and Boyd
2. Text book of organic chemistry by Graham solomons
3. Fundamentals of organic synthesis and retrosynthetic analysis
4. by Ratna Kumar Kar
5. Organic synthesis by Dr. Jagadamba Singh and Dr. L.D.S. Yadav
6. Stereochemistry of organic compounds by D. Nasipuri
7. Organic chemistry by Clayden, Greeves, Warren and Wothers
8. Fundamentals of Asymmetric Synthesis by G. L. David Krupadanam

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Page 21

Laboratory Course

Paper IV- Quantitative Analysis - II

45hrs (3h/ week)

1. Conductometry titrations:
 - i) Strong acid Vs Strong base;
 - ii) Weak acid Vs Strong base.
2. Potentiometry titration:
 - i) Strong acid Vs Strong base;
 - ii) Weak acid Vs Strong base.
3. Estimation of Nickel by back titration (Standard MgSO_4 solution will be given)
4. Estimation of Barium as Barium Sulphate

Uncommented?

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Page 22

B.Sc. with Computer Science Syllabus

IV Semester, DSC 1D

Design and Analysis of Algorithms

Unit I

Fundamentals of the Analysis of Algorithm Efficiency: The Analysis Framework, Asymptotic Notations and Basic Efficiency Classes.

Divide-and-Conquer: maximum-subarray problem, Strassen's algorithm for matrix multiplication, The substitution method for solving recurrences, The recursion-tree method for solving recurrences, The master method for solving recurrences.

Dynamic Programming: Rod cutting, Matrix-chain multiplication, Elements of dynamic programming, longest common subsequence, Optimal binary search trees.

Greedy Algorithms: An activity-selection problem, Elements of the greedy strategy, Huffman codes, Matroids and greedy methods, task-scheduling problem as a matroid.

Unit II

Searching and Sorting Techniques: Review of elementary sorting techniques-selection sort, Bubble sort, insertion sort, more sorting techniques-quick sort, heap sort, merge sort, shell sort, external sorting.

Limitations of Algorithm: Lower-Bound Arguments, Decision Trees, P , NP , and NP -Complete Problems.

Polynomials and the FFT: Representing polynomials, The DFT and FFT, Efficient FFT implementations.

Number-Theoretic Algorithms: Elementary number-theoretic notions, Greatest common divisor(GCD), Modular arithmetic, Addition and Multiplication of two large numbers.

Unit III

String Matching: The naive string-matching algorithm, The Rabin-Karp algorithm, String matching with finite automata, The Knuth-Morris-Pratt algorithm.

B.Sc. with Computer Science Syllabus

NP-Completeness: Polynomial time, Polynomial-time verification, NP-completeness and reducibility, NP-completeness proofs, NP-complete problems.

Approximation Algorithms: The vertex-cover problem, The traveling-salesman problem, The set-covering problem, Randomization and linear programming, The subset-sum problem.

Unit IV

Elementary Graph Algorithms: Representations of graphs, Breadth-first search, Depth-first search, Topological sort, strongly connected components.

Minimum Spanning Trees: Growing a minimum spanning tree, the algorithms of Kruskal and Prim.

Single-Source Shortest Paths: The Bellman-Ford algorithm, Single-source shortest paths in directed acyclic graphs, Dijkstra's algorithm, Difference constraints and shortest paths, Proofs of shortest-paths properties.

Text book:

1. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, *Introduction to Algorithms*, MIT press, 3rd edition, 2009.
2. Anany Levitin, *Introduction to the design and analysis of algorithms*, 3rd edition, 2012.

References:

1. J. Kleinberg and E. Tardos, *Algorithms Design*, Pearson Education, 2006.
2. S. Baase, *Computer Algorithms: Introduction to Design and Analysis*, Addison Wesley, 1999.
3. A.V. Levitin, *Introduction to the Design and Analysis of Algorithms*, Pearson Education, 2006.

B.Sc. with Computer Science Syllabus

Practicals: Design and Analysis of Algorithms

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Sorting Algorithm:

1. To analyze time complexity of insertion sort
2. To analyze time complexity of Quick sort
3. To analyze time complexity of merge sort

Dynamic Algorithm:

4. To implement largest common subsequence
5. To implement optimal binary search tree
6. To implement martrix chain multiplication

Divide And Conquer:

7. Implement Binary Search Algorithm.
8. Implement Merge Sort Algorithm.
9. Implement Quick Sort Algorithm.
10. To implement strassen's martrix multiplication algorithm

The Greedy Method:

11. Implement activity selection problem
12. Implement fractional Knapsack Problem Algorithm.
13. Implement Job Sequencing with Deadlines Algorithm.

B.Sc. with Computer Science Syllabus

14. Implement Minimum-Cost Spanning Trees: Prim's Algorithm.
15. Implement Single Source Shortest Paths: Dijkstra's Algorithm.

Dynamic Programming:

16. Implement Single-Source Shortest Paths: Bellman-Ford's Algorithm.
17. Implement All-Pairs Shortest Paths: Floyd & Warshall's Algorithm.

Graphs:

18. Implement Dijkstra's algorithm
19. Implement Warshall algorithm
20. Implement Bellman Fords algorithim
21. Implement depth first search algorithm
22. Implement depth first search algorithm

String Matching Algorithm:

23. Implement Naïve string matching algorithm
24. Implement Rabin Karp string matching algorithm

Spanning Trees:

25. Implement prim's algorithm
26. Implement Kruskal's algorithm

B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

DSC-1D	(4 hrs./week)	Theory syllabus	Credits-4 (60 hours)
UNIT - I:			
1.	Meristems: Types, histological organization of shoot and root apices and theories.		(3h)
2.	Tissues and Tissue Systems: Simple, complex and special tissues.		(6 h)
3.	Leaf: Ontogeny, diversity of internal structure; stomata and epidermal outgrowths.		(6 h)
UNIT-II			
4.	Stem and root anatomy: Vascular cambium - Formation and function.		(3h)
5.	Anomalous secondary growth of Stem - <i>Achyranthes</i> , <i>Boerhaavia</i> , <i>Bignonia</i> , <i>Dracaena</i> ; Root- <i>Beta vulgaris</i>		(5h)
6.	Wood structure: General account. Study of local timbers – Teak (<i>Tectona grandis</i>), Rosewood, (<i>Dalbergia latefolia</i>), Red sanders, (<i>Pterocarpus santalinus</i>) Nallamaddi (<i>Terminalia tomentosa</i>) and Neem (<i>Azadirachta indica</i>).		(7h)
UNIT - III			
7.	Introduction: History and importance of Embryology.		(2h)
8.	Anther structure, Microsporogenesis and development of male gametophyte.		(6h)
9.	Ovule structure and types; Megasporogenesis; types and development of female gametophyte.		(7h)
UNIT-IV			
10.	Pollination - Types; Pollen - pistil interaction. Fertilization.		(4h)
11.	Endosperm - Development and types. Embryo - development and types; Polyembryony and Apomixis - an outline.		(5h)
12.	Palynology- Pollen morphology, NPC system and application of Palynology.		(6h)

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References:

1. Bhattacharya et. al. 2007. A textbook of Palynology, Central, New Delhi.
2. Bhojwani, S. S. and S. P. Bhatnagar. 2000. The Embryology of Angiosperms (4th Ed.), Vikas Publishing House, Delhi.
3. M.R.Saxena- A textbook of Palynology.
4. Vashista- A textbook of Anatomy.
5. P.K.K.Nair- A textbook of Palynology.
6. Esau, K. 1971. Anatomy of Seed Plants. John Wiley and Son, USA.
7. Johri, B. M. 1984. Embryology of Angiosperms. Springer-Verleg, Berlin.
8. Kapil, R. P. 1986. Pollination Biology. Inter India Publishers, New Delhi.
9. Maheswari, P. 1971. An Introduction to Embryology of Angiosperms. McGraw Hill Book Co., London.
10. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

Theory Model Question Paper

Time: 2 hrs

Max. Marks: 40

Draw well labeled diagrams wherever necessary.

I. Write short notes on any FOUR of the following: -

4 X 2 = 8M

- a. Types of Stomata.
- b. parenchyma.
- c. Different types of Ovules.
- d. Exine stratification.
- e. Rose Wood
- f. Polyembryony

II. Essay Questions:

4 X 8 = 32M

- 1 a. Classify Meristems ? Discuss in detail the various types of meristems.
(OR)
b. Theories associated with root apices.
- 2 a. Primary and secondary structure of *Boerhaavia diffusa* stem.
(OR)
b. Describe in detail the wood structure of *Pterocarpus santalinus*.
- 3 a. Discuss different Embryo sacs studied by you.
(OR)
b. Describe the development of Male Gametophyte.
- 4 a. Describe in detail various steps in Fertilization.
(OR)
b. Discuss in detail the various applications of Palynology.

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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

Practical syllabus

(45 hours)

Suggested Laboratory Exercises:

1. Demonstration of double staining technique. (3 h)
2. Tissue organization in root and shoot apices using permanent slides (3 h)
3. Preparation of double stained Permanent slides
Primary structure: Root - *Cicer, Canna*; Stem - *Tridax, Sorghum* (6 h)
Secondary structure: Root - *Tridax* sp.; Stem - *Pongamia*
- Anomalous secondary structure: Examples as given in theory syllabus. (6 h)
4. Stomatal types using epidermal peels. (3 h)
5. Microscopic study of wood in T.S., T.L.S. and R.L.S. (6 h)
6. Structure of anther and microsporogenesis using permanent slides. (3 h)
7. Structure of pollen grains using whole mounts - *Hibiscus, Acacia* and Grass). (3 h)
8. Pollen viability test using Evans Blue - *Hibiscus* (3 h)
9. Study of ovule types and developmental stages of embryosac. (3 h)
10. Structure of endosperm (nuclear and cellular); Developmental stages of dicot and monocot embryos using permanent slides. (3 h)
11. Isolation and mounting of embryo (using *Cymopsis / Senna / Crotalaria*) (3 h)

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B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

Practical Model Paper

Time: 2 1/2 hrs

Max. marks : 25

1. Prepare a double stained permanent mount of transverse section of
given material " A " . 9M

2. Prepare a temporary mount of epidermal peel of the given leaf
material " B " and identify the stomatal type . 4M

3. Conduct the pollen viability test " C " (OR) Isolate the embryo from
the given material . 4M

4. Identify and describe the specimens / slides with well labelled diagrams
(a) Embryology – D (b) Palynology – E (c) Anatomy – F 3 X 2 = 6M

5. Record 2M

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B.Sc. ZOOLOGY SYLLABUS UNDER CBCS
(With effect from 2016-2017)
IV - SEMESTER
DSC-1D (Theory)
Cell and Molecular Biology, Genetics, Evolution

Max. Marks: 80

UNIT – I

- 1.1 Cell theory; Differences of Prokaryotic and Eukaryotic cells.
- 1.2 Ultrastructure of animal cell; Structure and functions of plasma membrane proteins.
- 1.3 Structure and functions of cell organelles – Endoplasmic reticulum, Golgi body, Ribosomes, Lysosomes, centrosomes, Mitochondria and Nucleus.
- 1.4 Chromosomes – Structure, types, giant chromosomes.
- 1.5 Cell Division - Mitosis, Meiosis; Cell cycle and its regulation.

UNIT – II

- 2.1 DNA (Deoxyribo Nucleic Acid) – Structure; DNA Replication.
- 2.2 RNA (Ribo Nucleic Acid) - Structure, types.
- 2.3 Protein Synthesis – Transcription and Translation.
- 2.4 Gene Expression – Genetic Code; operon concept.
- 2.5 Molecular Biology Techniques - Polymerase Chain Reaction, Electrophoresis

UNIT – III

- 3.1 Mendals laws of Inheritance and Non-Medelian Inheritance; Linkage and Crossing over.
- 3.2 Sex determination and sex-linked inheritance
- 3.3 Chromosomal Mutations- Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy.
- 3.4. Gene mutations- Induced versus Spontaneous mutations.
- 3.5. Inborn errors of metabolism; One gene one enzyme, one gene one polypeptide theory.

UNIT – IV

- 4.1 Theories of evolution – Lamarckism and Neo-Lamarckism, Darwinism and Neo Darwinism, Modern synthetic theory.
- 4.2 Evidences of Evolution and Hardy Weinberg Law; Forces of Evolution – mutation, Gene flow, genetic drift, and natural selection.
- 4.3 Isolation – Pre-mating and post mating isolating mechanisms.
- 4.4 Speciation: Methods of speciation - Allopatric and sympatric.
- 4.5 Causes and Role of Extinction in Evolution.

Suggested readings

1. **Lodish, Berk, Zipursky, Matsudaria, Baltimore, Darnell** '*Molecular Cell Biology*' W.H. Free man and company New York..
2. **Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008).** *Principles of Genetics*. VIII Edition. Wiley India.
3. **Snustad, D.P., Simmons, M.J. (2009).** *Principles of Genetics*. V Edition. John Wiley and Sons Inc.
4. **Klug, W.S., Cummings, M.R., Spencer, C.A. (2012).** *Concepts of Genetics*. X Edition. Benjamin Cummings.
5. **Russell, P. J. (2009).** *Genetics- A Molecular Approach*. III Edition. Benjamin Cummings.
6. **Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B.** *Introduction to Genetic Analysis*. IX Edition. W. H. Freeman and Co.
7. **Ridley, M. (2004).** *Evolution*. III Edition. Blackwell Publishing
8. **Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H. (2007).** *Evolution*. Cold Spring, Harbour Laboratory Press.
9. **Hall, B. K. and Hallgrimsson, B. (2008).** *Evolution*. IV Edition. Jones and Bartlett Publishers
10. **Campbell, N. A. and Reece J. B. (2011).** *Biology*. IX Edition, Pearson, Benjamin, Cummings.
11. **Douglas, J. Futuyma (1997).** *Evolutionary Biology*. Sinauer Associates.
12. **Minkoff, E. (1983).** *Evolutionary Biology*. Addison-Wesley.
13. **James D. Watson, Nancy H. Hopkins** '*Molecular Biology of the Gene*'
14. **Jan M. Savage.** *Evolution*, 2nd ed, Oxford and IBH Publishing Co., New Delhi.
15. **Gupta P.K.,** '*Genetics*'

ZOOLOGY PRACTICAL SYLLABUS FOR III SEMESTER

ZOOLOGY (DSC-1D)

Cell and Molecular Biology, Genetics and Evolution

Max. Marks: 50

I. Cytology

1. Preparation and Identification of slides of Mitotic divisions with onion root tips
2. Preparation and Identification of different stages of Meiosis in Grasshopper Testes
3. Identification and study of the following slides
 - i). Different stages of Mitosis and Meiosis
 - ii) Lamp brush and Polytene chromosomes

II. Genetics

1. Problems on Genetics - Mendelian inheritance, Linkage and crossing over, Sex linked inheritance

III. Evolution

1. Museum Study of Fossil animals: *Peripatus*, *Coelacanth Fish*, *Dipnoi fishes*, *Sphenodon*, *Archeopteryx*.
2. Study of homology and analogy from suitable specimens and pictures
3. Problems on Hardy-Weinberg Law
4. Macroevolution using Darwin finches (pictures)

Laboratory Record work shall be submitted at the time of practical examination

An “**Album**” containing photographs, cut outs, with appropriate write-up about Genetics and Evolution.

Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals

Manual of laboratory experiments in cell biology Edward, G.

**CURRICULUM FOR MATHEMATICS
IN UNDER GRADUATE DEGREE PROGRAMME**

**CBCS SYLLABUS SCHEDULE 2016 - 2017
SEMESTER - V**



**By
Chairperson
Board of Studies
Department of Mathematics
Kakatiya University, Warangal.**

Skill Enhancement Course - III
B.Sc., III Year, V Semester
For All Science Faculty Departments
Verbal Reasoning For Aptitude Test
Credits: 2

Theory: 2 hours/week

Marks - 50

UNIT - I - Numbers And Diagrams

- 1.1. **Series Completion:** Number series, Alphabet Series.
- 1.2. **Series Completion:** Alpha Numeric Series, Continuous Pattern Series.
- 1.3. **Logical Venn Diagrams.**
- 1.4. **Mathematical Operations:** Problem solving by substitution, Interchange of signs and numbers.

UNIT - II - Arithemtical Reasoning

- 2.1. Mathematical Operations: Deriving the appropriate conclusions.
- 2.2. Arithmetical Reasoning: Calculation based problems, Data based problems .
- 2.3. Arithmetical Reasoning: Problems on ages, Venn diagram based problems.
- 2.4. Cause and Effect Reasoning.

TEXT: *A Modern Approach to Verbal and Non-Verbal Reasoning* by Dr.R.S. Aggarwal

Kakatiya University
B.Sc. Mathematics, V Semester
LINEAR ALGEBRA

DSC-1E
BS:503

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours/week and Practicals: 2 hours/week

Objective: The students are exposed to various concepts like vector spaces, bases, dimension, Eigen values etc.

Outcome: After completion this course students appreciate its interdisciplinary nature.

UNIT-I

Vector Spaces : Vector Spaces and Subspaces -Null Spaces, Column Spaces, and Linear Transformations -Linearly Independent Sets; Bases -Coordinate Systems

UNIT-II

The Dimension of a Vector Space, Rank-Change of Basis - Eigenvalues and Eigenvectors .

UNIT-III

The Characteristic Equation, Diagonalization -Eigenvectors and Linear Transformations -Complex Eigenvalues - Applications to Differential Equations .

UNIT-IV

Orthogonality and Least Squares : Inner Product, Length, and Orthogonality -Orthogonal Sets.

TEXT: David C Lay,*Linear Algebra and its Applications 4e*

References:

- S Lang, *Introduction to Linear Algebra*
- Gilbert Strang ,*Linear Algebra and its Applications*
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence; *Linear Algebra*
- Kuldeep Singh; *Linear Algebra*
- Sheldon Axler;*Linear Algebra Done Right*

Practical Question Bank

UNIT-I

- (1) Let H be the set of all vectors of the form $\begin{bmatrix} -2t \\ 5t \\ 3t \end{bmatrix}$. Find a vector v in R^3 such that $H = \text{Span}\{v\}$.
Why does this show that H is a subspace of R^3 ?
- (2) Let V be the first quadrant in the xy -plane; that is let $V = \left\{ \begin{bmatrix} x \\ y \end{bmatrix} \mid x \geq 0, y \geq 0 \right\}$
- (a). If u and v are in V is $u + v$ in V ? why?
(b) Find a specific vector u in V and a specific scalar c such that
- (3) Let $v_1 = \begin{bmatrix} 1 \\ -2 \\ 3 \end{bmatrix}$ and $v_2 = \begin{bmatrix} -2 \\ 7 \\ -9 \end{bmatrix}$. Determine if $\{v_1, v_2\}$ is a basis for R^3 . Is $\{v_1, v_2\}$ a basis for R^2 .
- (4) The set $B = \{1 + t^2, t + t^2, 1 + 2t + t^2\}$ is a basis for P_2 . Find the coordinate vector of $p(t) = 1 + 4t + 7t^2$ relative to B .
- (5) set $B = \{1 - t^2, t - t^2, 2 - t + t^2\}$ is a basis for P_2 . Find the coordinate vector of $p(t) = 1 + 3t - 6t^2$ relative to B .
- (6) The vector $v_1 = \begin{bmatrix} 1 \\ -3 \end{bmatrix}, v_2 = \begin{bmatrix} 2 \\ -8 \end{bmatrix}, v_3 = \begin{bmatrix} -3 \\ 7 \end{bmatrix}$ span R^2 but do not form a basis. Find two different ways to express $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$ as a linear combination of v_1, v_2, v_3
- (7) Let V be the set of all real-valued functions defined on a set D . Then $f + g$ is the function whose value at t in the domain D is $f(t) + g(t)$ and for any scalar c and for any f in V , the scalar multiple cf is the function whose value at t is $cf(t)$.
- (8) The vector space \mathbf{R}^2 is not a subspace of \mathbf{R}^3 because \mathbf{R}^2 is not even a subset of \mathbf{R}^3 . (The vectors in \mathbf{R}^3 all have three entries, whereas the vectors in \mathbf{R}^2 have only two.) The set $H = \left\{ \begin{pmatrix} s \\ t \\ 0 \end{pmatrix} : s \text{ and } t \text{ are real} \right\}$ is a subset of \mathbf{R}^3 that "looks" and "acts" like \mathbf{R}^2 , although it is logically distinct from \mathbf{R}^2 . Show that H is a subspace of \mathbf{R}^3 .
- (9) The differential equation $y'' + \omega^2 y = 0$ where ω is a constant, is used to describe a variety of physical systems, such as the vibration of a weighted spring, the movement of a pendulum, and the voltage in an inductance-capacitance electrical circuit. Then show that the set of solutions of the given differential equation is precisely the kernel of the linear transformation that maps a function $y = f(t)$ into the function $y'' + \omega^2 y = 0$.
- (10) Let $v_1 = \begin{pmatrix} 3 \\ 0 \\ -6 \end{pmatrix}, v_2 = \begin{pmatrix} -4 \\ 1 \\ 7 \end{pmatrix}, v_3 = \begin{pmatrix} -2 \\ 1 \\ 5 \end{pmatrix}$. Determine if $\{v_1, v_2, v_3\}$ is a basis for \mathbf{R}^3

UNIT-II

- (11) Find the dimension of the subspace of all vectors in R^3 whose first and third entries are equal
- (12) Find the dimension of the subspace H of R^2 spanned by $\begin{bmatrix} 1 \\ -5 \end{bmatrix}$ $\begin{bmatrix} -2 \\ 10 \end{bmatrix}$ $\begin{bmatrix} -3 \\ 15 \end{bmatrix}$
- (13) Let H be an n dimensional subspace of an n dimensional vectorspace V . Show that $H=V$.
- (14) Explain why the space P of all polynomials is an infinite dimensional space
- (15) If a 4×7 matrix A has rank 3 ,find $\dim \text{Null}A$, $\dim \text{Row } A$ and rank A^T
- (16) If a 7×5 matrix A has rank 2 ,find $\dim \text{Null}A$, $\dim \text{Row } A$ and rank A^T
- (17) If the null space of an 8×5 matrix A is 3 dimensional,what is the dimension of the row space of A ?
- (18) If A is a 3×7 matrix what is the smallest possible dimension of $\text{Null } A$?
- (19) Let $U = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$ find V in R^3 such that $\begin{bmatrix} 1 & -3 & 4 \\ 2 & -6 & 8 \end{bmatrix} = UV^T$
- (20) If A is a 7×5 matrix,what is the largest possible rank of A ? If A is a 5×7 matrix,what is the largest possible rank of A ? Explain your answers.

UNIT-III

- (21) Without calculations list $\text{rank}(A)$ and $\dim(A)$, $\text{Nul}(A)$

$$\text{if } A = \begin{bmatrix} 2 & 6 & -6 & -6 & 3 & 6 \\ -2 & -3 & 6 & -3 & 0 & -6 \\ 4 & 9 & 12 & 9 & 3 & 12 \\ -2 & 3 & 6 & 3 & 3 & -6 \end{bmatrix}$$

- (22) Use a property of determinants to show A and A^T have same characteristic polynomial.
- (23) Find the characteristic equation of

$$A = \begin{bmatrix} 5 & -2 & 6 & -1 \\ 0 & 3 & -8 & 0 \\ 0 & 0 & 5 & 4 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

- (24) Find characteristic polynomial and the real eigen values of

$$\begin{bmatrix} 4 & 0 & -1 \\ 0 & 4 & -1 \\ 1 & 0 & 2 \end{bmatrix} \quad \begin{bmatrix} -1 & 0 & 2 \\ 3 & 1 & 0 \\ 0 & 1 & 2 \end{bmatrix}$$

- (25) Let $A = PDP^{-1}$ and compute A^4 where $P = \begin{bmatrix} 5 & 7 \\ 2 & 3 \end{bmatrix}$ $D = \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$

- (26) Let $B = \{b_1, b_2, b_3\}$ and $D = \{d_1, d_2\}$ be bases for vector spaces V and W respectively. Let $T : V \rightarrow W$ be a linear transformation with the property that $T(b_1) = 3d_1 - 5d_2$, $T(b_2) = -d_1 + 6d_2$, $T(b_3) = 4d_2$ Find the matrix T relative to B and D .

(27) Let $D = \{d_1, d_2\}$ and $B = \{b_1, b_2\}$ be bases for vector spaces V and W respectively. Let $T : V \rightarrow W$ be a linear transformation with the property that $T(d_1) = 3b_1 - 3b_2$, $T(d_2) = -2b_1 + 5b_2$. Find the matrix for T relative to B and D .

(28) Let $B = \{b_1, b_2, b_3\}$ be a basis for a vector space V and let $T : V \rightarrow \mathbf{R}^2$ be a linear transformation with the property that

$$T(x_1b_1 + x_2b_2 + x_3b_3) = \begin{bmatrix} 2x_1 - 3x_2 + x_3 \\ -2x_1 + 5x_3 \end{bmatrix}$$

find the matrix for T relative to B and the standard basis for \mathbf{R}^2 .

(29) Let $T : P_2 \rightarrow P_3$ be the transformation that maps a polynomial $p(t)$ into the polynomial $(t+3)p(t)$

(a). Find the image of $p(t) = 3 - 2t + t^2$

(b). Show that T is a linear transformation

(c). Find the matrix for T relative to the basis $\{1, t, t^2\}$ and $\{1, t, t^2, t^3\}$

(30) Assume the mapping $T : P_2 \rightarrow P_2$ defined by

$T(a_0 + a_1t + a_2t^2) = 3a_0 + (5a_0 - 2a_1)t + (4a_1 + a_2)t^2$ is linear. Find the matrix representation of T relative to the basis $B = \{1, t, t^2\}$

UNIT-IV

(31) Define $T : P_3 \rightarrow \mathbf{R}^4$ by $T(P) = \begin{bmatrix} P(-2) \\ P(3) \\ P(1) \\ P(0) \end{bmatrix}$

(a. Show that T is a linear transformation

(b. Find the matrix for T relative to the basis $\{1, t, t^2, t^3\}$ for P_3 and standard basis for \mathbf{R}^4

(32) Let A be 2×2 matrix with eigen values -3 and -1 corresponding eigen vectors $V_1 = \begin{bmatrix} -1 \\ 1 \end{bmatrix}$ and $V_2 = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$. Let $X(t)$ be the position of a particle at time t solve the initial value problem $X' = AX$, $X(0) = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$.

(33) Construct the general solution of $X' = AX$, $A = \begin{bmatrix} -3 & 2 \\ -1 & -1 \end{bmatrix}$, $\begin{bmatrix} -7 & 10 \\ -4 & 5 \end{bmatrix}$

(34) Compute the orthogonal projection of $\begin{bmatrix} 1 \\ 7 \end{bmatrix}$ onto the line through $\begin{bmatrix} -4 \\ 2 \end{bmatrix}$ and the origin.

(35) Let W be the subspace of \mathbf{R}^2 spanned by $X = (\frac{2}{3}, 1)$. Find a unit vector in z that is a basis for W .

(36) Show that $\{u_1, u_2, u_3\}$ is an orthogonal set, where $u_1 = \begin{pmatrix} 3 \\ 1 \\ 1 \end{pmatrix}$, $u_2 = \begin{pmatrix} -1 \\ 2 \\ 1 \end{pmatrix}$, $u_3 = \begin{pmatrix} -\frac{1}{2} \\ -2 \\ \frac{7}{2} \end{pmatrix}$.

(37) The set $S = \{u_1, u_2, u_3\}$ where $u_1 = \begin{pmatrix} 3 \\ 1 \\ 1 \end{pmatrix}$, $u_2 = \begin{pmatrix} -1 \\ 2 \\ 1 \end{pmatrix}$, $u_3 = \begin{pmatrix} -\frac{1}{2} \\ -2 \\ \frac{7}{2} \end{pmatrix}$ is an orthogonal basis for

R^3 . Express the vector $y = \begin{pmatrix} 6 \\ 1 \\ -8 \end{pmatrix}$ as a linear combination of the vectors in S .

(38) Show that $S = \{v_1, v_2, v_3\}$ is an orthonormal basis of R , where $v_1 = \begin{pmatrix} \frac{3}{\sqrt{11}} \\ \frac{1}{\sqrt{11}} \\ \frac{1}{\sqrt{11}} \end{pmatrix}$, $v_2 = \begin{pmatrix} -\frac{1}{\sqrt{6}} \\ \frac{2}{\sqrt{6}} \\ \frac{1}{\sqrt{6}} \end{pmatrix}$,

$$v_3 = \begin{pmatrix} -\frac{1}{\sqrt{66}} \\ -\frac{4}{\sqrt{66}} \\ \frac{7}{\sqrt{66}} \end{pmatrix}$$

(39) Determine given set of vectors are orthogonal or not. $\begin{pmatrix} -1 \\ 4 \\ -3 \end{pmatrix}$, $\begin{pmatrix} 5 \\ 2 \\ 1 \end{pmatrix}$, $\begin{pmatrix} 3 \\ -4 \\ -7 \end{pmatrix}$

(40) Let $U = \begin{bmatrix} \frac{1}{\sqrt{2}} & \frac{2}{3} \\ \frac{1}{\sqrt{2}} & -\frac{2}{3} \\ 0 & \frac{1}{3} \end{bmatrix}$ and $x = \begin{bmatrix} \sqrt{2} \\ 3 \end{bmatrix}$. Notice that U has orthonormal columns and $U^T U =$

$$\begin{bmatrix} \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} & 0 \\ \frac{2}{3} & -\frac{2}{3} & \frac{1}{3} \end{bmatrix} \begin{bmatrix} \frac{1}{\sqrt{2}} & \frac{2}{3} \\ \frac{1}{\sqrt{2}} & -\frac{2}{3} \\ 0 & \frac{1}{3} \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \text{ verify that } \|Ux\| = \|x\| .$$

Kakatiya University
B.Sc. Mathematics, V Semester
SOLID GEOMETRY

DSE-1E/A
BS:506

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours/week

Objective: Students learn to describe some of the surfaces by using analytical geometry.

Outcome: Students understand the beautiful interplay between algebra and geometry.

UNIT- I

Sphere: Definition-The Sphere Through Four Given Points - Equations of a Circle - Intersection of a Sphere and a Line - Equation of a Tangent Plane - Angle of Intersection of Two Spheres - Radical Plane.

UNIT- II

Cones : Definition-Condition that the General Equation of second degree Represents a Cone - Cone and a Plane through its Vertex - Intersection of a Line with a Cone. The Right Circular Cone.

UNIT- III

Cylinder: Definition-Equation of a Cylinder-Enveloping Cylinder - The Cylinder - The Right Circular Cylinder.

UNIT- IV

The Conicoid: The General Equation of the Second Degree-Intersection of Line with a Conicoid- Plane of contact-Enveloping Cone and Cylinder.

TEXT: Shanti Narayan and P K Mittal, *Analytical Solid Geometry* (17e)

References:

- Khaleel Ahmed, *Analytical Solid Geometry*
- S L Loney , *Solid Geometry*
- Smith and Minton, *Calculus*

Practical Question Bank

UNIT-I

- (1) Find the equation of the sphere through the four points $(4,-1,2)$, $(0,-2,3)$, $(1,-5,-1)$, $(2,0,1)$.
- (2) Find the equation of the sphere through the four points $(0,0,0)$, $(-a,b,c)$, $(a,-b,c)$, $(a,b,-c)$.
- (3) Find the centre and radius of the circle $x + 2y + 2 = 15$, $x^2 + y^2 + z^2 - 2y - 4z = 11$.
- (4) Show that the following points are concyclic:
 - (i) $(5,0,2)$, $(2,-6,0)$, $(7,-3,8)$, $(4,-9,6)$.
 - (ii) $(-8,5,2)$, $(-5,2,2)$, $(-7,6,6)$, $(-4,3,6)$.
- (5) Find the centres of the two spheres which touch the plane $4x + 3y = 47$ at the points $(8.5,4)$ and which touch the sphere $x^2 + y^2 + z^2 = 1$
- (6) Show that the spheres $x^2 + y^2 + z^2 = 25$ & $x^2 + y^2 + z^2 - 24x - 40y - 18z + 225 = 0$ touch externally and find the point of contact.
- (7) Find the equation of the sphere that passes through the two points $(0,3,0)$, $(-2,-1,-4)$ and cuts orthogonally the two spheres
 $x^2 + y^2 + z^2 - x - 3z - 2 = 0$, $2(x^2 + y^2 + z^2) + x + 3y + 4 = 0$.
- (8) Find the limiting points of the co-axial system of spheres $x^2 + y^2 + z^2 - 20x + 30y - 40z + 29 + \lambda(2x - 3y + 4z) = 0$.
- (9) Find the equation of the two spheres of the co-axial systems $x^2 + y^2 + z^2 - 5 + \lambda(2x + y + 3z - 3) = 0$ which touch the plane $3x + 4y = 15$.
- (10) Show that the radical planes of the spheres of a co-axial system and of any given sphere pass through a line.

UNIT-II

- (11) Find the equation of cone whose vertex is (α, β, γ) and base $ax^2 + by^2 = 1$, $z = 0$
- (12) The section of a cone whose vertex is P and guiding curve the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, z = 0$ by the plane $x = 0$ is a rectangular hyperbola . show that the locus of P is $\frac{x^2}{a^2} + \frac{y^2+z^2}{b^2} = 1$
- (13) Find the equation of the cone whose vertex is the point $(1,1,0)$ and whose guiding curve is $y = 0, x^2 + y^2 = 4$
- (14) Find the equation of the cone whose vertex is the point $(1,2,3)$ and guiding curve the circle $x^2 + y^2 + z^2 = 4, x + y + z = 1$
- (15) Find the enveloping cone of the sphere $x^2 + y^2 + z^2 - 2x + 4z = 1$ with vertex at $(1,1,1)$.
- (16) Show that the plane $z = 0$ cuts the enveloping cone of the sphere $x^2 + y^2 + z^2 = 11$ which has its vertex at $(2,4,1)$ in a rectangular hyperbola.
- (17) Find the equation of the quadric cone whose vertex is at the origin and which passes through the curve given by the equations $ax^2 + by^2 + cz^2 = 1$, $lx + my + nz = p$.

- (18) Find the equations to the cones with vertex at origin and which pass through the curve given by the equations $ax^2 + by^2 = 2z, lx + my + nz = p$.
- (19) Find the equation of the cone with vertex at the origin and direction cosines of its generators satisfying the relation $3l^2 - 4m^2 + 5n^2 = 0$
- (20) Find the equations to the cones with vertex at origin and which pass through the curve given by the equations $z = 2, x^2 + y^2 = 4$

UNIT-III

- (21) Find the equation of a cylinder whose generating line have the direction cosines (l, m, n) and which passes through the circle $x^2 + z^2 = a^2, y = 0$.
- (22) Find the equation of the cylinder whose generators are parallel to $x = -\frac{1}{2}y = \frac{1}{3}z$ and whose guiding curve is the ellipse $x^2 + 2y^2 = 1, z = 3$.
- (23) Find the enveloping cylinder of the sphere $x^2 + y^2 + z^2 - 2x + 4y = 1$ having the generators parallel to the line $x = y = z$.
- (24) The axis equation of a right circular cylinder of radius 2 is $\frac{(x-1)}{2} = \frac{y}{3} = \frac{(z-3)}{1}$;
Show that its equation is $10x^2 + 5y^2 + 13z^2 - 12xy - 6yz - 4zx - 8x - 30y - 74z + 59 = 0$.
- (25) Find the equation of the right circular cylinder of radius 2 whose axis is the line $\frac{x-1}{2} = \frac{y-2}{2} = \frac{z-2}{2}$.
- (26) Find the equation of the right circular cylinder of radius 2 whose axis passes through the point $(1, 2, 3)$ and has direction cosines proportional to $(2, -3, 6)$.
- (27) Find the right circular cylinder of radius 4 and axis the line $x = 2y = -z$. Also prove that the area of cross - section of the cylinder by the plane $z = 0$ is 24π
- (28) Obtain the equation of the right circular cylinder described on the circle through the three points $(1, 0, 0), (0, 1, 0), (0, 0, 1)$ as guiding circle.
- (29) Find the equation of the right circular cylinder of radius 2 whose axis is the line $\frac{(x-1)}{2} = (y-2) = \frac{(z-3)}{2}$
- (30) Find the equation, if the cylinder whose generator touch the sphere $x^2 + y^2 + z^2 = a^2$ and parallel to the line $\frac{x}{l} = \frac{y}{m} = \frac{z}{n}$.

UNIT-IV

- (31) Find the points of intersection of the line $-\frac{1}{3}(x + 5) = (y - 4) = \frac{1}{7}(z - 11)$, with the conicoid $12x^2 - 17y^2 + 7z^2 = 7$.
- (32) Find the equations to the tangent planes to $7x^2 - 3y^2 - z^2 + 21 = 0$, which passes through the line, $7x - 6y + 9 = 3, z = 3$.
- (33) Obtain the tangent planes to the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$, which are parallel to the plane $lx + my + nz = 0$.
- (34) Show that the plane $3x + 12y - 6z - 17 = 0$ touches the conicoid $3x^2 - 6y^2 + 9z^2 + 17 = 0$, and find point of contact.

- (35) Find the equations to the tangent planes to the surface $4x^2 - 5y^2 + 7z^2 + 13 = 0$ parallel to the plane $4x + 20y - 21z = 0$. Find their points of contact also.
- (36) Find the locus of the perpendiculars from the origin to the tangent planes to the surface $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ which cut off from its axes intercepts the sum of whose reciprocals is equal to a constant $\frac{1}{k}$.
- (37) If the section of the enveloping one of the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$, whose vertex is P by the plane $z = 0$ is a rectangular hyperbola, show that the locus of P is $\frac{x^2+y^2}{a^2+b^2} + \frac{z^2}{c^2} = 1$.
- (38) Find the locus of points from which three mutually perpendicular tangent lines can be drawn to the conicoid $ax^2 + by^2 + cz^2 = 1$.
- (39) $P(1, 3, 2)$ is a point on the conicoid $x^2 - 2y^2 + 3z^2 + 5 = 0$. Find the locus of the mid-points of chords drawn parallel to OP .

Kakatiya University
B.Sc. Mathematics, V Semester
INTEGRAL CALCULUS

DSE-1E/B
BS:506

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours/week and Practicals: 2 hours/week

Objective: Techniques of multiple integrals will be taught.

Outcome: Students will come to know about its applications in finding areas and volumes of some solids.

UNIT-I

Areas and Volumes: Double Integrals-Double Integrals over a Rectangle-Double Integrals over General Regions in the Plane.

UNIT-II

Double integrals, Changing the order of Integration, Triple Integrals: The Integrals over a Box.

UNIT-III

Elementary Regions in Space-Triple Integrals in General, Triple Integral.

UNIT-IV

Change of Variables: Coordinate Transformations-Change of Variables in Triple Integrals.

TEXT: Susan Jane Colley, *Vector Calculus*(4e)

References

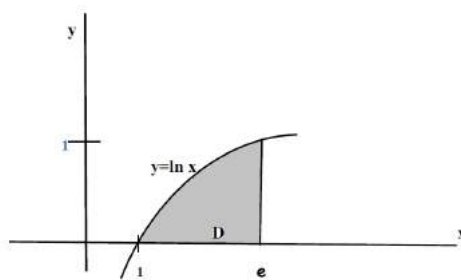
- Smith and Minton, *Calculus*
- Shanti Narayan and Mittal, *Integral calculus*
- Ulrich L. Rohde , G. C. Jain, Ajay K. Poddar and A. K. Ghosh; *Introduction to Integral Calculus*

2.14.1 Practicals Question Bank
UNIT-I

- (1) Let $R = [-3, 3] \times [-2, 2]$. Without explicitly evaluating any iterated integrals, determine the value of $\iint_R (x^5 + 2y) dA$.
- (2) Integrate the function $f(x, y) = 3xy$ over the region bounded by $y = 32x^3$ and $y = \sqrt{x}$.
- (3) Integrate the function $f(x, y) = x + y$ over the region bounded by $x + y = 2$ and $y^2 - 2y - x = 0$.
- (4) Evaluate $\iint_D xy dA$, where D is the region bounded by $x = y^3$ and $y = x^2$.
- (5) Evaluate $\iint_D e^{x^2} dA$, where D is the triangular region with vertices $(0, 0)$, $(1, 0)$ and $(1, 1)$.
- (6) Evaluate $\iint_D 3y dA$, where D is the region bounded by $xy^2 = 1$, $y = x$, $x = 0$ and $y = 3$.
- (7) Evaluate $\iint_D (x - 2y) dA$, where D is the region bounded by $y = x^2 + 2$ and $y = 2x^2 - 2$.
- (8) Evaluate $\iint_D (x^2 + y^2) dA$, where D is the region in the first quadrant bounded by $y = x$, $y = 3x$ and $xy = 3$.
- (9) Let D be the region bounded by the parabolas $y = 3x^2$, $y = 4 - x^2$ and the y -axis (Note that parabolas intersect at the point $(1, 3)$). Since D is the type I elementary region, with $f(x, y) = x^2y$ then find $\iint_D x^2y dA = \int_0^1 \int_{3x^2}^{4-x^2} x^2y dy dx$
- (10) Find the volume of the region under the graph of $f(x, y) = 2 - |x| - |y|$ and above the xy -plane.

Unit-II

- (11) Calculate area of shaded region from the given figure. Consider D as type-I region



- (12) Use change of order of the integration find integral $\int_0^2 \int_{y^2}^4 y \cos(x^2) dx dy$.
- (13) consider the integral $\int_0^2 \int_{x^2}^{2x} (2x + 1) dy dx$ (a) Evaluate this integral. (b) Sketch the region of integration. (c) Write an equivalent iterated integral with the order of integration reversed. Evaluate this new integral and check that your answer agrees with part (a).
- (14) Evaluate $\iiint_{[-2,3] \times [0,1] \times [0,5]} (x^2e^y + xyz) dV$

- (15) Evaluate $\iiint_{[-1,1] \times [0,2] \times [1,3]} xyz dV$
- (16) Evaluate $\iiint_{[0,1] \times [0,2] \times [0,3]} (x^2 + y^2 + z^2) dV$
- (17) Evaluate $\iiint_{[1,e] \times [1,e] \times [1,e]} \frac{1}{xyz} dV$
- (18) Find the value of $\iiint_W z dV$, where $W = [-1, 2] \times [2, 5] \times [-3, 3]$, without resorting to explicit calculation.
- (19) Evaluate the iterative integral. $\int_{-1}^2 \int_1^{z^2} \int_0^{y+z} 3yz^2 dx dy dz$.
- (20) Evaluate the iterative integral. $\int_1^3 \int_0^z \int_1^{xz} (x + 2y + z) dy dx dz$.

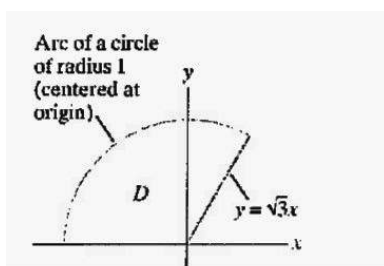
Unit-III

- (21) Let W be the solid region bounded by the hemisphere $x^2 + y^2 + z^2 = 4$ where $z \leq 0$ and the paraboloid $z = 4 - x^2 - y^2$ put solid bounded by them in type1,type2,type3,type4 forms and discuss the same geometrically.
- (22) Put the solid bounded by the ellipsoid $E : \frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$, a, b, c are positive constants in the in type1,type2,type3,type4 forms and discuss the same geometrically.
Integrate the following over the indicated W .
- (23) $f(x, y, z) = 2x - y + z$; W is the region bounded by the cylinder $z = y^2$, the xy -plane, the planes $x = 0, x = 1, y = -2, y = 2$.
- (24) $f(x, y, z) = y$; W is the region bounded by the plane $x + y + z = 2$, the cylinder $x^2 + z^2 = 1$ and $y = 0$.
- (25) $f(x, y, z) = 8xyz$; W is the region bounded by the cylinder $y = x^2$, the plane $y + z = 9$ and the xy -plane.
- (26) $f(x, y, z) = z$; W is the region in the first octant bounded by the cylinder $y^2 + z^2 = 9$ and the planes $y = x, x = 0$ and $z = 0$.
- (27) $f(x, y, z) = 1 - z^2$; W is the tetrahedron with vertices $(0, 0, 0), (1, 0, 0), (0, 2, 0)$ and $(0, 0, 3)$.
- (28) $f(x, y, z) = 3x$; W is the region in the octant bounded by $z = x^2 + y^2, x = 0, y = 0$ and $z = 4$.
- (29) $f(x, y, z) = x + y$; W is the region bounded by the cylinder $x^2 + 3z^2 = 9$ and the plane $y = 0, x + y = 3$.
- (30) $f(x, y, z) = z$; W is the region bounded by $z = 0, x^2 + 4y^2 = 4$ and $z = x + 2$.

Unit-IV

- (31) Let $T : R^3 \rightarrow R^3$ be given by $T(u, v, w) = (2u, 2u + 3v + w, 3w)$ write T by matrix multiplication. Integrate the following over the indicated region W .
- (32) $f(x, y, z) = 4x + y$; W is the region bounded by $x = y^2, y = z, x = y$ and $z = 0$.
- (33) $f(x, y, z) = x$; W is the region in the first octant bounded by $z = x^2 + 2y^2, z = 6 - x^2 - y^2, x = 0$ and $y = 0$.

- (34) Let $T(u, v) = (3u, -v)$. Write $T(u, v)$ as $A[y]$ for a suitable matrix A .
- (35) Describe the image $D = T(D^*)$, where D^* is the unit square $[0, 1] \times [0, 1]$.
- (36) Determine the value of $\iint_D \sqrt{\frac{x+y}{x-2y}} dA$, where D is the region in R^2 enclosed by the lines $y = x^2$, $y = 0$ and $x + y = 1$.
- (37) Evaluate $\iint_D \sqrt{\frac{(2x+y-3)^2}{(2y-x+6)^2}} dx dy$, where D is the square with vertices $(0, 0)$, $(2, 1)$, $(3, -1)$ and $(1, -2)$. (Hint: First sketch D and find the equations of its sides).
- (38) Evaluate $\iint_D \cos(x^2 + y^2) dA$ where D is the shaded region in the following figure.



- (39) Evaluate $\iint_D \frac{1}{\sqrt{4-x^2-y^2}} dA$. where D is the disk of radius 1 with center at $(0, 1)$. (Be careful when you describe D .)
- (40) Determine the value of $\iiint_W \frac{z}{\sqrt{x^2+y^2}} dV$. where W is the solid region bounded by the plane $z = 12$ and the paraboloid $z = 2x^2 + 2y^2 - 6$.

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(SEC-3) Skill Enhancement Course-III
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

VERBAL REASONING FOR APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 50

Unit – I NUMBERS AND DIAGRAMS

1.1 Series Completion: Number series, Alphabet Series

1.2 Series Completion: Alpha Numeric Series, Continuous Pattern Series

1.3 Logical Venn Diagrams

1.4 Mathematical Operations: Problem solving by substitution, Interchange of signs and numbers

Unit – II ARITHMETICAL REASONING

2.1 Mathematical Operations: Deriving the appropriate conclusions

2.2 Arithmetical Reasoning: Calculation based problems, Data based problems

2.3 Arithmetical Reasoning: Problems on ages, Venn diagram based problems

2.4 Cause and Effect Reasoning

Text Book: A Modern Approach to Verbal & Non-Verbal Reasoning by Dr. R.S. Aggarwal

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(GE-1) GENERIC ELECTIVE-I
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

PUBLIC HEALTH AND HYGIENE

Credits: 2

Theory :2 hours/week

Marks: 50

UNIT – I : NUTRITION AND ENVIRONMENT

- 1.1 Balanced diet and Malnutrition.
- 1.2 Nutritional deficiencies and disorders- Carbohydrates, proteins, lipids, vitamins and minerals.
- 1.3 Occupational, Industrial, agricultural and urban Health-Exposure at work place, urban areas, industrial workers, farmers and agricultural labourers, Health workers and health disorders and diseases.
- 1.4 Environmental pollution and associated Health hazards, Water borne diseases and Air borne diseases.

UNIT-II : DISEASES AND HEALTH CARE

- 2.1 Causes, Symptoms, Diagnosis, Treatment and Prevention - Malaria, Filariasis, Measles, Polio, Chicken pox, Rabies, Plague, Leprosy,.
- 2.2 Causes, Symptoms, Diagnosis, Treatment and Prevention of non communicable diseases - Hypertension, Coronary Heart diseases, Stroke, Diabetes, Obesity and Mental ill-health.
- 2.3 Health care legislation in India – Termination of pregnancy act, Maternity benefit act, Biomedical waste act, ESI act.
- 2.4 First Aid and Health awareness, personal health care record maintenance.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Paper- : Programming in Java

Unit I

Introduction: Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Type Conversion, Casting, Conditional Statements, Loops, Branching Mechanism, Classes, Objects, Class Declaration, Creating Objects, Method Declaration and Invocation, Method Overloading,

Unit II

Constructors – Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects. **Class Variables & Method-static Keyword**, this Keyword, One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.

Inheritance: Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keyword, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

Packages: Creating and Using Packages, Access Protection, Wrapper Classes, String Class, String Buffer Class.

Unit III

Exception: Introduction, Types, Exception Handling Techniques, User-Defined Exception.

Multithreading: Introduction, Main Thread and Creation of New Threads –By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority and Synchronization.

Input/Output: Introduction, java.io Package, File Class, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

Unit IV

Applets: Introduction, Example, Life Cycle, Applet Class, Common Methods Used in Displaying the Output.

Event Handling: Introduction, Types of Events, Example.

AWT: Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts. **Swing:** Introduction, Differences between Swing and AWT, JFrame, Japplet, JPanel, Components in Swings, Layout Managers, Jtable, Dialog Box.

Database Handling Using JDBC: Introduction, Types of JDBC Drivers, Load the Driver, Establish Connection, Create Statement, Execute Query, Iterate Resultset, Scrollable Resultset, Developing a JDBC Application.

Text Book:

Sachin Malhotra, Saurabh Choudhary, Programming in Java (2e)

References:

1. Bruce Eckel, Thinking in Java (4e)
2. Herbert Schildt, Java: The Complete Reference (9e)
3. Y. Daniel Liang, Introduction to Java Programming (10e)
4. Paul Deitel, Harvey Deitel, Java: How To Program (10e)
5. Cay S. Horstmann, Core Java Volume I –Fundamentals (10e)
6. C. Thomas Wu, An introduction to object-oriented programming with Java (5e)
7. Tony Gaddis, Starting Out with Java From Control Structures Through Objects (6e)
8. Jeanne Boyarsky, Scott Selikoff, OCA: Oracle Certified Associate Java SE 8 Programmer– I Study Guide

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Programming in Java Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Write Java programs to find the following
 - a) largest of given three numbers
 - b) reverses the digits of a number
 - c) given number is prime or not
 - d) GCD of given two integers
2. Write Java programs to implement the following
 - a) default constructor b) parameterized constructor c) constructor overloading
3.
 - a) Write a Java program to find the smallest from given list of integers using array and scanner class.
 - b) Write a Java program for multiplication of two matrices.
4.
 - a) Write a Java program for demonstrating an inner class or nested class.
 - b) Write a Java program to implement method overloading, method overriding, dynamic method dispatch
5. Write a Java program to implement single, multilevel, hierarchal, multiple, hybrid inheritances.
6. Write Java programs that demonstrate the use of abstract, this, super, static, final keywords
7.
 - a) Write a Java program for creating a package and using a package.
 - b) Write a Java program to demonstrate the use of wrapper classes.
8.
 - a) Write a Java program using all five keywords of exception handling mechanism.

- b) Write a Java program for creating customized (user) Exception
- 9.
- a) Write a Java program that checks whether a given string is a palindrome or not.
 - b) Write a Java program for sorting a given list of names in ascending order.
- 10.
- a) Write a Java program to create a file, write the data and display the data.
 - b) Write a Java program that reads a file name from user and displays its information.
- 11.
- a) Write a Java program for controlling main thread.
 - b) Write a Java program for creating new thread by extending Thread class.
- 12.
- a) Write a Java program for creating new thread by implementing Runnable interface.
 - b) Write a Java program for thread synchronization.
- 13.
- a) Write a Java program to create following AWT components: Button, Checkbox, Choice and List.
 - b) Write Java programs to create AWT application using containers and layouts.
- 14.
- a) Write Java programs to create a simple Applet.
 - b) Write a Java program to handle different types of events in a swing application.
15. Write Java programs to create a swing application using swing components and layouts.
16. Write a Java program to store and retrieve data from database using JDBC.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

A) Computer Networks

Unit I

Introduction: Data Communication Components, Line Configuration, Topologies, Transmission Mode, Categories of Networks, ISO Reference Model–Layered Architecture, Functions of Layers, TCP/IP Reference Model.

Transmission Media: Guided Media–Twisted Pair Cable, Coaxial Cable, Optical Fiber, Unguided Media– Satellite Communication, and Cellular Telephony. Multiplexing: Frequency–Division Multiplexing, Time–Division Multiplexing.

Unit II

Data Link Layer: Error Detection–VRC, LRC, CRC, Checksum, Error Correction–Hamming Code, Burst Error Correction, Line Discipline–ENQ/ACK, Poll/Select, Flow Control–Stop-and-Wait, Sliding Window, Error Control–Stop-and-Wait ARQ, Sliding Window ARQ Go-Back-n ARQ, Selective-Reject ARQ.

Unit III

Local Area Networks: Introduction to IEEE 802, Ethernet-CSMA/CD, Implementation, Token Ring, -Token Passing, Implementation.

Switching: Circuit Switching, Packet Switching, Message Switching.

Unit IV

Networking and Internetworking Devices: Repeaters, Bridges, Routers, Gateways, Routers, Switches, Distance Vector Routing Algorithm, Link State Routing Algorithm.

Transport Layer: Duties of Transport Layer, Connection. Upper OSI Layers; Session Layer, Presentation Layer, Application Layer.

Text Book:

Behrouz A. Forouzan, Data Communication and Networking (2e Update)

References:

1. S.S. Shinde, Computer Networks
2. William Stallings, Data and Computer Communications
3. Andrew S. Tanenbaum, David J Wetherall, Computer Networks
4. Behrouz A Forouzan, Firouz Mosharrarf, Computer Networks A Top-Down Approach
5. James F. Kurose, Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

A) Computer Networks Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Write a program to create a socket and implement connect function.
2. Write a program to get MAC address.
3. Write a program to display hello world using signals.
4. Write a program for socket pair system call using IPC.
5. Write a program to implement the sliding window protocol.
6. Write a program to identify the category of IP address for a given IP address.
7. Write a program to print details of DNS host.
8. Write a program to implement listener and talker.
9. Write a program to implement TCP echo using client–server program.
10. Write a program to implement UDP echo using client–server program.
11. Write a UDP client–server program to convert lowercase letters to uppercase letters.
12. Write a TCP client–server program to convert a given string into reverse.
13. Write a UDP client–server program to convert a given string into reverse.
14. Write a program to implement TCP iterative client–server program.
15. Write a program to implement time service using TCP client–server program.
16. Write a program to implement time service using UDP client–server program.

Note: Write above program using ‘C’ or C++

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

B. Visual Programming

Unit I

Introduction to VB: Writing windows application with VB, Programming languages -procedural, object oriented, event driven; VB Environment, Writing first VB project, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Variables, constants, and Calculation: Data types, naming rules and conversion, constants-named and intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data Counting and accumulating Sums.

Unit II

Decisions and Conditions : If statement, Conditions comparing numeric variables and constants, comparing strings, compound conditions (and, or, not), nested if statements, using if statements with option buttons & check boxes, displaying message in message box, input validation. Calling event procedures, debugging VB projects, Debugging Step-by-Step Tutorial.

Modular programming: Menus, using common dialog box, writing general procedure.

Unit III

Forms Handling: Multiple forms, creating, adding, removing forms, hide, show method, load, unload statement, me keyword, referring to objects on a different forms, Variables and constants in Multiple-Forms.

Iteration Handling: Lists Boxes and Combo Boxes, Do/loops, for/next loops, using msgbox function, using string function

Arrays: control Arrays, the case structure, single-dimension arrays, for Each/Next statement, table lookup, using list boxes with array, multi dimensional arrays.

Unit IV

Database Connectivity: VB and database, using the data control, viewing a database file-step-by-step, Navigating the Database in code, using list boxes and comboboxes as data-bound controls, adding a lookup table and navigation-step-by-step, updating a database file, Record sets, working with database fields, creating a new Dynaset.

Advanced topics in VB: ActiveX controls, Dynamic link libraries (DLL), Multiple Document interface (MDI).

Text Book:

1. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata McGraw Hill Edition 2000 (Fourteenth Reprint 2004))

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

B) Visual Programming Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
 - External Vice-Voce is compulsory.
-
1. Print a table of numbers from 5 to 15 and their squares & Cubes.
 2. Print the largest of three numbers.
 3. Find the fractional of a number n.
 4. Enter a list of positive numbers terminated by zero. Find the sum and average of these numbers.
 5. A person deposits Rs. 1000 in a fixed account yielding 5% interest. Complete the amount in the account at the end of each year for n years.
 6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
 7. Read n numbers. Count the number of negative numbers, positive numbers and zeroes in the list(use arrays)
 8. Read a single dimension array. Find the sum and average of these numbers.
 9. Read a two dimension array. Find the sum of two 2D Array
 10. Write a program to Demonstrate Control Array.
 11. Write a Program to perform String Manipulation Operations.
 12. Develop a VB Application to check for Input Validations.
 13. Develop a VB Application to Demonstrate MDI.
 14. Develop a VB Application to Demonstrate Combobox and Listbox.
 15. Develop a VB Application to Demonstrate Option Buttons and Check Boxes.
 16. Develop a VB Application to deal the following Database Operations
 - a) Insert
 - b) Delete
 - c) Update
 - d) Display

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

C) Python

Unit I

Introduction to Python: Python, Features of Python, Execution of a Python Program, Viewing the Byte Code, Flavors of Python, Python Virtual Machine, Frozen Binaries, Memory Management in Python, Garbage Collection in Python, Comparisons between C and Python, Comparisons between Java and Python.

Writing Our First Python Program: Installing Python for Windows, Installing numpy, Setting the Path to Python, Writing Our First Python Program, Executing a Python Program, Getting Help in Python, Getting Python Documentation Help, Reopening the Python Program in IDLE.

Data types in Python: Comments in Python, Doc strings, How Python Sees Variables, Data types in Python, Built-in data types, bool Data type, Sequences in Python, Sets, Literals in Python, Determining the Data type of a Variable, What about Characters, User-defined Data types, Constants in Python, Identifiers and Reserved words, Naming Conventions in Python.

Unit II

Operators in Python: Arithmetic Operators, Assignment Operators, Unary Minus Operator, Relational Operators, Logical Operators, Boolean Operators, Bitwise Operators, Membership Operators, Identity Operators, Operator Precedence and Associativity, Mathematical Functions.

Input and Output: Output statements, Input Statements, Command Line Arguments. Control Statements: Control Statements, The if Statement, A Word on Indentation, The if ... else Statement, The if ... elif ... else Statement, The while Loop, The for Loop, Infinite Loops, Nested Loops, The else Suite, The break Statement, The continue Statement, The pass Statement, The assert Statement, The return Statement.

Unit III

Arrays in Python: Array, Advantages of Arrays, Creating an Array, Importing the Array Module, Indexing and Slicing on Arrays, Processing the Arrays, Types of Arrays, Working with Arrays using numpy, Creating Arrays using array(), linspace, logspace, arange(), zeros() and ones() Functions, Mathematical Operations on Arrays, Comparing Arrays, Aliasing the Arrays, Viewing and Copying Arrays, Slicing and Indexing in numpy Arrays, Dimensions of Arrays, Attributes of an Array, The reshape() Method, The flatten() Method, Working with Multi-dimensional Arrays, Indexing in Multi-dimensional Arrays, Slicing the Multi-dimensional Arrays, Matrices in numpy, Getting Diagonal Elements of a Matrix, Finding Maximum and Minimum Elements, Finding Sum and Average of Elements, Products of Elements, Sorting the Matrix, Transpose of a Matrix, Matrix Addition and Multiplication, Random Numbers.

Strings and Characters: Creating Strings, Length of a String, Indexing in Strings, Slicing the Strings, Repeating the Strings, Concatenation of Strings, Checking Membership, Comparing Strings, Removing Spaces from a String, Finding Sub Strings, Counting Substrings in a String, Strings are Immutable, Replacing a String with another String, Splitting and Joining Strings, Changing Case of a String, Checking Starting and Ending of a String, String Testing Methods, Formatting the Strings,

Working with Characters, Sorting Strings, Searching in the Strings, Finding Number of Characters and Words, Inserting Sub String into a String.

Unit IV

Functions: Difference between a Function and a Method, Defining a Function, Calling a Function, Returning Results from a Function, Returning Multiple Values from a Function, Functions are First Class Objects, Pass by Object Reference, Formal and Actual Arguments, Positional Arguments, Keyword Arguments, Default Arguments, Variable Length Arguments, Local and Global Variables, The Global Keyword, Passing a Group of Elements to a Function, Recursive Functions, Anonymous Functions or Lambdas, Function Decorators, Generators, Structured Programming, Creating our Own Modules in Python, The Special Variable name.

Lists and Tuples: List, Creating Lists using range() Function, Updating the Elements of a List, Concatenation of Two Lists, Repetition of Lists, Membership in Lists, Aliasing and Cloning Lists, Methods to Process Lists, Finding Biggest and Smallest Elements in a List, Sorting the List Elements, Number of Occurrences of an Element in the List, Finding Common Elements in Two Lists, Storing Different Types of Data in a List, Nested Lists, Nested Lists as Matrices, List Comprehensions, Tuples, Creating Tuples, Accessing the Tuple Elements, Basic Operations on Tuples, Functions to Process Tuples, Nested Tuples, Inserting Elements in a Tuple, Modifying Elements of a Tuple, Deleting Elements from a Tuple.

Text Book:

R. Nageswara Rao, Corer Python Programming, Dreamtech Press

References:

1. Mark Lutz, Learning Python
2. Tony Gaddis, Starting Out With Python
3. Kenneth A. Lambert, Fundamentals of Python
4. James Payne, Beginning Python using Python 2.6 and Python 3
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

Note:

Student friendly video lecturers pertaining to this course are available at <http://spoken-tutorial.org/>

Teachers are advised to teach these courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

C) Python Lab

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1. Write a Python Program which accepts the radius of a Circle from the user and compute the Area.
 2. Write a Python program to solve $(x + y) * (x + y)$, accept x and y from the user.
 3. Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum.
 4. Write a Python program to find whether a given number (accept from the user) is even or odd, Print out an appropriate message to the user.
 5. Write a Python program to get the Fibonacci series between 0 and 50.
 6. Write a Python program to print alphabet pattern 'E'.

```
*****
*
*
****
*
*
*****
```

7. Write the Python programs for the following.
 - a. To find the length of a given string
 - b. To Concatenate N Strings
 - c. To find the given String is palindrome or not.
8. Write a Python program to check if a String is numeric.
9. Write a Python program to find the sum of positive numbers from a given list (using continue statement).
10. Write a Python program to reverse the order of the items in the array.
11. Write a Python function to find the Maximum of three numbers.
12. Write a Python function that takes a number as a parameter and check the number is prime or not.
13. Write a Python program to get the number of occurrences of a specified element in an array.
14. Write a Python Recursive function to calculate the Factorial of a number (a non-negative number).
15. Write a Python program to add an item in a tuple.
16. Write a Python program to check whether an element exists within a tuple

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(SEC-3) Skill Enhancement Course-III
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

VERBAL REASONING FOR APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 50

Unit – I NUMBERS AND DIAGRAMS

1.1 Series Completion: Number series, Alphabet Series

1.2 Series Completion: Alpha Numeric Series, Continuous Pattern Series

1.3 Logical Venn Diagrams

1.4 Mathematical Operations: Problem solving by substitution, Interchange of signs and numbers

Unit – II ARITHMETICAL REASONING

2.1 Mathematical Operations: Deriving the appropriate conclusions

2.2 Arithmetical Reasoning: Calculation based problems, Data based problems

2.3 Arithmetical Reasoning: Problems on ages, Venn diagram based problems

2.4 Cause and Effect Reasoning

Text Book: A Modern Approach to Verbal & Non-Verbal Reasoning by Dr. R.S. Aggarwal

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(GE-1) GENERIC ELECTIVE-I
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

PUBLIC HEALTH AND HYGIENE

Credits: 2

Theory :2 hours/week

Marks: 50

UNIT – I : NUTRITION AND ENVIRONMENT

1.1 Balanced diet and Malnutrition.

1.2 Nutritional deficiencies and disorders- Carbohydrates, proteins, lipids, vitamins and minerals.

1.3 Occupational, Industrial, agricultural and urban Health-Exposure at work place, urban areas, industrial workers, farmers and agricultural labourers, Health workers and health disorders and diseases.

1.4 Environmental pollution and associated Health hazards, Water borne diseases and Air borne diseases.

UNIT-II : DISEASES AND HEALTH CARE

2.1 Causes, Symptoms, Diagnosis, Treatment and Prevention - Malaria, Filariasis, Measles,

Polio, Chicken pox, Rabies, Plague, Leprosy,.

2.2 Causes, Symptoms, Diagnosis, Treatment and Prevention of non communicable diseases - Hypertension, Coronary Heart diseases, Stroke, Diabetes, Obesity and Mental ill-health.

2.3 Health care legislation in India – Termination of pregnancy act, Maternity benefit act, Biomedical waste act, ESI act.

2.4 First Aid and Health awareness, personal health care record maintenance.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1E)
SEMESTER – V

CHEMISTRY PAPER-V

Unit-I (Inorganic Chemistry) 11 Hrs

S5-I-1: Coordination Compounds-II 09 Hrs

Tetrahedral, square planer with suitable examples. Crystal field stabilization energies and its calculations for various d^n configurations in octahedral complexes. High Spin Low Spin complexes.

Magnetic properties of transition metal complexes- para, dia, ferro, anti ferromagnetic properties, determination of magnetic susceptibility (Guoy method), spin only formula, calculations of magnetic moments.

Electronic spectra of metal complexes – color of transition metal aqua complexes– d-d transitions. Detection of complex formation - basic principles of various methods- change in chemical properties, solubility, color, pH, conductivity, magnetic susceptibility.

Thermodynamic and kinetic stability of transition of metal complexes. Stability of metal complexes –stepwise and overall stability constant and their relationship. Factors effecting the stability constants. Chelate effect, determination of composition of complex by Job's method and mole ratio method.

Applications of coordination compounds

Applications of coordination compounds a) in quantitative and qualitative analysis with suitable examples b) in medicine for removal of toxic metal ions and cancer therapy c) in industry as catalysts polymerization – Ziegler Natta catalyst d) water softening

S5-I-2: Boranes and Carboranes 02 Hrs

Definition of clusters. Structures of boranes and carboranes- Wade's rules, closo, nido arachno Boranes and Carboranes.

Unit-II (Organic Chemistry)**11 Hrs****S5-O-1: Amines, Cyanides and Isocyanides****07 Hrs****Amines:**

Nomenclature, classification into 1^o, 2^o, 3^o Amines and Quaternary ammonium compounds. Preparative methods – 1. Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromide reaction (mechanism). Reduction of Amides and Schmidt reaction. Physical properties and basic character – Comparative basic strength of Ammonia, methyl amine, dimethyl amine, tri methyl amine and aniline- comparative basic strength of aniline, N- methyl aniline and N,N-dimethyl aniline (in aqueous and non- aqueous medium), steric effects and substituent effects. Use of amine salts as phase transfer catalysts. 4. Chemical Properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg's separation. 5. Reaction with Nitrous acid of 1^o, 2^o, 3^o (Aliphatic and aromatic amines). Electrophilic substitutions of Aromatic amines – Bromination and Nitration, oxidation of aryl and 3^o Amines, diazotisation. 6. Diazonium salts: Preparation with mechanism. Synthetic importance – a) Replacement of diazonium group by – OH, X (Cl)- Sandmeyer and Gatterman reaction, by fluorine (Schiemann's reaction), by iodine, CN, NO₂, H and aryl groups. Coupling Reaction of diazonium salts. i) with phenols ii) with anilines. Reduction to phenyl hydrazines

Cyanides and isocyanides:

Nomenclature (aliphatic and aromatic) structure. Preparation of cyanides from a) Alkyl halides b) from amides c) from aldoximes. Preparation of isocyanides from Alkyl halides and Amines. 2. Properties of cyanides and isocyanides, a)hydrolysis b) addition of Grignard reagent iii) reduction iv) oxidation.

S5-O-2: Heterocyclic Compounds**04 Hrs**

Introduction and definition: Simple 5 membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole. Importance of ring systems – presence in important natural products like hemoglobin and chlorophyll. Numbering the ring systems as per Greek letter and Numbers. Aromatic character – 6- electron system (four-electrons from two double bonds and a pair of non-bonded electrons from the hetero atom). Tendency to undergo substitution reactions. Resonance structures: Indicating electron surplus carbons and electron deficient hetero atom. Explanation of feebly acidic character of pyrrole, electrophilic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions. Reactivity of furan as 1,3-diene, Diels Alder reactions (one example). Sulphonation of thiophene purification of Benzene

obtained from coal tar). Preparation of furan, Pyrrole and thiophene from 1,4,- dicarbonyl compounds only, Paul-Knorr synthesis, structure of pyridine, Basicity – Aromaticity – Comparison with pyrrole – one method of preparation and properties – Reactivity towards Nucleophilic substitution reaction – Pchichibabin reaction.

Unit-III (Physical Chemistry)

S5-P-1: Chemical Kinetics

11 Hrs

Introduction to chemical kinetics, rate of reaction, variation of concentration with time, rate laws and rate constant. Specific reaction rate. Factors influencing reaction rates: effect of concentration of reactants, effect of temperature, effect of pressure, effect of reaction medium, effect of radiation, effect of catalyst with simple examples, order of reaction.

First order reaction, derivation of equation for rate constant. Characteristics of first order reaction. Units for rate constant. Half- life period, graph of 1st order reaction, examples. Decomposition of H_2O_2 and decomposition of oxalic acid.

Pseudo first order reaction, Hydrolysis of methyl acetate, inversion of cane sugar, problems

Second order reaction, derivation of expression for 2nd order rate constant, examples- Saponification of ester, $2\text{O}_3 \rightarrow 3\text{O}_2$, $\text{C}_2\text{H}_4 + \text{H}_2 \rightarrow \text{C}_2\text{H}_6$. Characteristics of second order reaction, units for rate constants, half- life period and second order plots.

Zero order reaction: derivation of rate expression, examples i) combination of H_2 and Cl_2 to form HCl , ii) thermal decomposition of HI on gold surface characteristics of Zero order reaction units of k , half-life period and graph, problems.

Determination of order of reaction: i) method of integration, ii) half life method, iii) vant-Hoff differential method iv) Ostwald's isolation method. Problems.

Kinetics of complex reactions (first order only): Opposing reactions, Parallel reactions, Consecutive reactions and Chain reactions. Problems.

Effect of temperature on reaction rate, Arrhenius equation. Temperature coefficient. Concept of energy of activation, determination of energy of activation from Arrhenius equation and by graphical method, problems. Simple collision theory based on hard sphere model explanation of frequency factor, orientation or steric factor. The transition state theory (elementary treatment).

Unit-IV (General Chemistry)**12 Hrs****S5-G-1: Molecular spectroscopy****08 Hrs**

Introduction to electromagnetic radiation, interaction of electromagnetic radiations with molecules, various types of molecular spectra.

Rotational spectroscopy (Microwave spectroscopy)

Rotational axis, moment of inertia, classification of molecules (based on moment of inertia), rotational energies, selection rules, determination of bond length of rigid diatomic molecules eg. HCl.

Infra red spectroscopy

Energy levels of simple harmonic oscillator, molecular vibration spectrum, selection rules. Determination of force constant. Qualitative relation of force constant to bond energies. Anharmonic motion of real molecules and energy levels. Modes of vibrations in polyatomic molecules. Characteristic absorption bands of various functional groups. Finger print nature of infrared spectrum

Electronic spectroscopy:

Bonding and antibonding molecular orbitals, electronic energy levels of molecules (σ , π , n), types of electronic transitions: $\sigma \rightarrow \sigma^*$, $n \rightarrow \sigma^*$, $n \rightarrow \pi^*$, $\pi \rightarrow \pi^*$ with suitable examples. Selection rules, Terminology of chromophore, auxochrome, bathochromic and hypsochromic shifts. Absorption of characteristics of chromophones: diene, enone and aromatic chromophores. Representation of UV-Visible spectra.

S5-G-2: Photochemistry**04 Hrs**

Introduction to photochemical reactions, Difference between thermal and photochemical reactions, Laws of photo chemistry- Grotthus - Drapper law, Stark – Einsteins Law of photo chemical equivalence. Quantum yield. Examples of photo chemical reactions with different quantum yields. Photo chemical combinations of $H_2 - Cl_2$ and $H_2 - Br_2$ reactions, reasons for the high and low quantum yield. Problems based on quantum efficiency, Consequences of light absorptions. Singlet and triplet states. Jablonski diagram Explanation of internal conversion, inter- system crossing, Phosphorescence, fluorescence.

References :

Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem.
4. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4th edn.
5. Chemistry of the elements by N.N.Greenwood and A. Earnshaw Pergamon Press 1989.
6. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press 1999.

Unit- II

1. Text book of organic chemistry by Soni.
2. General Organic chemistry by Sachin Kumar Ghosh.
3. Text book of organic chemistry by Morrison and Boyd.
4. Text book of organic chemistry by Graham Solomons.
5. Text book of organic chemistry by Bruce Yuranis Powla.

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri, Sharma and Pattania.
4. Physical Chemistry by Atkins & De Paula, 8th Edition
5. Text Book of Physical Chemistry by K. L. Kapoor.
6. Physical Chemistry through problems by S.K. Dogra.
7. Text Book of Physical Chemistry by R.P. Verma.
8. Elements of Physical Chemistry by Lewis Glasstone.
9. Basics of Chemical Kinetics by G.L. Agarwal
10. Kinetics and mechanism of chemical transformations by Rajaram & Kuriacose

Unit IV

1. Bioinorganic Chemistry, M.N.Huges
2. Organic spectroscopy, William Kemp
3. Text Book of Physical Chemistry by Puri, Sharma and Pattania.
4. Photochemistry by Gurdeep Raj, Goel publishing house, 5th edition

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1E)
SEMESTER – V

LABORATORY COURSE
CHEMISTRY-V (Organic Synthesis and TLC)
(03 Hrs per week, 01 Credit) 45 Hrs

I. Synthesis of Organic compounds:

Acetylation: Acetylation of salicylic acid, Benzoylation of Aniline.

Aromatic electrophilic substitution: Nitration: Preparation of nitro benzene and m-dinitro benzene.

Halogenation: Preparation of p-bromo acetanilide, Preparation of 2, 4, 6-tribromo phenol

Oxidation: Preparation of benzoic acid from benzyl chloride.

Esterification: Preparation of n-butyl acetate from acetic acid.

Methylation: Preparation of 1-naphthyl methyl ether.

Condensation: Preparation of benzilidene aniline and Benzaldehyde and aniline.

Diazotisation: Azocoupling of 1-Naphthol.

II. Thin layer Chromatography (TLC)

Determination of R_f values and identification of organic compounds: preparation and separation of 2,4-dinitrophenyl hydrazones of acetone and 2-butanone using toluene and light petroleum(40:60)

Separation of ortho & para nitro aniline mixtures

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

ELECTIVE-I

A (T) - INSTRUMENTAL METHODS OF ANALYSIS

Unit I: Chromatography-I

11Hrs

S5-E-A-I: Solvent Extraction- Principle, Methods of extraction: Batch extraction, continuous extraction and counter current extraction. Application – Determination of Iron (III).

Chromatography: Classification of chromatographic methods, principles of differential migration, adsorption phenomenon, nature of adsorbents, solvent systems.

Thin layer Chromatography (TLC): Advantages, preparation of plates, development of the chromatogram, Detection of the spots, factors effecting R_f values and applications.

Paper Chromatography: Principle, choice of paper and solvent systems, development of chromatogram – ascending, descending, radial and two dimensional chromatography and applications

Unit II: Chromatography-II

11Hrs

S5-E-A-II: Column Chromatography- Principle, Types of stationary phases, Column packing – Wet packing technique, Dry packing technique. Selection criteria of mobile phase solvents for eluting polar, non-polar compounds and its applications.

Ion exchange chromatography: Principle, cation and anion exchange resins, its application in separation of ions.

Gas Chromatography: Theory and instrumentation (Block Diagram), Types of stationary phases and carrier gases (mobile phase).

High performance liquid chromatography: Theory and instrumentation, stationary phases and mobile phases. Analysis of paracetamol.

Unit III: Colorimetry and Spectrophotometry

12Hrs

S5-E-A-III: General features of absorption – spectroscopy, transmittance, absorbance, and molar absorptivity. Beer Lambert's law and its limitations, difference between Colorimetry and Spectrophotometry.

Instruments – Single beam UV- Visible Spectrophotometer, Double beam UV- Visible Spectrophotometer. Lamps used as energy sources. Verification of Beer's law. Estimation of iron in water samples by thiocyanate method. Estimation of (i) Chromium and (ii) Manganese in steel.

IR Spectrophotometer: Principle, Sources of Radiations, Sampling, Block diagram of FT-IR Spectrophotometer.

Unit IV: Electro analytical methods

11Hrs

S5-E-A-IV: Types of Electro analytical Methods.

I) Interfacial methods – a) Potentiometry: Principle, Electrochemical cell, Electrodes- (i) Indicator and (ii) Reference electrodes – Normal Hydrogen Electrode, Quinhydrone Electrode, Saturated Calomel Electrode. Numerical Problems. Application of Potentiometry – Assay of Sulphanilamide

b) Voltametry – three electrode assembly; Introduction to types of voltametric techniques, micro electrodes, Over potential and Polarization

II) Bulk methods – Conductometry, Conductivity Cell, Specific Conductivity, Equivalent Conductivity. Numerical Problems. Applications of conductometry. Estimation of Cl^- using AgNO_3 . Determination of Aspirin with KOH.

Recommended Text Books and Reference Books

1. Analytical Chemistry by David Krupadanam, Universities Press (India) Limited.
2. D.A. Skoog, F.J. Holler, T.A. Nieman, Principles of Instrumental Analysis, Engage earning India Ed.
3. D. A. Skoog, D.M. West, F.J. Holler, Fundamentals of Analytical Chemistry 6th Ed., Saunders College Publishing, Fort worth (1992).
4. Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. Instrumental Methods of Analysis. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA, 1988.
5. Harris, D. C. Quantitative Chemical Analysis, W. H. Freeman.2007.
6. Dean, J. A. Analytical Chemistry Notebook, McGraw Hill.
7. Day, R. A. & Underwood, A. L. Quantitative Analysis, Prentice Hall of India.
8. Freifelder, D. Physical Biochemistry 2nd Ed., W.H. Freeman and Co., N.Y. USA, 1982.
9. Cooper, T.G. The Tools of Biochemistry, John Wiley and Sons, N.Y. USA. 16, 1977.
10. Vogel, A. I. Vogel's Qualitative Inorganic Analysis 7th Ed., Prentice Hall.
11. Vogel, A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Prentice Hall.
12. Robinson, J.W. Undergraduate Instrumental Analysis 5th Ed., Marcel Dekker, Inc, New York (1995).
13. Analytical Chemistry 7th edition by Gary D. Christian (2004).
14. B. K. Sharma, Industrial Chemistry (including Chemical Engineering). Edn. (1997).
15. M.N Sastry, Separation Methods, Paperback (2004), Himalaya Publications.
16. Usharani Analytical Chemistry Paperback (2000) Narosa Publications

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

ELECTIVE-I

A (T) - INSTRUMENTAL METHODS OF ANALYSIS

LABORATORY COURSE

(Chemical Kinetics & Electrochemistry)

(02 Hrs per week, 01 Credit) 30 Hrs

I. Chemical Kinetics

1. Kinetic study of Acid Catalyzed hydrolysis of methyl acetate and determination of rate constant - Graphical method.
2. Kinetic study of Acid catalyzed Acetone - Iodine reaction and determination of rate constant – Graphical method.
3. Kinetic study of persulphate iodide reaction and determination rate constant
Graphical method

II. Electrochemistry (Potentiometry & pH metry)

1. Determination of Redox potentials of Fe^{2+} by Potentiometry titration of ferrous ammonium sulphate Vs. KMnO_4 .
2. pH metric titration of strong acid (HCl) with strong base (NaOH)
3. pH metric titration of weak acid (Acetic acid) with strong base (NaOH) and determination of dissociation constant

Reference Books:

1. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.*; McGraw-Hill: New York (2003).
2. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.*; W.H. Freeman & Co.: New York (2003).
3. Khosla, B. D.; Garg, V. C. & Gulati, A., *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
4. Practical Physical Chemistry by B. Vishwanathan and P.S. Raghavan.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

ELECTIVE-I

B) INDUSTRIAL CHEMISTRY AND CATALYSIS
(03 Hrs per week, 03 Credits) 45 Hrs

Unit I: General Principles of Metallurgy and Production of Non Ferrous Metals 11 Hrs

S5-E-B-I: Pyrometallurgy: Drying and calcination, roasting, smelting, products of smelting,

Hydrometallurgy: Leaching methods, leaching agents, leaching of metals, oxides and sulphides.

Separation of liquid and solid phases and processing of aqueous solutions

Electrometallurgy: Electrolysis, Refining electrolysis, electrolysis from aqueous solutions, fused-salt electrolysis

Refining processes: Chemical and physical refining processes

Production of selected non-ferrous metals (Copper, Nickel, Zinc): Properties, raw materials, production (flow charts presentations and chemical reactions involved) and uses.

Unit II: Natural and Synthetic Dyes 12 Hrs

S5-E-B-II: Classification of dyes. Sources of natural dyes: Indigoid, Anthraquinone, Naphthoquinone, Benzoquinone, Flavonoid, Carotenoid and Tannin-based dyes.

Synthetic Dyes: Acidic, basic, dispersive, direct, reactive and vat dyes with examples.

Extraction of natural dyes and their sustainability: The different methods for extraction of coloring materials from natural dyes. Aqueous extraction, alkali or acid extraction, microwave and ultrasonic assisted extraction, fermentation, solvent extraction, super critical fluid extraction.

Drying methods. Application of natural dyes on textiles, Mordanting- types of mordanting - metallic mordants, oil mordants, Tannins and Tannic acid. Present scenario and sustainability

Issues in usage of natural dyes and cost considerations.

Unit III: Catalysis-I 11 Hrs

S5-E-B-III: Homogeneous and heterogeneous catalysis - Definition of a catalyst and catalysis.

Comparison of homogeneous and heterogeneous catalysis with specific examples. General characteristics of catalytic reactions.

Acid-base catalysis- Examples of acid and base catalysed reactions, hydrolysis of esters. Kinetics of acid catalysed reactions. Specific acid and general acid catalysis, Kinetics of base catalysed reactions. Specific base and general base catalysis. Examples-Aldol condensation and decomposition of nitramide, base catalysed conversion of acetone to di acetone alcohol. Effect of PH on reaction rate of acid and base catalysed reactions.

Phase transfer catalysis: Principle of phase transfer catalysis, classification of phase transfer catalysts. Factors influencing the rate of PTC reactions.

Unit IV: Catalysis-II

11 Hrs

S5-E-B-IV: Enzyme catalysis- Characteristics of enzyme catalysis, Examples: (i) Invertase in inversion of cane sugar (ii) Maltase in conversion of maltose to glucose (iii) Urease in decomposition of urea and (iv) Zymase in conversion of glucose to ethanol. Factors affecting enzyme catalysis. Effect of temperature, pH, concentration and inhibitor on enzyme catalysed reactions.

Kinetics of enzyme catalysed reactions: Michaelis-Menton Equation. Mechanism of enzyme catalysed reactions. Significance of Michaelis constant (K_m) and maximum velocity (V_{max}), Lineweaver-Burk plot.

References

1. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
2. R.M. Felder, R.W. Rousseau: Elementary Principles of Chemical Processes, Wiley Publishers, New Delhi.
3. J. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
4. Kate ina Skotnicová, Monika Losertová, Miroslav Kursá, Theory of production of non-ferrous metals and alloys Study.
5. K.Venkataraman, the Chemistry of Synthetic Dyes, Volume 4, Elsevier, Technology & Engineering.
6. Sujata Saxena and A. S. M. Raja by Natural Dyes: Sources, Chemistry, Application and Sustainability Issues.
7. Physical Chemistry by Atkins and De Paula, 8th Edn.
8. Physical Chemistry by Puri, Sharma and Pattania, 2017.
9. Kinetics and mechanism of chemical transformations by Rajarajm and Kuraiacose, Published by Macmillan India Ltd.
10. Text book of Physical Chemistry by K.L. Kapoor Macmillan, 1999.
11. Catalysis by J.C. Kuriacose, Macmillan Macmillan Publishers India Limited, 1980.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

LABORATORY COURSE
DSE: CHEMISTRY LAB PAPER -VI (Elective-B)
(Spectral Analysis & Separation of Organic Compounds)
(02 Hrs per week, 01 Credit) 30 Hrs

I. Spectral analysis of Organic compounds

Analysis of any five organic compounds with different functional group using UV, IR, ¹HNMR and Mass Spectroscopy.

II. Separation of two component mixture

1. Aniline + Naphthalene
2. Benzoic acid + Benzophenone

Reference Books:

1. Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
2. Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA, 1988.
3. Spectroscopic identification of organic compounds by R M Silverstein and F X Webster.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

ELECTIVE-I

CHEMISTRY PAPER-VI (Elective-C)
DSE: Analysis of Drugs, Foods & Dairy Products
(03 Hrs per week, 03 Credits) 45 Hrs

UNIT- I **11 Hrs**

S5-E-C-1: Analysis of the drugs and pharmaceuticals preparations-I

(Knowledge of molecular formula, structure and analysis)

1. Analysis of analgesics and antipyretics like aspirin and paracetamol
2. Analysis of antimalerials like chloroquine.
3. Analysis of drugs in the treatment of infections and infestations: Amoxicillin, chloramphenicol, metronidazole, penicillin, tetracycline, cephalexin (cephalexin). Anti-tuberculosis drug-isoniazid.

UNIT - II **11 Hrs**

S5-E-C-2: Analysis of the drugs and pharmaceuticals preparations-II

(Knowledge of molecular formula, structure and analysis)

1. Analysis of antihistamine drugs and sedatives like: Allegra, zyrtec (cetirizine), alprazolam, trazodone, lorazepam, ambient (zolpidem), diazepam.
2. Analysis of prevacid (lansoprazole) a drug used for the prevention of production of acids in stomach.

UNIT - III **11 Hrs**

S5-E-C-3: Analysis of the drugs and pharmaceuticals preparations-III

1. Analysis of anti epileptic and anti convulsant drugs like Phenobarbital and phenacemide.
2. Analysis of drugs used in case of cardiovascular drugs: atenolol, norvasc (amlodipine).
3. Analysis of Lipitor (atorvastatin) a drug for the prevention of production of cholesterol.
4. Analysis of diuretics like: furosemide (Lasix), triamterene

UNIT - IV

S6-E-C-4: Analysis of Milk, Milk products & Food materials **12 Hrs**

Acidity, total solids, fat, total nitrogen, protein, lactose, phosphate activity, casein, chloride. Analysis of food materials- Preservatives: Sodium carbonate, sodium benzoate sorbic acid Coloring matters, - Brilliant blue FCF, fast green FCF, tartrazine, erythrosine, sunset yellow FCF. Flavoring agents - Vanilla, diacetyl, isoamyl acetate, limonene, ethyl propionate, allyl hexanoate and Adulterants in rice and wheat, wheat flour, sago, coconut oil, coffee powder, tea powder, milk.

Reference Books:

- 1.F.J.Welcher-Standard methods of analysis
- 2.A.I.Vogel-A text book of quantitative Inorganic analysis-ELBS
- 3.F.D.Snell & F.M.Biffen-Commercial methods of analysis-D.B.Taraporavala & sons
- 4.J.J.Elving and I.M.Kolthoff- Chemical analysis - A series of monographs on analytical chemistry and its applications -- Inter Science- Vol I to VII.
- 5.Analytical Agricultural Chemistry by S.L.Chopra & J.S.Kanwar -- Kalyani Publishers
6. Quantitative analysis of drugs in pharmaceutical formulations by P.D.Sethi, CBS Publishers and Distributors, New Delhi .
7. G.Ingram- Methods of organic elemental micro analysis- Chapman and Hall.
8. H.Wincciam and Bobbles (Henry J)- Instrumental methods of analysis of food additives.
9. H.Edward-The Chemical analysis of foods;practical treatise on the examination of food stuffs and the detection of adulterants
10. The quantitative analysis of drugs- D.C.Garratt-Chapman & Hall.
11. A text book of pharmaceutical analysis by K.A.Connors-Wiley-International.
12. Comprehensive medicinal chemistry-Ed Corwin Hansch Vol 5,Pergamon Pres.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

ELECTIVE-I

LABORATORY COURSE

DSE: CHEMISTRY LAB PAPER -VI (Elective-C)

((Industrial Chemicals & Environment))

(02 Hrs per week, 01 Credit) 30 Hrs

1. Determination of dissolved oxygen in water.
2. Determination of Chemical Oxygen Demand (COD)
3. Percentage of available chlorine in bleaching powder.
5. Measurement of chloride of water samples by simple titration method by AgNO₃
6. Estimation of total alkalinity of water samples (CO₃²⁻ & HCO₃⁻ using double titration Method.
7. Estimation of Copper in Brass

Reference Books:

1. E. Stocchi., Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
2. R.M. Felder, R.W. Rousseau: Elementary Principles of Chemical Processes, Wiley Publishers, New Delhi.
3. J. A. Kent., Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
4. S. S. Dara., A Textbook of Engineering Chemistry, S. Chand & Company Ltd. New Delhi.
5. K. De., Environmental Chemistry: New Age International Pvt. Ltd, New Delhi.
6. S. M. Khopkar., Environmental Pollution Analysis: Wiley Eastern Ltd, New Delhi.

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(SEC-3) Skill Enhancement Course-III
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

VERBAL REASONING FOR APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 50

Unit – I NUMBERS AND DIAGRAMS

1.1 Series Completion: Number series, Alphabet Series

1.2 Series Completion: Alpha Numeric Series, Continuous Pattern Series

1.3 Logical Venn Diagrams

1.4 Mathematical Operations: Problem solving by substitution, Interchange of signs and numbers

Unit – II ARITHMETICAL REASONING

2.1 Mathematical Operations: Deriving the appropriate conclusions

2.2 Arithmetical Reasoning: Calculation based problems, Data based problems

2.3 Arithmetical Reasoning: Problems on ages, Venn diagram based problems

2.4 Cause and Effect Reasoning

Text Book: A Modern Approach to Verbal & Non-Verbal Reasoning by
Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(GE-1) GENERIC ELECTIVE-I
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

PUBLIC HEALTH AND HYGIENE

Credits: 2

Theory :2 hours/week

Marks: 50

UNIT – I : NUTRITION AND ENVIRONMENT

- 1.1 Balanced diet and Malnutrition.
- 1.2 Nutritional deficiencies and disorders- Carbohydrates, proteins, lipids, vitamins and minerals.
- 1.3 Occupational, Industrial, agricultural and urban Health-Exposure at work place, urban areas, industrial workers, farmers and agricultural labourers, Health workers and health disorders and diseases.
- 1.4 Environmental pollution and associated Health hazards, Water borne diseases and Air borne diseases.

UNIT-II : DISEASES AND HEALTH CARE

- 2.1 Causes, Symptoms, Diagnosis, Treatment and Prevention - Malaria, Filariasis, Measles, Polio, Chicken pox, Rabies, Plague, Leprosy,.
- 2.2 Causes, Symptoms, Diagnosis, Treatment and Prevention of non communicable diseases - Hypertension, Coronary Heart diseases, Stroke, Diabetes, Obesity and Mental ill-health.
- 2.3 Health care legislation in India – Termination of pregnancy act, Maternity benefit act, Biomedical waste act, ESI act.
- 2.4 First Aid and Health awareness, personal health care record maintenance.

KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSC-1E)

SEMESTER – V

Paper – V: Electromagnetism

Unit I : Electrostatics (11 hrs)

Electric Field:- Concept of electric field lines and electric flux, Gauss's law (Integral and differential forms), application to linear, plane and spherical charge distributions. Conservative nature of electric field „E“, Irrotational field. Electric potential:- Concept of electric potential, relation between electric potential and electric field, potential energy of a system of charges. Energy density in an electric field. Calculation of potential from electric field for a spherical charge distribution.

Unit II : Magnetostatics (12 hrs)

Concept of magnetic field „B“ and magnetic flux, Biot-Savart's law, B due to a straight current carrying conductor. Force on a point charge in a magnetic field. Properties of B, curl and divergence of B, solenoidal field. Integral form of Ampere's law, Applications of Ampere's law: field due to straight, circular and solenoidal currents. Energy stored in magnetic field. Magnetic energy in terms of current and inductance. Magnetic force between two current carrying conductors. Magnetic field intensity. Ballistic Galvanometer:- Torque on a current loop in a uniform magnetic field, working principle of B.G., current and charge sensitivity, electromagnetic damping, critical damping resistance.

Unit III: Electromagnetic Induction (9 hrs)

Faraday's laws of induction (differential and integral form), Lenz's law, self and mutual Induction. Continuity equation, modification of Ampere's law, displacement current, Maxwell equations

Unit IV : Electromagnetic waves (10 hrs)

Maxwell's equations in vacuum and dielectric medium, boundary conditions, plane wave equation: transverse nature of EM waves, velocity of light in vacuum and in medium, polarization, reflection and transmission. Polarization of EM waves, Brewster's angle, description of linear, circular and elliptical polarization.

Text Books

1. Fundamentals of electricity and magnetism By Arthur F. Kip (McGraw-Hill, 1968)
2. Electricity and magnetism by J.H.Fewkes & John Yarwood. Vol.I (Oxford Univ. Press, 1991).
3. Introduction to Electrodynamics, 3rd edition, by David J. Griffiths, (Benjamin Cummings, 1998).

Reference Books

1. Electricity and magnetism By Edward M. Purcell (McGraw-Hill Education, 1986)
2. Electricity and magnetism. By D C Tayal (Himalaya Publishing House, 1988)
3. Electromagnetics by Joseph A. Edminister 2nd ed. (New Delhi: Tata McGraw Hill, 2006).



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl

Date: 24th Aug., 2016 & 5th June, 2017

KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSC-1E)

SEMESTER – V

Paper – V:: Electromagnetism Lab

PHYSICS LABORATORY

1. To verify the Thevenin Theorem
2. To verify Norton Theorem
3. To verify Superposition Theorem
4. To verify maximum power transfer theorem.
5. To determine a small resistance by Carey Foster's bridge.
6. To determine the (a) current sensitivity, (b) charge sensitivity, and (c) CDR of a B.G.
7. To determine high resistance by leakage method.
8. To determine the ratio of two capacitances by De Sauty's bridge.
9. To determine self-inductance of a coil by Anderson's bridge using AC.
10. To determine self-inductance of a coil by Rayleigh's method.
11. To determine coefficient of Mutual inductance by absolute method.

Note: Minimum of eight experiments should be performed.

Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Suggested Books for Reference:

1. B. L. Worsnop and H. T. Flint, Advanced Practical Physics, Asia Publishing House, New Delhi.
2. InduPrakash and Ramakrishna, A Text Book of Practical Physics, KitabMahal



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KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Paper – VI (A):: Solid State Physics (Elective-1)

Unit-I (11 hrs)

Crystal Structure: Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis, Crystal systems, Bravais lattices, Unit Cell, Miller Indices. Types of Lattices, Reciprocal Lattice. Packing factors: SC, BCC, FCC, HCP, Brillouin Zones. Diffraction of X-rays by Crystals.

Bragg's Law.

Elementary Lattice Dynamics: Lattice vibrations and phonons, Linear monoatomic and diatomic chains. Acoustical and optical phonons. Qualitative description of the phonon spectrum in solids. Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids. T^3 law.

Unit-II (11 hrs)

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin theory of dia- and paramagnetism. Curie's law, Weiss's theory of Ferromagnetism and Ferromagnetic Domains. Discussion of B-H Curve. Hysteresis and Energy Loss.

Dielectric Properties of Materials: Polarization. Local electric field at an atom. Depolarization field. Electric susceptibility. Polarizability. Clausius-Mosotti Equation. Classical theory of electric polarizability.

Unit-III (10 hrs)

Elementary band theory: Kronig Penny model. Band Gap. Brillouin zones, effective mass of electron. Classification of materials based on band theory: conductor, semiconductor and insulator. Conductivity of Semiconductor, mobility, Hall Effect. Measurement of conductivity (04 probe method) & Hall coefficient.

UNIT IV (10 hrs)

Lasers: Einstein's A and B coefficients. Metastable states. Spontaneous and Stimulated emissions. Optical Pumping and Population Inversion. Three-Level and Four-Level Lasers. Ruby Laser and He-Ne Laser.

Superconductivity: Introduction, Critical temperature, Critical magnetic field, Meissner effect, Type I and type II superconductors, London's equation and penetration depth, Isotope effect, concept of BCS theory

Text Books:

1. Introduction to Solid State Physics, Charles Kittel, 8th Edition, 2004, Wiley India Pvt. Ltd.
2. Elements of Solid State Physics, J.P. Srivastava, 2nd Edition, 2006, Prentice-Hall of India
3. Solid State Physics, M.A. Wahab, 2011, Narosa Publications
4. Solid State Physics – S. O. Pillai (New Age Publication)
5. LASERS: Fundamentals and Applications – Thyagarajan and Ghatak (McMillanIndia)



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Date: 24th Aug, 2016 & 5th June, 2017

Reference Books:

1. Solid-state Physics, H. Ibach and H. Luth, 2009, Springer
2. Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
3. Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill
4. Solid State Physics, N.W. Ashcroft and N.D. Mermin, 1976, Cengage Learning
5. Solid State Physics- R.K.Puri&V.K. Babbar (S.Chand Publication)2013
6. Lasers and Non linear Optics –B.B.Laud-Wiley Eastern.

KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Paper: VI (A) Solid State Physics Lab

1. Measurement of susceptibility of paramagnetic solution (Quinck's Tube Method)
2. To measure the Magnetic susceptibility of Solids (Guoy's method)
3. To determine the Coupling Coefficient of a Piezoelectric crystal.
4. To measure the Dielectric Constant of a dielectric Materials with frequency
5. To study the polarization-electric field (P-E) hysteresis loop of a Ferroelectric Crystal.
6. To draw the B-H curve of Fe using Solenoid & determine energy loss from Hysteresis.
7. To measure the resistivity of a semiconductor (Ge) with temperature by four-probe method (room temperature to 150 °C) and to determine its band gap.
8. To determine the Hall coefficient of a semiconductor sample.
9. Calculation of d-values of a given Laue's pattern.
10. Calculation of d-values of power diffraction method.
12. To study the spectral characteristics of a Photo- Voltaic cell.
13. . Verification of Bragg's equation.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practical, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. A Text Book of Practical Physics, I.Prakash& Ramakrishna, 11th Ed., 2011, KitabMahal
4. Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India

Note: Minimum of eight experiments should be performed.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl

Date: 24th Aug., 2016 & 5th June, 2017

KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Paper – VI (B):: Modern Optics (Elective-2)

Unit I (11 hrs)

Principles of Lasers: Emission and absorption of radiation – Einstein relations. - Pumping mechanisms – Optical feedback - Laser rate equations for two, three and four level lasers. Pumping threshold conditions – Properties of Laser beams. Classification of laser systems – Gas, Liquid and Solid Lasers: He-Ne, and Argon lasers, their energy level schemes – Ruby laser and Nd:YAG laser, Ga-As laser, and their applications in various fields.

Unit II (11 hrs)

Holography: Basic principles of holography- Recording of amplitude and phase- The recording medium- Reconstruction of original wave front- Image formation by wave front reconstruction- Gaber hologram- Limitations of Gaber hologram - Off axis hologram - Fourier transform holograms - Volume holograms, Applications of holograms.

Unit III (10 hrs)

Fourier and Non-Linear Optics: Fourier optics - Thin lens as phase transformation – Thickness function- Various types of lenses- Fourier transforming properties of lenses – Object placed in front of the lens- Object placed behind the lens.

Non-Linear Optics: Harmonic generation- second harmonic generation- phase matching condition- Optical mixing- Parametric generation of light – Self focusing of light.

Unit IV (10 hrs)

Optical Fibers: Fiber types and their structures. Ray optics representation, acceptance angle and numerical aperture. Step index and graded index fibers, single mode and multimode fibers. Fiber materials for glass fibers and plastic fibers. Signal attenuation in optical fibers: Absorption, scattering and bending losses in fibers, core and cladding losses. Material dispersion, wave guide dispersion, inter-mode distortion and pulse broadening.

Recommended Books:

1. Opto Electronics- An Introduction – Wilson & JFB Hawkes 2nd Edition.
2. Introduction to Fourier optics – J.W. Goodman
3. Lasers and Non-Linear optics – B.B. Laud
4. Optical Electronics – GhatakndThygaRajan.
5. Principles of Lasers – O. Svelto
6. Optical Fiber Communications – by Gerad Keiser
7. Optical Fiber Communications – by John M. Senior (PHI)



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KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Paper: VI (B): Modern Optics LAB

1. Study of the profile of a laser beam.
2. Determination of the diameter of a thin wire using laser.
3. Determination of wavelength of He-Ne laser by transmission grating.
4. Construction and recording of a hologram.
5. Study of Fourier transforming properties of lenses.
6. Study of second harmonic generation by KDP crystal.
7. Measurement of numerical aperture of an optical fiber.
8. Measurement of coupling losses in optical fibers.
9. Measurement of bending losses in optical fibers.
10. Study of audio signal transmission through optical fibers.
11. To study the interference of light using optical fibers.

Reference Books:

- 1) Introduction to Fourier Optics – J. Goodman
- 2) Optical Fiber Communications- John M. Senior
- 3) Principles of Lasers- O. Svelto
- 4) Modern Optics- Grant Fowles.
- 5) Principles of Optics – Born & Wolf
- 6) Fundamentals of Optics- Jenkins & White

Note: Minimum of eight experiments should be performed.

Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
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KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Paper: V I (C): QUANTUM MECHANICS AND APPLICATIONS

(DSE- Elective-3)

Unit-I (11hrs)

Schrodinger equation & the operators: Time dependent Schrodinger equation and dynamical evolution of a quantum state; Properties of Wave Function. Interpretation of Wave Function Probability and probability current densities in three dimensions; Conditions for Physical Acceptability of Wave Functions. Normalization. Linearity and Superposition Principles. Hermitian operator, Eigen values and Eigen functions. Position, momentum and Energy operators; commutator of position and momentum operators; Expectation values of position and momentum. Wave Function of a Free Particle.

Unit II (11 hrs)

Time independent Schrodinger equation-Hamiltonian, stationary states and energy eigen values; expansion of an arbitrary wave function as a linear combination of energy eigen functions; General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states; Application to spread of Gaussian wave-packet for a free particle in one dimension; wave packets, Fourier transforms and momentum space wave function; Position-momentum uncertainty principle.

Unit-III (10 hrs)

General discussion of bound states in an arbitrary potential- continuity of wave function, boundary condition and emergence of discrete energy levels; application to one-dimensional problem-square well potential; Quantum mechanics of simple harmonic oscillator-energy levels and energy eigen functions ground state, zero point energy & uncertainty principle. One dimensional infinitely rigid box- energy eigen values and eigen functions, normalization; Quantum dot as example; Quantum mechanical scattering and tunnelling in one dimension across a step potential & rectangular potential barrier.

Unit-IV (10hrs)

Atoms in Electric & Magnetic Fields: Electron angular momentum. Space quantization. Electron Spin and Spin Angular Momentum. Larmor's Theorem. Spin Magnetic Moment. Stern Gerlach Experiment. Zeeman Effect: Electron Magnetic Moment and Magnetic Energy, Gyromagnetic Ratio and Bohr Magneton. Atoms in External Magnetic Fields:- Normal and Anomalous Zeeman Effect. Paschen Back and Stark Effect (Qualitative Discussion only) (12 Lectures)

Text Books:

1. A Text book of Quantum Mechanics, P. M. Mathews and K. Venkatesan, 2nd Ed., 2010, McGraw Hill
2. Quantum Mechanics, Robert Eisberg and Robert Resnick, 2nd Edn., 2002, Wiley.
3. Quantum Mechanics, Leonard I. Schiff, 3rd Edn. 2010, Tata McGraw Hill.

Reference Books:

1. Quantum Mechanics, G. Aruldas, 2nd Edn. 2002, PHI Learning of India.
2. Cohen-Tannoudji, B Diu and F Laloë, Quantum Mechanics (2 vols) Wiley-VCH 1977 • Basic Quantum Mechanics –A. Ghatak (McMillan India) 2012
3. • Introduction to Quantum Mechanics, D.J. Griffith, 2nd Ed. 2005, Pearson • Quantum Physics---S. Gasiorowicz (Wiley India) 2013

KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Paper: V I (C): QUANTUM MECHANICS AND APPLICATIONS LAB

Use C/C++/Scilab for solving the following problems based on Quantum Mechanics like

1. Solve the s-wave Schrodinger equation for the ground state and the first excited state of the hydrogen atom: Here, m is the reduced mass of the electron. Obtain the energy eigenvalues and plot the corresponding wavefunctions. Remember that the ground state energy of the hydrogen atom is ≈ -13.6 eV. Take $e = 3.795$ (eVÅ)^{1/2}, $\hbar c = 1973$ (eVÅ) and $m = 0.511 \times 10^6$ eV/c².
2. Solve the s-wave radial Schrodinger equation for an atom: where m is the reduced mass of the system (which can be chosen to be the mass of an electron), for the screened coulomb potential Find the energy (in eV) of the ground state of the atom to an accuracy of three significant digits. Also, plot the corresponding wavefunction. Take $e = 3.795$ (eVÅ)^{1/2}, $m = 0.511 \times 10^6$ eV/c², and $a = 3$ Å, 5 Å, 7 Å. In these units $\hbar c = 1973$ (eVÅ). The ground state energy is expected to be above -12 eV in all three cases.
3. Solve the s-wave radial Schrodinger equation for a particle of mass m : For the anharmonic oscillator potential for the ground state energy (in MeV) of particle to an accuracy of three significant digits. Also, plot the corresponding wave function. Choose $m = 940$ MeV/c², $k = 100$ MeV fm⁻², $b = 0, 10, 30$ MeV fm⁻³ In these units, $\hbar c = 197.3$ MeV fm. The ground state energy I expected to lie between 90 and 110 MeV for all three cases.
4. Solve the s-wave radial Schrodinger equation for the vibrations of hydrogen molecule: Where μ is the reduced mass of the two-atom system for the Morse potential Find the lowest vibrational energy (in MeV) of the molecule to an accuracy of three significant digits. Also plot the corresponding wave function. Take: $m = 940 \times 10^6$ eV/c², $D = 0.755501$ eV, $\alpha = 1.44$, $r_0 = 0.131349$ Å

Laboratory based experiments:

5. Study of Electron spin resonance- determine magnetic field as a function of the resonance frequency
6. Study of Zeeman effect: with external magnetic field; Hyperfine splitting
7. To show the tunneling effect in tunnel diode using I-V characteristics.
8. Quantum efficiency of CCDs

Reference Books:

1. Schaum's outline of Programming with C++. J.Hubbard, 2000, McGraw-Hill Publication
2. Numerical Recipes in C: The Art of Scientific Computing, W.H. Press et al., 3rd Edn., 2007, Cambridge University Press.
3. An introduction to computational Physics, T.Pang, 2nd Edn., 2006, Cambridge Univ. Press • Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific & Engineering Applications: A. VandeWouwer, P. Saucez, C. V. Fernández. 2014 Springer.
4. Scilab (A Free Software to Matlab): H. Ramchandran, A.S. Nair. 2011 S. Chand & Co.
5. Scilab Image Processing: L.M. Surhone. 2010 Betascript Publishing ISBN: 978 613345927

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(SEC-3) Skill Enhancement Course-III
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

VERBAL REASONING FOR APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 50

Unit – I NUMBERS AND DIAGRAMS

1.1 Series Completion: Number series, Alphabet Series

1.2 Series Completion: Alpha Numeric Series, Continuous Pattern Series

1.3 Logical Venn Diagrams

1.4 Mathematical Operations: Problem solving by substitution, Interchange of signs and numbers

Unit – II ARITHMETICAL REASONING

2.1 Mathematical Operations: Deriving the appropriate conclusions

2.2 Arithmetical Reasoning: Calculation based problems, Data based problems

2.3 Arithmetical Reasoning: Problems on ages, Venn diagram based problems

2.4 Cause and Effect Reasoning

Text Book: A Modern Approach to Verbal & Non-Verbal Reasoning by
Dr. R.S. Aggarwal

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(GE-1) GENERIC ELECTIVE-I
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

PUBLIC HEALTH AND HYGIENE

Credits: 2

Theory :2 hours/week

Marks:50

UNIT – I : NUTRITION AND ENVIRONMENT

1.1 Balanced diet and Malnutrition.

1.2 Nutritional deficiencies and disorders- Carbohydrates, proteins, lipids, vitamins and minerals.

1.3 Occupational, Industrial, agricultural and urban Health-Exposure at work place, urban areas, industrial workers, farmers and agricultural labourers, Health workers and health disorders and diseases.

1.4 Environmental pollution and associated Health hazards, Water borne diseases and Air borne diseases.

UNIT-II : DISEASES AND HEALTH CARE

2.1 Causes, Symptoms, Diagnosis, Treatment and Prevention - Malaria, Filariasis, Measles, Polio, Chicken pox, Rabies, Plague, Leprosy,.

2.2 Causes, Symptoms, Diagnosis, Treatment and Prevention of non communicable diseases - Hypertension, Coronary Heart diseases, Stroke, Diabetes, Obesity and Mental ill-health.

2.3 Health care legislation in India – Termination of pregnancy act, Maternity benefit act, Biomedical waste act, ESI act.

2.4 First Aid and Health awareness, personal health care record maintenance.

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSC-1E)

SEMESTER – V

Cell Biology and Genetics

DSC-1E (3 hrs./week)

Unit - I:

1. Plant cell envelopes: Ultra structure of cell wall, molecular organization of cell membranes.(4h)
2. Nucleus: Ultra structure, Nucleic acids - Structure of DNA, types and functions of RNA. (4 h)
3. Chromosomes: Morphology, organization of DNA in a chromosome, Euchromatin and Heterochromatin, Karyotype. DNA Replication. Special types of chromosomes: Lampbrush Polytene and B - chromosomes. (7h)

Unit - II:

4. Extra nuclear genome: Mitochondrial and plastid DNA, plasmids. (3 h)
5. Cell division: Cell and its regulation; mitosis, meiosis and their significance (3h)
6. Mutations: Chromosomal aberrations - structural and numerical changes; Gene mutations, Transposable elements. (3 h)

Unit - III:

7. Mendelism: Laws of inheritance. Genetic interactions - Epistasis, Complementary, Supplementary and inhibitory genes. (5h)
8. Linkage: A brief account and theories of Linkage. Crossing over: Mechanism and theories of crossing over. (4 h)
9. Genetic maps: Construction of genetic maps with Two point and Three point test cross data. (3h)

Unit - IV:

10. Gene Organization- Structure of gene, Genetic code, Method of Replication of DNA in Eukaryotes & Prokaryotes (3h)
11. Mechanism of transcription in Prokaryotes and Eukaryotes, translation (4h)
12. Regulation of gene expression in prokaryotes (Lac and Trp. Operons). (2h)

References:

1. Sharma, A. K. and A. Sharma. 1999. Plant Chromosomes: Analysis, Manipulation and Engineering. Harward Academic Publishers, Australia.
2. Shukla, R. S. and P. S. Chandel. 2007. Cytogenetics, Evolution, Biostatistics and Plant Breeding. S.Chand & Company Ltd., New Delhi.
3. Singh, H. R. 2005. Environmental Biology. S. Chand & Company Ltd., New Delhi.
4. Snustad, D. P. and M. J. Simmons. 2000. Principles of Genetics. John Wiley & Sons, Inc., U S A.
5. Strickberger, M. W. 1990. Genetics (3rd Ed.). Macmillan Publishing Company.
6. Verma, P. S. and V. K. Agrawal. 2004. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S. Chand & Company Ltd., New Delhi.

KAKATIYA UNIVERSITY
U.G. Botany (Under CBCS)
B.Sc. Final Year (DSC-1E)
SEMESTER – V

Cell Biology and Genetics Practical

1. Demonstration of cytochemical methods: Fixation of plant material and nuclear staining for mitotic and meiotic studies. (6 h)
2. Study of various stages of mitosis using cytological preparation of Onion root tips. (6 h)
3. Study of various stages of meiosis using cytological preparation of Onion flower buds. (3 h)
5. Solving genetic problems related to monohybrid, dihybrid ratio incomplete dominance and interaction of genes (minimum of six problems in each topic). (12h)
6. Construction of linkage maps; two and three point test cross. (6 h)
7. Study of ultra structure of cell organelles using photographers. (6h)
8. Study of Special types of Chromosomes (6h)

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Elective

A) Ecology & Biodiversity

DSE-1E (3 hrs./week) Theory Syllabus

Unit – I

1. Concept and components of Ecosystem. Energy flow, food chains, food webs, ecological pyramids, Biogeochemical cycles - Carbon Cycle (4h)
2. Definition of Environment: Atmosphere (Troposphere, Stratosphere, Mesosphere, Ionosphere), Hydrosphere, Lithosphere & Biosphere. (3h)
3. Plants and environment: Ecological factors - Climatic (Light and Temperature), and biotic. Ecological adaptations of plants. (5h)

Unit – II

4. Edaphic Factors: Soil- Formation- Weathering, mode of formation-residual; Transported: Colluvial, Alluvial, Glacial & Eolian. Soil erosion & Conservation. (4h)
5. Population ecology: Natalivity, Mortality, Growth curves, Ecotypes & Ecads. (4h)
6. Community ecology: Frequency, density cover, Life forms & Biological spectrum. (4h)

Unit – III

7. Community Dynamics: Succession - Serial stages, Modification of physical environment, Climax formation with reference to Hydrosere and Xerosere. (4h)
8. Production ecology: Concepts of productivity - Primary and Secondary Productivity. (4h)
9. Biodiversity: Concepts, Convention of Biodiversity - Earth Summit (Copenhagen). (4h)

Unit – IV

10. Biodiversity – Levels, threats and value (3h)
11. Hot spots of India - North Eastern Himalayas, Western Ghats; Endemism. (3h)
IUCN categories, RED data book
12. Principles of conservation – *In situ* and *Ex situ*. Role of organizations in the conservation of Biodiversity - WWF and NBPGR. (3h)

References:

1. Bharucha, E. 2005. Textbook of Environmental Studies for Undergraduate Courses. Universities Press (India) Private Limited, Hyderabad.
2. Khitoliya, R. K. 2007. Environmental Pollution – Management and Control for Sustainable Development. S. Chand & Company Ltd., New Delhi.
3. Michael, S. 1996. Ecology. Oxford University Press, London.
4. Mishra. D. D. 2008. Fundamental Concepts in Environmental Studies. S. Chand & Company Ltd., New Delhi.
5. Odum, E. P. 1983. Basics of Ecology. Saunder's International Students Edition, Philadelphia.
6. Sharma, P. D. 1989. Elements of Ecology. Rastogi Publications, Meerut.
7. Verma, P. S. and V. K. Agrawal. 2006. Genetics. S. Chand & Company Ltd., New Delhi

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Elective

A) Ecology & Biodiversity

Practical Syllabus

1. Study of plant communities by Quadrat Method (9h)
2. Estimation of carbonates and bicarbonates in the given water sample. (6h)
3. Determination of soil texture (composition of clay, sand silt etc.) and pH. (6h)
4. Study of morphological and anatomical characteristics of plant communities using locally available plant species: Hydrophytes (*Eichhornia*, *Hydrilla*, *Pistia*, *Nymphaea*, *Vallisneria*), Xerophytes: (*Asparagus*, *Opuntia*, *Euphorbia spp*), Halophytes (*Rhizophora*, *Avicennia*) . (12h)
5. Value of biodiversity
 - a) Medicinal value: *Catharanthus*, *Tinospora* and *Emblica* (12h)
 - b) Timber Value: *Acacia*, *Tectona* and *Azardirachta*
 - c) Aesthetic Value: *Mangifera*, *Ficus*, *Ocimum*

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Elective

B) Horticulture

DSE-1E (3 hrs./week)

Theory Syllabus

Unit – I

1. Definition, branches, scope and economic importance of horticultural crops (4h)
2. Classification of horticultural crops based on -Climatic requirements, Season of growth (6h)
3. Manures: Definition, importance of manures FYM (compost), oil cakes, green manure (3h)

Unit – II

4. Organic manures and vermi-compost (2h)
5. Natural Propagation: By seeds, Vegetative Structures like Bulbs, Tubers, Corms, Rhizomes, Root stock, runners, Offsets and suckers (4h)
6. Artificial Propagation: Cutting, Layering, Grafting and Budding (4h)

Unit – III

7. Application of the following plant growth regulators in horticulture – Auxins, Gibberellins, Cytokinins, Ethylene and Brassinosteroids. (4h)
8. Green house technology- definition, types, layout, construction, irrigation systems, care and attention, hardening of plants. (3h)
9. Soil and climatic requirements of horticultural crops, Selection of site, planning, training (3h)

Unit – IV

10. Pruning and Cropping system; Garden implements and their uses (2h)
11. Management: Orchard management, Nutrition management, Water management and Weed Management. (4h)
12. Organic Farming; Bonsai techniques. (6h)

References:

1. Bhattacharjee.S.K. 2006. Amenity Horticulture, Biotechnology and Post harvest technology. Pointer publishers. Jaipur
2. Chadha, K.L. 2001, Handbook of Horticulture, ICAR, New Delhi.
3. Chandra, R. and M. Mishra. 2003. Micropropagation of horticultural crops. International Book Distributing Co., Lucknow.
4. Chattopadhyaya, P.K.2001. A text book on Pomology (Fundamentals of fruit growing) Kalyani Publication, New Delhi
5. Christopher, E.P. 2001. Introductory Horticulture, Biotech Books, New Delhi
6. Edmond, J.B. T.L.Senn, F.S. Andrews and P.G.Halfacre, 1975. Fundamentals of Horticulture, Tata MC. Graw Hill Publishing Co.New Delhi
7. George Acquaah, 2002, Horticulture-principles and practices. Prentice-Hall of India pvt. Ltd., New Delhi.
8. Hartman, H.T. and Kester, D.E. 1986. Plant propagation – Principles and Practices – Prentice Hall of India Ltd., New Delhi.
9. Jacob John. P. 2008. A hand book of post harvest management of fruits and vegetables. Daya publishers.
10. Jitendra Singh. 2006. Basic Horticulture. Kalyani Publishers, New Delhi.
11. Rajan, S. and B.L. Markose. 2007. Propagation of horticultural crops. New India Publishing, New Delhi.
12. Shanmugavelu, K.G., N. Kumar and K.V. Peter. 2005. Production technology of spices and plantation crops. Agrobios, Jodhpur.
13. Singh, D.K. 2008. Hi-tech horticulture. Agrotech publishers, Udaipur
14. Singh, N.P. 2005. Basic concepts of fruit science. International Book Distributing Co., Lucknow.
15. Surendra Prasad and U. Kumar. 1999. Principles of horticulture, Agro-botanica, Bikaner, India.
16. Sureshkumar, P. Sagar and Manish Kanwat. 2009. Post harvest physiology and quality management of fruits and vegetables. Agrotech publishers, Udaipur
17. Utpal Banerjee. 2008. Horticulture. Mangal Deep publishers
18. Vijaikumar UmRao. 2008. Horticulture terms – Definitions and Terminology. IBD publishers, Dehradun
19. Adams, C.R. and M. P. Early. 2004. Principles of horticulture. Butterworth –Heinemam, Oxford University Press.
20. Bansil. P.C. 2008. Horticulture in India. CBS Publishers and Distributors, New Delhi.
21. Kumar, N.1997. Introduction to Horticulture, Rajalakshmi Publication, Nagercoil.

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Elective

B) Horticulture

Practical Syllabus

- Garden tools and implements. (3h)
1. Identification and description of any two varieties/hybrids of tropical and subtropical vegetable, fruit, flower and ornamental crops. (3h)
 2. Propagation practices by seed, Vegetative propagation (Rhizome, bulb, corm), cutting, layering, budding, grafting with two examples. (9h)
 3. Seed propagation- seed treatments, sowing and seedling production. (6h)
 4. Nursery practices, transplanting, field preparation, sowing/planting, use of herbicides, top dressing of fertilizers and use of growth regulators. (6h)
 5. Nursery containers, media, potting and repotting of plants, hardening of plants in nursery, shade regulation in nursery, plant protection in nursery plants (Demonstration) (6h)
 6. Packing nursery plants for local and long distance markets. (Demonstration) (3h)
 7. Making of organic-compost. (9h)

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Elective

C) Microbiology and Plant Pathology

DSE-1E (3 hrs./week) Theory Syllabus

Unit – I

1. Discovery of microorganisms; systematic position of microorganisms in biological world; classification of microorganisms (2h)
2. Sterilization methods; culture media; pure culture methods; growth determination (2h)
3. Prokaryotic microorganisms; fine structure of prokaryotic cell; bacteriophage T4; general account of mycoplasma and actinomycetes (3h)

Unit – II

4. Genetic recombination in prokaryotes: conjugation, transformation and transduction (3h)
5. Role of microorganisms in biogeochemical cycling of nitrogen and carbon; biological N₂ fixation (3h)
6. Industrial application of microorganisms: organic acids, alcohol, food processing, milk products, antibiotics, biopesticides (8h)

Unit – III

7. General account of plant pathogens: historical developments; general account of diseases caused by plant pathogens (2h)
8. Plant disease epidemiology: transmission and spread of plant pathogens; disease cycles; epidemics; modeling and diseases forecasting (6h)
9. Plant disease management: chemical; biological; development of transgenics; biopesticides (6h)

Unit – IV

10. Genetics of resistance and susceptibility: genes for virulence and avirulence, their application in resistance and susceptibility; induced resistance (immunization) (4h)
11. Molecular plant pathology: molecular diagnosis; identification of genes and specific molecules in disease development; molecular manipulation of resistance (4h)
12. Application of information technology in plant pathology: General account (2h)

References:

1. Agrios, G.N. 1997. Plant Pathology. Academic Press, London.
2. Albajes, R., Gullino, M.L., Van Lanteren, J.C. & Elad, Y. 2000. Integrated Pest and Disease Management in Greenhouse Crops. Kluwer Academic Publishers.
3. Bridge, P. et.al. 1998. Molecular Variability of Fungal Pathogens. CAB International, UK.
4. Bridge, P. et.al. 1999. Application of PCR in Mycology. CAB International, UK.
5. Persley, G.J. 1996. Biotechnologies and Integrated Pest Management, CAB International, UK.
6. Skerritt, J.H. and Apples, R. 1995. New Diagnostics in Crop Sciences. CAB International, UK.

KAKATIYA UNIVERSITY

U.G. Botany (Under CBCS)

B.Sc. Final Year (DSE-1E)

SEMESTER – V

Elective

C) Microbiology and Plant Pathology

Practical Syllabus

1. Cultivation media for autotrophic and heterotrophic microorganisms (3h)
2. Cleaning of glassware, mineral media, complex media, solid media, sterilization (9h)
3. Isolation of microorganisms: streaking on agar plates / pour plate method, isolation of clones (3h)
4. Preservation (3h)
5. Preparation of Winogradsky column using pond bottom mud, observations on temporal sequence of appearance of microbes (visual appearance) (6h)
6. Observation on Virus infected plants (symptoms) (6h)
7. Study of important plant pathogens (symptoms and host parasite relationship) (6h)
8. Isolation of pectolytic enzymes from diseased plants (6h)
9. Demonstration of biopesticides (essential oils, neem, turmeric and garlic) against some pathogens (3h)

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – V

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Basics of Immune system

- 1.1.1 Cells of the Immune system and the Lymphoid organs (Primary and Secondary)
- 1.1.2 First line of defences-physical and chemical barriers; second line of defences – inflammation and phagocytosis.
- 1.1.3 Types of Immunity- Inherent (Active and Passive) and Acquired Immunity (Active and Passive) Humoral and Cell mediated immunity.
- 1.1.4 Major Histocompatibility complex (MHC)- structure and function of class I and Class II proteins. Significance of MHC in organ transplantation; MHC restriction

UNIT – II

2.1 Antibodies and Antigens and Immune system diseases

- 2.1.1 Antibodies(Immunoglobulins) – Structure, functions and classification, antibody diversity, Monoclonal antibodies and applications
- 2.1.2 Antigens structure, antigenic determinants/epitopes, haptens, adjuvants and antigenicity.
- 2.1.3 Antigen-antibody reactions; Agglutination; Precipitation, Opsonization, Cytotoxicity
- 2.1.4 Hypersensitivity reactions.
Autoimmunity and Immunodeficiency diseases.

Unit – III

3.1 Animal Biotechnology and Genetically modified organisms

- 3.1.1 Concept and Scope of Animal Biotechnology
- 3.1.2 Recombinant DNA Technology and its applications.
- 3.1.3 Cloning Vectors- Plasmids, Cosmids and shuttle vectors, Cloning methods(Cell, Animal and Gene cloning); Restriction enzymes and Ligases
- 3.1.4 Transgenesis – Methods of Transgenesis
Production of Transgenic animals- Sheep and Fish

Unit – IV

4.1 Applications of Biotechnology

- 4.1.1 In vitro fertilization and embryo transfer
- 4.1.2 Hybridoma technology – concepts and applications
- 4.1.3 Stem cells- Types and their applications
- 4.1.4 Recombinant insulin and human growth hormone; Polymerase Chain Reaction (PCR)
Animal Bioreactors- Concepts and Applications.


HEAD
Department Of Zoology
University College
Kakatiya University,
WARANGAL.-506009(T.S)


DR. G. SHAMITHA
Chairperson
Board of Studies
Department of Zoology & Sericulture Unit
KAKATIYA UNIVERSITY - WGL-506009 (T.S)

Suggested Readings:

1. Text Book of Immunology – Ivan Riott
2. Text Book of Immunology – C.V.Rao
3. Text Book of Immunology – Nandinin Shetty
4. Text Book of Immunology – Kubey
5. Culture of Animal Cells – R. Ian Freshney, Wiley Liss
6. Biotechnology – S. Mitra
7. Animal Cell Culture - Practical Approach – Ed. John. RW. Masters, Oxford
8. Biotechnology – B.D.Singh
9. Brown, T.A. (1998). *Molecular Biology Labfax II: Gene Cloning and DNA Analysis*. II Edition, Academic Press, California, USA.
10. Glick, B.R. and Pasternak, J.J. (2009). *Molecular Biotechnology - Principles and Applications of Recombinant DNA*. IV Edition, ASM press, Washington, USA.


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KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – V

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY
PRACTICAL

Instruction: 3 hrs per week

No. of Credits: 1

I. Immunology

1. Identification of Blood grouping (Demonstration of Agglutination) using kit.
2. Demonstration of Precipitation (VDRL/RPR) using kit.
3. Histological study of Lymphoid organs -Spleen, Thymus, Lymph node, Bone marrow (through prepared slides).
4. Enumeration of Total RBC from a given blood sample.
5. Enumeration of Total WBC from a given blood sample.
6. Enumeration of Differential count of WBC from a given blood sample.

II. Animal Biotechnology

1. Study the following techniques through Photographs / Virtual Lab

- a) Identification of Vectors
- b) Identification of Transgenic animals
- c) DNA sequencing (Sanger's method)
- d) DNA finger printing
- e) Southern blotting
- f) Western blotting

2. PCR (demonstration) on site or of site demonstration.

- **Laboratory Record work shall be submitted at the time of practical examination**
- **Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

1. A Hand Book of Practical Immunology – **Ivan Riott**
2. Animal Biotechnology – **P.K. Gupta.**
3. Immunology, VI Edition. W.H. Freeman and Company **Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006).**
4. Immunology, VII Edition, Mosby, Elsevier Publication **David, M., Jonathan, B., David, R. B. and Ivan R. (2006).**
5. Cellular and Molecular Immunology. V Edition. Saunders Publication, **Abbas, K. Abul and Lechtman H. Andrew (2003.)**


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KAKATIYA UNIVERSITY, WARANGAL-506 009

B.Sc. Under CBCS System wef A.Y: 2021-22

Third Year : : Semester - V

GENERIC ELECTIVE (Common to all students)

WATER RESOURCES MANAGEMENT

(4 hrs/week) (Taught by ant Science Dept) (Credits:4) (Marks:100)

UNIT-I:

Introduction to water resources management, different types of water resources, water resources and its importance, Global distribution of water. Hydrological cycle, Conservation of water, recycling of water.

Unit-II:

Rain water harvesting, methods of roof top rain water harvesting in urban setting: Direct method - Storing rain water in tanks for direct use; indirect methods - Recharge pits, bore wells/dug wells, Recharge trenches. Over use of surface and ground water and control measures.

UNIT-III:

Importance of water shed and water shed management, Rain water harvesting in rural setting: Check dams, percolation tanks, gabion structure, continuous contour trenches, staggered contour trenches, farm ponds. Surface water and ground water pollution, control measures.

UNIT-IV :

Mission Bhagiratha: Telangana government water grid project for drinking water supply - aims and objectives and method of implementation. Mission Kakatiya: Telangana government project for the restoration of minor irrigation tanks, aims and objectives and method of implementation.

Text books:

- 1) Water Resources, Conservation and Management by Chatterjee, S.N.
- 2) Groundwater hydrology by Todd
- 3) Watershed management by J.V.S.Murthy
- 4) Applied Hydrogeology by Fetter.

**CURRICULUM FOR MATHEMATICS
IN UNDER GRADUATE DEGREE PROGRAMME**

**CBCS SYLLABUS SCHEDULE 2016 - 2017
SEMESTER - VI**



**By
Chairperson
Board of Studies
Department of Mathematics
Kakatiya University, Warangal.**

Kakatiya University
B.Sc. Mathematics, VI Semester
Skill Enhancement Course - IV
B.Sc., III Year, VI Semester
Quantitative Aptitude Test

Credits: 2 Theory: 2 hours/week

Marks - 50

Unit I : Arithmetical Ability

- 1.1 Arithmetical Ability: Ratio and Proportion
- 1.2 Arithmetical Ability: Time and Work, Time and Distance
- 1.3 Arithmetical Ability: Simple Interest, Compound Interest
- 1.4 Arithmetical Ability: Stocks and Shares

Unit II : Data Interpretation

- 2.1 Data Interpretation: Tabulation
 - 2.2 Data Interpretation: Bar Graphs
 - 2.3 Data Interpretation: Pie Charts
 - 2.4 Data Interpretation: Line Graphs
- TEXT:** *Quantitative Aptitude* by Dr.R.S.Aggarwal

Kakatiya University
B.Sc. Mathematics, VI Semester
NUMERICAL ANALYSIS

DSC-1F
BS:603

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours/week and Practicals: 2 hours/week

Objective: Students will be made to understand some methods of numerical analysis.

Outcome: Students realize the importance of the subject in solving some problems of algebra and calculus.

UNIT-I

Solutions of Equations in One Variable : The Bisection Method - Fixed-Point Iteration - Newtons Method and Its Extensions - Error Analysis for Iterative Methods - Accelerating Convergence - Zeros of Polynomials and Mullers Method - Survey of Methods and Software.

UNIT-II

Interpolation and Polynomial Approximation: Interpolation and the Lagrange Polynomial - Data Approximation and Nevilles Method - Divided Differences.

UNIT-III

Hermite Interpolation - Cubic Spline Interpolation. Numerical Differentiation and Integration: Numerical Differentiation - Richardsons Extrapolation

UNIT-IV

Elements of Numerical Integration- Composite Numerical Integration - Romberg Integration - Adaptive Quadrature Methods - Gaussian Quadrature.

TEXT: Richard L. Burden and J. Douglas Faires, *Numerical Analysis (9e)*

References

- M. K. Jain, S. R. K. Iyengar and R. K. Jain, *Numerical Methods for Scientific and Engineering computation*
- B. Bradie, *A Friendly introduction to Numerical Analysis*

UNIT-I

- (1) Use the Bisection method to find P_3 for $f(x) = \sqrt{x} - \cos x$ on $[0,1]$.
- (2) Let $f(x) = 3(x+1)(x-1/2)(x-1)$. Use the Bisection method on the following intervals to find P_3 .
 - (a) $[-2,1.5]$
 - (b) $[-1.25,2.5]$
- (3) Use the Bisection method to find solutions accurate with in 10^{-5} for the following problems.
 - (a) $x - 2^{-x} = 0$ for $0 \leq x \leq 1$
 - (b) $e^x - x^2 + 3x - 2 = 0$ for $0 \leq x \leq 1$
 - (c) $2x \cos(2x) - (x+1)^2 = 0$ for $-3 \leq x \leq -2$ and $-1 \leq x \leq 0$.
- (4) Use algebraic manipulation to show that each of the following functions has a fixed point at p precisely when $f(p) = 0$, where $f(x) = x^4 + 2x^2 - x - 3$.
 - (a) $g_1(x) = (3 + x - 2x^2)^{1/4}$
 - (b) $g_2(x) = \left(\frac{x+3-x^4}{2}\right)^{1/2}$
- (5) Use a fixed-point iteration method to determine a solution accurate to within 10^{-2} for $x^4 - 3x^2 - 3 = 0$ on $[1,2]$. Use $p_0 = 1$.
- (6) Use a fixed-point iteration method to determine a solution accurate to within 10^{-2} for $x^3 - x - 1 = 0$ on $[1,2]$. Use $p_0 = 1$.
- (7) Use a fixed-point iteration method to find an approximation to $\sqrt{3}$ that is accurate to within 10^{-4} .
- (8) The equation $x^2 - 10 \cos x = 0$ has two solutions, ± 1.3793646 . Use Newton's method to approximate the solutions to within 10^{-5} with the following values of P_0 .
 - (a) $P_0 = -100$
 - (b) $P_0 = -50$
 - (c) $P_0 = -25$
 - (d) $P_0 = 25$
 - (e) $P_0 = 50$
 - (f) $P_0 = 100$
- (9) The equation $4x^2 - e^x - e^{-x} = 0$ has two positive solutions x_1 and x_2 . Use Newton's method to approximate the solution to within 10^{-5} with the following values of p_0 .
 - (a) $P_0 = -10$ (b) $P_0 = -5$ (c) $P_0 = -3$
 - (d) $P_0 = -1$ (e) $P_0 = 0$ (f) $P_0 = 1$
 - (g) $P_0 = 3$ (h) $P_0 = 5$ (i) $P_0 = 10$
- (10) Use each of the following methods to find a solution in $[0.1, 1]$ accurate to within 10^{-4} for $600x^4 - 550x^3 + 200x^2 - 20x - 1 = 0$
 - (a) Bisection method
 - (b) Newton method
 - (c) Secant method
 - (d) Method of False position
 - (e) Muller's method

UNIT-II

- (11) For the given function $f(x)$, let $x_0 = 0$, $x_1 = 0.6$, and $x_2 = 0.9$. Construct interpolation polynomial of degree at most one and at most two to approximate $f(0.45)$, and find the absolute error

(a) $f(x) = \cos x$ (b) $f(x) = \ln(x + 1)$

- (12) For the given function $f(x)$, let $x_0 = 1$, $x_1 = 1.25$ and $x_2 = 1.6$. Construct interpolation polynomial degree at most one and at most two to approximate $f(1.4)$, and find the absolute error.

(a) $f(x) = \sin \pi x$ (b) $f(x) = \log(3x - 1)$

- (13) Let $P_3(x)$ be the interpolating polynomials for the data $(0, 0), (0.5, y), (1, 3)$ and $(2, 2)$. The coefficient of x^3 in $P_3(x)$ is 6. Find y

- (14) Neville's method is used to approximate $f(0.4)$, giving the following table.

$x_0 = 0$	$P_0 = 1$			
$x_1 = 0.25$	$P_1 = 2$	$P_{0,1} = 2.6$		
$x_2 = 0.5$	P_2	$P_{1,2}$	$P_{0,1,2}$	
$x_3 = 0.75$	$P_3 = 8$	$P_{2,3} = 2.4$	$P_{1,2,3} = 2.96$	$P_{0,1,2,3} = 3.016$

Determine $P_2 = f(0.5)$.

- (15) Neville's method is used to approximate $f(0.5)$, giving the following table.

$x_0 = 0$	$P_0 = 0$		
$x_1 = 0.4$	$P_1 = 2.8$	$P_{0,1} = 3.5$	
$x_2 = 0.7$	P_2	$P_{1,2}$	$P_{0,1,2} = \frac{27}{7}$

Determine $P_2 = f(0.7)$.

- (16) Neville's Algorithm is used to approximate $f(0)$ using $f(-2), f(-1), f(1)$ and $f(2)$. Suppose $f(-1)$ was overstated by 2 and $f(1)$ was understated by 3. Determine the error in the original calculation of the value of the interpolating polynomial to approximate $f(0)$.

- (17) Compute the divided difference table for the data

x	1.0	1.3	1.6	1.9	2.2
$f(x)$	0.7651977	0.6200860	0.4554022	0.2818186	0.1103623

- (18) Use the Newton forward-difference formula to construct interpolating polynomials of degree one, two, and three for the following data. Approximate the specified value using each of the polynomials.

(a) $f(0.43)$ if $f(0) = 1, f(0.25) = 1.64872, f(0.5) = 2.71828, f(0.75) = 4.48169$

(b) $f(0.18)$ if $f(0.1) = -0.29004986, f(0.2) = -0.56079734, f(0.3) = -0.81401972, f(0.4) = -1.0526302$

- (19) Use the Newton backward-difference formula to construct interpolating polynomials of degree one, two, and three for the following data. Approximate the specified value using each of the polynomials.

(a) $f(0.43)$ if $f(0) = 1, f(0.25) = 1.64872, f(0.5) = 2.71828, f(0.75) = 4.48169$

(b) $f(0.25)$ if $f(-1) = 0.86199480, f(-0.5) = 0.95802009, f(0) = 1.0986123, f(0.5) = 1.2943767$

- (20) Use Stirling's formula to approximate $f(0.43)$ for the following data

x	0.0	0.2	0.4	0.6	0.8
$f(x)$	1.0000	1.22140	1.49182	1.82212	2.22554

UNIT-III

- (21) Use the Hermite Polynomial to find an approximation of $f(1.5)$ for the following data

k	x_k	$f(x_k)$	$f'(x_k)$
0	1.3	0.6200860	-0.5220232
1	1.6	0.4554022	-0.56989959
2	1.9	0.2818186	-0.5811571

- (22) A car travelling along a straight road is clocked at a number of points. The data from the observations are given in the following table, where the time is in seconds, the distance is in feet, and the speed is in feet per second.

Time	0	3	5	8	13
Distance	0	225	383	623	993
Speed	75	77	80	74	72

Use Hermite's polynomial to predict the position of the car and its speed when $t = 10$ second

- (23) Use the following values and five - digit - rounding arithmetic to construct the Hermite interpolating polynomial to approximate $\sin(0.34)$

x	$\sin x$	$D_x \sin x = \cos x$
0.30	0.29552	0.95534
0.32	0.31457	0.94924
0.35	0.34290	0.93937

- (24) Determine the natural cubic spline S that interpolates the data $f(0) = 0, f(1) = 1,$ and $f(2) = 2$.
- (25) Determine the clamped cubic spline S that interpolates the data $f(0) = 0, f(1) = 1, f(2) = 2,$ and satisfies $s'(0) = s'(2) = 1$.
- (26) Use the forward-difference formula and backward-difference formula to determine each missing entry in the following tables.

(a)

x	$f(x)$	$f'(x)$
0.5	0.4794	
0.6	0.5646	
0.7	0.6442	

(b)

x	$f(x)$	$f'(x)$
0.0	0.0000	
0.2	0.74140	
0.4	1.3718	

- (27) Consider the following table of data

x	0.2	0.4	0.6	0.8	1.0
$f(x)$	0.9798652	0.9177710	0.808038	0.6386093	0.3843735

Use all the appropriate for-

mulas given in this section to approximate $f'(0.4)$ and $f''(0.4)$.

- (28) Derive a method for approximating $f'''(x_0)$ whose error term is of order h^2 by expanding the function f in a fourth Taylor polynomial about x_0 and evaluating at $x_0 \pm h$ and $x_0 \pm 2h$.

(29) The forward-difference formula can be expressed as

$f'(x_0) = \frac{1}{h}[f(x_0 + h) - f(x_0)] - \frac{h}{2}f''(x_0) - \frac{h^2}{6}f'''(x_0) + O(h^3)$. Use extrapolation to derive $O(h^3)$ formula for $f'(x_0)$

(30) Show that $\lim_{h \rightarrow 0} \left(\frac{2+h}{2-h}\right)^{\frac{1}{h}} = e$

UNIT-IV

(31) Approximate the following integrals using the Trapezoidal rule.

- (a) $\int_{0.5}^1 x^4 dx$
- (b) $\int_0^{0.5} \frac{2}{x-4} dx$
- (c) $\int_1^{1.5} x^2 \ln x dx$
- (d) $\int_0^1 x^2 e^{-x} dx$

(32) Approximate the following integral using Trapezoidal Rule

- (a) $\int_{-0.25}^{0.25} (\cos x)^2 dx$
- (b) $\int_{-0.5}^0 x \ln(x+1) dx$

(33) The Trapezoidal rule applied to $\int_0^2 f(x) dx$ gives the value 5, and the midpoint rule gives the value 4. What value does Simpson's rule give?

(34) The quadrature formula $\int_0^2 f(x) dx = c_0 f(0) + c_1 f(1) + c_2 f(2)$ is exact for all polynomials of degree less than or equal to 2. Determine c_0, c_1 , and c_2 .

(35) Find the constants c_0, c_1 and x_1 so that quadrature formula $\int_0^1 f(x) dx = c_0 f(0) + c_1 f(x_1)$ has the highest possible degree of precision.

(36) Use the composite Trapezoidal Rule with the indicated values of n to approximate the following integrals

- (a) $\int_1^2 x \ln x dx$, $n=4$
- (b) $\int_{-2}^2 x^3 e^x dx$, $n=4$.

(37) Suppose that $f(0) = 1, f(0.5) = 2.5, f(1) = 2$ and $f(0.25) = f(0.75) = \infty$. Find ∞ if the Composite Trapezoidal rule with $n = 4$ gives the value 1.75 for $\int_0^1 f(x) dx$

(38) Romberg integration is used to approximate $\int_2^3 f(x) dx$.

If $f(2) = 0.51342, f(3) = 0.36788, R_{31} = 0.43687, R_{33} = 0.43662$, find $f(2.5)$

(39) Use Romberg integration to compute $R_{3,3}$ for the following integrals.

- (a) $\int_1^{1.5} x^2 \ln x dx$
- (b) $\int_0^1 x^2 e^{-x} dx$

(40) Use Romberg integration to compute $R_{3,3}$ for the following integrals.

- (a) $\int_{-1}^1 (\cos x)^2 dx$
- (b) $\int_{-0.75}^{0.75} x \ln(x+1) dx$

Kakatiya University
B.Sc. Mathematics, VI Semester
COMPLEX ANALYSIS

DSE-1F/A
BS:606

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours/week and Practicals: 2 hours/week

Objective: Analytic Functions, contour integration and calculus of residues will be introduced to the students.

Outcome: Students realize calculus of residues is one of the power tools in solving some problems, like improper and definite integrals, effortlessly.

UNIT-I

Regions in the Complex Plane - Analytic Functions - Functions of a Complex Variable - Mappings - Mappings by the Exponential Function - Limits - Theorems on Limits - Limits Involving the Point at Infinity - Continuity - Derivatives - Differentiation Formulas - Cauchy-Riemann Equations - Sufficient Conditions for Differentiability - Polar Coordinates-Harmonic Functions.

UNIT-II

Elementary Functions: The Exponential Function - The Logarithmic Function - Branches and Derivatives of Logarithms - Some Identities Involving Logarithms Complex Exponents - Trigonometric Functions - Hyperbolic Functions.

UNIT-III

Integrals: Derivatives of Functions $w(t)$ - Definite Integrals of Functions $w(t)$ - Contours - Contour Integrals - Some Examples - Examples with Branch Cuts - Upper Bounds for Moduli of Contour Integrals - Antiderivatives.

UNIT-IV

Cauchy-Goursat Theorem - Proof of the Theorem - Simply Connected Domains - Multiply Connected Domains - Cauchy Integral Formula - An Extension of the Cauchy Integral Formula - Some Consequences of the Extension - Liouville's Theorem and the Fundamental Theorem of Algebra- Maximum Modulus Principle.

TEXT: James Ward Brown and Ruel V. Churchill, *Complex Variables and Applications* (8e)

References:

- Joseph Bak and Donald J Newman, *Complex analysis*
- Lars V Ahlfors , *Complex Analysis*
- S.Lang, *Complex Analysis*
- B Choudary, *The Elements Complex Analysis*

UNIT-I

- (1) Sketch the following set and determine which are domains (a) $|z - 2 + i| \leq 1$
(b) $|2z + 3| > 4$
(c) $Imz > 1$
(d) $Imz = 1$.
- (2) Sketch the region onto which the sector $r \leq 1, 0 \leq \theta \leq \frac{\pi}{4}$ is mapped by the transformation
(a) $w = z^2$
(b) $w = z^3$
(c) $w = z^4$
- (3) Find all roots of the equation
(a) $\sinh z = i$ (b) $\cosh z = \frac{1}{2}$
- (4) Find all values of z such that
(a) $e^z = -2$; (b) $e^z = 1 + \sqrt{3}i$; (c) $\exp(2z - 1) = 1$.
- (5) Show that
 $\lim_{z \rightarrow z_0} f(z)g(z)$ if $\lim_{z \rightarrow z_0} f(z) = 0$
and if there exists a positive number M such that $|g(z)| \leq M$ for all z in some neighborhood of z_0 .
- (6) Show that $f'(z)$ does not exist at any point if
(a) $f(z) = \bar{z}$ (b) $f(z) = z - \bar{z}$
(c) $f(z) = 2x + ixy^2$ (d) $f(z) = e^x e^{-iy}$
- (7) Verify that each of these functions is entire
(a) $f(z) = 3x + y + i(3y - x)$ (b) $f(z) = \sin x \cosh y + i \cos x \sinh y$
(c) $f(z) = e^{-y} \sin x - i e^{-y} \cos x$ (d) $f(z) = (z^2 - 2)e^{-x} e^{-iy}$.
- (8) State why a composition of two entire functions is entire. Also, state why any linear combination $c_1 f_1(z) + c_2 f_2(z)$ of two entire functions, where c_1 and c_2 are complex constants, is entire.
- (9) Show that $u(x, y)$ is harmonic in some domain and find a harmonic conjugate $v(x, y)$ when
(a) $u(x, y) = 2x(1 - y)$ (b) $u(x, y) = 2x - x^3 + 3xy^2$
(c) $u(x, y) = \sinh x \sin y$ (d) $u(x, y) = \frac{y}{x^2 + y^2}$
- (10) Show that if v and V are harmonic conjugates of $u(x, y)$ in a domain D , then $v(x, y)$ and $V(x, y)$ can differ at most by an additive constant.

UNIT-II

- (11) Show that $\exp(z + \pi i) = -\exp(z)$
- (12) Find all values of z such that $e^z = -2$
- (13) Show that $\exp \bar{z} = \overline{\exp z} \forall z$ and $\exp(\bar{iz}) = \overline{\exp(iz)}$
- (14) Show that the function $\exp \bar{z}$ is not analytic anywhere

- (15) Show that $\overline{\cos(i\bar{z})} = \cos(i\bar{z}) \forall z$
 $\overline{\sin(i\bar{z})} = \sin(i\bar{z})$ if and only if $z = n\pi i$ ($n = 0, \pm 1, \pm 2, \dots$)
- (16) Show that neither $\sin \bar{z}$ nor $\cos \bar{z}$ is an analytic function of z anywhere
- (17) Show that $\sin^{-1}(-i) = n\pi + i(-1)^{n+1}\cos(1 + \sqrt{2})$ ($n = 0, \pm 1, \pm 2, \dots$)
- (18) Show that $\cos(-ei) = 1 - \frac{\pi}{2}i$
- (19) Find all the roots of the equation $\cosh z = \frac{1}{2}$
- (20) Find all the roots of the equation $\sinh z = i$

UNIT-III

- (21) Evaluate $\int_C f(z) dz$
 where $f(z) = \frac{(z+2)}{z}$ and C is
- the semicircle $z = 2e^{i\theta}$ ($0 \leq \theta \leq \pi$)
 - the semicircle $z = 2e^{i\theta}$ ($\pi \leq \theta \leq 2\pi$)
 - the circle $z = 2e^{i\theta}$ ($0 \leq \theta \leq 2\pi$)
- (22) $f(z)$ is defined by the means of the equations $f(z) = \begin{cases} 1 & \text{when } y < 0 \\ 4y & \text{when } y > 0 \end{cases}$ and C is the arc from $z = -1 - i$ to $z = 1 + i$ along the curve $y = x^3$, then find $\int_C f(z) dz$.
- (23) Let C denote the line segment from $z = i$ to $z = 1$. By observing that of all the points on that line segment, the midpoint is the closest to the origin, show that
 $|\int_C \frac{dz}{z^4}| \leq 4\sqrt{2}$
 without evaluating the integral.
- (24) Let C_R denote the upper half of the circle $|z| = R$ ($R > 2$), taken in the counter clockwise direction. Show that
 $|\int_{C_R} \frac{2z^2-1}{z^4+5z^2+4} dz| \leq \frac{\pi R(2R^2+1)}{(R^2-1)(R^2-4)}$.
 Then, by dividing the numerator on the right here by R^4 , show that the value of the integral tends to zero as R tends to infinity.
- (25) By finding an antiderivative, evaluate each of these integrals, where the path is any contour between the indicated limits of integration:
- $\int_i^{i/2} e^{\pi z} dz$
 - $\int_0^{\pi+2i} \cos(\frac{z}{2}) dz$
 - $\int_1^3 (z-2)^3 dz$
- (26) Use an antiderivative to show that for every contour C extending from a point z_1 to a point z_2 ,
 $\int_C z^n dz = \frac{1}{n+1}(z_2^{n+1} - z_1^{n+1})$ ($n = 0, 1, 2, \dots$)
- (27) Let C_0 and C denote the circle $z = z_0 + Re^{i\theta}$ ($-\pi \leq \theta \leq \pi$) and $z = Re^{i\theta}$ ($-\pi \leq \theta \leq \pi$) respectively.
- Use these parametric representations to show that
 $\int_{C_0} f(z - z_0) dz = \int_C f(z) dz$
- (28) Evaluate the integral $\int_C z^m z^{-n} dz$
 where m and n are integers and C is the unit circle $|z| = 1$ taken counterclockwise.

- (29) $f(z) = 1$ and C is an arbitrary contour from any fixed point z_1 to any fixed point z_2 in the z plane .Evaluate

$$\int_C f(z)dz$$
- (30) $f(z) = \pi \exp(\pi \bar{z})$ and C is the boundary of the square with vertices at the points $0, 1, 1 + i$ and i the orientation of C being in the counterclockwise direction .Evaluate

$$\int_c f(z)dz$$

UNIT-IV

- (31) Let C denote the positively oriented boundary of the square whose sides lie along the lines $x = \pm 2$ and $y = \pm 2$. Evaluate each of these integrals.
 a. $\int_C \frac{e^{-z}}{z - (\frac{\pi i}{2})} dz$
 b. $\int_C \frac{\cos z}{z(z^2+8)} dz$
 c. $\int_C \frac{z}{2z+1} dz$
- (32) Find the value of the integral $g(z)$ around the circle $|z - i| = 2$ in the positive sense when
 a. $g(z) = \frac{1}{z^2+4}$
 b. $g(z) = \frac{1}{(z^2+4)^2}$
- (33) C be the circle $|z| = 3$ described in the positive sense. Show that if

$$g(z) = \int_C \frac{2s^2 - s - 2}{s - z} dz, (|z| \neq 3)$$
 then $g(2) = 8\pi i$. What is the value of $g(z)$ when $|z| > 3$?
- (34) Let C be any simple closed contour ,described in the positive sense in z plane ,and write

$$g(z) = \int_C \frac{s^3 + 2s}{(s - z)^3} dz$$
 Show that $g(z) = 6\pi iz$ when z is inside C and that $g(z) = 0$ when z is outside.
- (35) Show that if f is analytic within and on a simple closed contour C and z_0 is not on C , then

$$\int_C \frac{f'(z)}{z - z_0} dz = \int_C \frac{f(z)}{(z - z_0)^2} dz$$
- (36) Let C be the unit circle $z = e^{i\theta} (-\pi \leq \theta \leq \pi)$. First show that for any real constant a

$$\int_C \frac{e^{az}}{z} dz = 2\pi i$$
 Then write this integral in terms of θ to derive the integration formula

$$\int_0^\pi e^{a \cos \theta} \cos(a \sin \theta) d\theta = \pi$$
- (37) suppose that $f(z)$ is entire and that the harmonic function $u(x, y) = \operatorname{Re}|f(z)|$ has an upper bound u_0 ; that is $u(x, y) \leq u_0$ in the xy plane. Show that $u(x, y)$ must be constant throughtout the plane.
- (38) Let a function f be continuous on a closed bounded region R , and let it be analytic and not constant throughout the interior of R . Assuming that $f(z) \neq 0$ anywhere in R . Prove that $|f(z)|$ has a minimum value m in R which occur on the boundary of R and never in the interior. Do this by applying the corresponding result for maximum values to the function $g(z) = \frac{1}{f(z)}$
- (39) Let the function $f(z) = u(x, y) + iv(x, y)$ be continuous on a closed bounded region R , and suppose that it is analytic and non constant in the interior of R . Show that the component function $v(x, y)$ has maximum and minimum values in R which are reached on the boundary of R and never in the interior, where it is harmonic

- (40) Let f be the function $f(z) = e^z$ and R the rectangular region $0 \leq x \leq 1$, $0 \leq y \leq \pi$. Find points in R where the component function $u(x, y) = \operatorname{Re}[f(z)]$ reaches its maximum and minimum values

Kakatiya University
B.Sc. Mathematics, VI Semester
VECTOR CALCULUS

DSE-1F/B
BS:606

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours/week and Practicals: 2 hours/week

Objective: Concepts like gradient, divergence, curl and their physical relevance will be taught.

Outcome: Students realize the way vector calculus is used to addresses some of the problems of physics.

UNIT- I

Line Integrals: Introductory Example : Work done against a Force-Evaluation of Line Integrals
Conservative Vector Fields

UNIT- II

Surface Integrals: Introductory Example : Flow Through a Pipe
Evaluation of Surface Integrals. Volume Integrals: Evaluation of Volume integrals

UNIT- III

Gradient, Divergence and Curl: Partial differentiation and Taylor series in more than one variable-
Gradient of a scalar field-Gradients, conservative fields and potentials-Physical applications of the gradient.

UNIT- IV

Divergence of a vector field -Physical interpretation of divergence-Laplacian of a scalar field- Curl of a vector field-Physical interpretation of curl-Relation between curl and rotation-Curl and conservative vector fields.

TEXT: P.C. Matthews, *Vector Calculus*

References:

- G.B. Thomas and R.L. Finney, *Calculus*
- H. Anton, I. Bivens and S. Davis ; *Calculus*
- Smith and Minton, *Calculus*

UNIT-I

- (1) Evaluate the line integral $\int_C F \times dr$, where F is the vector field $(y, x, 0)$ and C is the curve $y = \sin x, z = 0$, between $x = 0$ and $x = \pi$.
- (2) Evaluate the line integral $\int_C x + y^2 dr$, where c is the parabola $y = x^2$ in the plane $z = 0$ connecting the points $(0, 0, 0)$ and $(1, 1, 0)$.
- (3) Evaluate the line integral $\int_C f \cdot dr$, where $F = (5z^2, 2x, x + 2y)$ and the curve C is given by $x = t, y = t^2, z = t^2, 0 \leq t \leq 1$
- (4) Find the line integral of the vector field $u = (y^2, x, z)$ along the curve given by $z = y = e^x$ from $x = 0$ and $x = 1$.
- (5) Evaluate the line integral of the vector field $u = (xy, z^2, x)$ along the curve given by $x = 1+t, y = 0, z = t^2, 0 \leq t \leq 3$.
- (6) Find the line integral of $F = (y, -x, 0)$ along the curve consisting of the two straight line segments $y = 1, 0 \leq x \leq 1$.
- (7) Find the circulation of the vector $F = (y, -x, 0)$ around the unit circle $x^2 + y^2 = 1, z = 0$, taken in anticlockwise direction.
- (8) Find the line integral $\oint r \cdot dr$, where the curve C is the ellipse $x^2/a^2 + y^2/b^2 = 1$ taken in an anticlockwise direction. What do you notice about the magnitude of the answer?
- (9) By considering the line integral of $F = (y, x^2 - x, 0)$ around the square in the x, y plane connecting the four points $(0, 0), (1, 0), (1, 1)$ and $(0, 1)$, show that F cannot be a conservative vector field.
- (10) Evaluate the line integral of the vector field $u = (xy, z^2, x)$ along the curve given by $x = 1+t, y = 0, z = t^2, 0 \leq t \leq 3$.

UNIT-II

- (11) Evaluate the surface integral of $u = (y, x^2, z^2)$, over the surface S , where S is the triangular surface on $x = 0$ with $y \geq 0, z \geq 0, y + x \leq 1$, with the normal n directed in the positive x direction
- (12) Find the surface integral of $u = r$ over the part of the paraboloid $z = 1 - x^2 - y^2$ with $z > 0$, with the normal pointing upwards.
- (13) If S is the entire x, y plane, evaluate the integral $I = \int_S e^{-x^2 - y^2} ds$, by transforming the integral into polar coordinates.
- (14) A cube $0 \leq x, y, z \leq 1$ has a variable density given by $\rho = 1 + x + y + z$. What is the total mass of the cube?
- (15) Find the volume of the tetrahedron with vertices $(0, 0, 0), (a, 0, 0), (0, b, 0), (0, 0, c)$.
- (16) Evaluate the surface integral of $\mathbf{u} = (xy, x, x + y)$ over the surface S defined by $z = 0$ with $0 \leq x \leq 1, 0 \leq y \leq 2$, with the normal \mathbf{n} directed in the positive z direction.
- (17) The surface S is defined to be that part of the plane $z = 0$ lying between the curve $y = x^2$ and $x = y^2$. Find the surface integral of $\mathbf{u} \cdot \mathbf{n}$ over S where $u = (z, xy, x^2)$ and $\mathbf{n} = (0, 0, 1)$.

- (18) Find the surface integral of $\mathbf{u} \cdot \mathbf{n}$ over S where S is the part of the surface $z = x + y^2$ with $z < 0$ and $x > -1$, u is the vector field $\mathbf{u} = (2y + x, -1, 0)$ and \mathbf{n} has a negative z component.
- (19) Find the volume integral of the scalar field $\phi = x^2 + y^2 + z^2$ over the region V specified by $0 \leq x \leq 1, 1 \leq y \leq 2, 0 \leq z \leq 3$.
- (20) Find the volume of the section of the cylinder $x^2 + y^2 = 1$ that lies between the planes $z = x + 1$ and $z = -x - 1$.
- (21) Find the unit normal \mathbf{n} to the surface $x^2 + y^2 - z = 0$ at the point $(1, 1, 2)$.
- (22) find the gradient of the scalar field $f = xyz$ and evaluate it at the point $(1, 2, 3)$. Hence find the direction derivative of f at this point in the direction of the vector $(1, 1, 0)$.

UNIT-III

- (23) Find the divergence of the vector field $\mathbf{u} = \mathbf{r}$.
- (24) The vector field \mathbf{u} is defined by $\mathbf{u} = (xy, z + x, y)$. Calculate $\nabla \times \mathbf{u}$ and find the point where $\nabla \times \mathbf{u} = 0$.
- (25) Find the gradient $\nabla\phi$ and the Laplacian $\nabla^2\phi$ for the scalar field $\phi = x^2 + xy + yz^2$.
- (26) Find the gradient and the Laplacian of $\phi = \sin(kx) \sin(ly)e^{\sqrt{k^2+l^2}z}$.
- (27) Find the unit normal to the surface $xy^2 + 2yz = 4$ at the point $(-2, 2, 3)$.
- (28) For $\phi(x, y, z) = x^2 + y^2 + z^2 + xy - 3x$, find $\nabla\phi$ and find the minimum value of ϕ .
- (29) Find the equation of the plane which is tangent to the surface $x^2 + y^2 - 2z^3 = 0$ at the point $(1, 1, 1)$.
- (30) Prove that $\nabla^2\left(\frac{1}{r}\right) = 0$

UNIT-IV

- (31) Find both the divergence and the curl of the vector fields
 (a) $\mathbf{u} = (y, z, x)$;
 (b) $V = (xyz, z^2, x - y)$.
- (32) For what values, if any, of the constants a and b is the vector field $\mathbf{u} = (y \cos x + axz, b \sin x + z, x^2 + y)$ irrotational?
- (33) (a) Show that $\mathbf{u} = (y^2z, -z^2 \sin y + 2xyz, 2z \cos y + y^2x)$ is irrotational.
 (b) Find the corresponding potential function.
 (c) Hence find the value of the line integral of \mathbf{u} along the curve $x = \sin \frac{\pi t}{2}, y = t^2 - t, z = t^4, 0 \leq t \leq 1$.
- (34) Find the divergence of the vector field $u = \vec{r}$.

- (35) The vector field u is defined by $u = (xy, x + z, y)$, then calculate $\nabla \times u$ and find the points where $\nabla \times u = 0$.
- (36) Show that both the divergence and the curl are linear operators.
- (37) Find $\nabla \cdot \nabla \phi$ if $\phi = 2x^3y^2z^4$.
- (38) If $A = x^2yi - 2xzj + 2yzk$ then find $\text{curl curl } A$.
- (39) Show that $\text{div curl } A = 0$.
- (40) If $A = xz^3i - 2x^2yzj + 2yz^4k$ then find $\nabla \times A$ at the point $(1, -1, 1)$.

KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 40

Unit – I ARITHMETICAL ABILITY

- 1.1 Arithmetical Ability:** Ratio & Proportion
- 1.2 Arithmetical Ability:** Time & Work, Time & Distance
- 1.3 Arithmetical Ability:** Simple Interest, Compound Interest
- 1.4 Arithmetical Ability:** Stocks & Shares

Unit – II DATA INTERPRETATION

- 2.1 Data Interpretation:** Tabulation
- 2.2 Data Interpretation:** Bar Graphs
- 2.3 Data Interpretation:** Pie Charts
- 2.4 Data Interpretation:** Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Agarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

DSC-VI (T): CHEMISTRY PAPER-VII
(03 Hrs per week, 03 Credits) 45 Hrs

Unit-I (Inorganic Chemistry)	11Hrs
S6-I-1: Inorganic reaction mechanisms	04 Hrs
Labile and inert complexes, Thermodynamic and kinetic stability based on VBT & CFT: ligand substitution reactions – S_N1 and S_N2 in Octahedral complexes; substitution reactions of square planar complexes – Trans effect and applications of trans effect. Reactions of tetrahedral complexes - Hydrolysis of silicon halides and phosphorous oxides.	
S6-I-2: Bio inorganic chemistry	05 Hrs
Essential elements, biological significance of Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn and chloride ion. Toxic metal ions As, Hg & Pb	
Oxygen transport and storage – structure of hemoglobin, binding and transport of oxygen. Fixation of CO_2 in photosynthesis- overview of light and dark reactions in photosynthesis. Structure of chlorophyll and coordination of magnesium. Electron transport in light reactions from water to $NADP^+$ (Z – scheme).	
S6-I-3: Hard and soft acids bases (HSAB)	02Hrs
Classification, Pearson's concept of hardness and softness, application of HSAB principles – Stability of compounds / complexes, predicting the feasibility of reaction.	
UNIT - II (Organic Chemistry)	11 Hrs
S6-O-1: Carbohydrates	06 Hrs
Introduction: Classification and nomenclature – classification into mono, oligo and polysaccharides, into pentoses, hexoses <i>etc.</i> , into aldoses and ketoses. Monosaccharides: All discussion to be confined to (+) glucose as an example of aldo hexoses and (-) fructose as example of ketohexoses. Chemical properties and structural elucidation: Evidences for straight chain pentahydroxy aldehyde structure (Acetylation, reduction to n-hexane, cyanohydrins formation, reduction of Tollen's and Fehling's reagents and oxidation to gluconic and saccharic acids). Number of optically active, isomers possible for the structure, configuration of glucose based on D-glyceraldehyde as primary standard (No proof for configuration is required). Evidence for cyclic structure of glucose (some negative aldehyde tests and mutarotation). Cyclic structure of glucose: Proposition of cyclic structure (Pyranose structure, anomeric Carbon and anomers). Proof for the ring size (methylation, hydrolysis and oxidation reactions). Different ways of writing pyranose structure (Haworth formula and chair conformational formula). Structure of fructose: Evidence of 2 – ketohexose structure (formation of penta acetate, formation of cyanohydrin its hydrolysis and reduction by HI to give 2-Carboxy-n-hexane) Same osazone formation from glucose and fructose, Hydrogen bonding in osazones, cyclic structure for fructose (Furanose structure, Haworth formula).	
Inter Conversion of Monosaccharides: Aldopentose to aldo hexose – eg: Arabinose to D-glucose, D- mannose (kiliani – Fischer method). Epimers, Epimerisation- Lobry de bruyn van Ekenstein rearrangement. Aldohexose – Aldopentose eg: D-glucose to D-arabinose by Ruff's degradation. Aldohexose(+) (glucose) to ketohexose (-)(Fructose) and Ketohexose (Fructose) to aldohexose (Glucose).	

S6-O-2: Amino acids and proteins**05 Hrs**

acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples – Glycine, Alanine, valine and Leucine) by following methods: a) From halogenated Carboxylic acid b) Malonic ester synthesis c) strecker's synthesis. Physical properties: Optical activity of naturally occurring amino acids: L – configuration, irrespective of sign of rotation. Zwitter ion structure – salt like character, solubility, melting points, amphoteric character, definition of isoelectric point. Chemical properties: General reactions due to amino and carboxyl groups – Lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides and proteins, peptide synthesis.

Unit-III (Physical Chemistry)**11 Hrs****S6-P-1: Thermodynamics –I****11 Hrs**

A brief review of - Energy, work and heat units, mechanical equivalent of heat, definition of system, surroundings. I law of thermodynamics statement- various forms mathematical expression. Thermodynamic quantities- extensive properties and intensive properties, state function, path functions energy as a state function, and exact differential. Work of expansion and heat absorbed as path function. Expression for work of expansion, sign convention problems on I law. Heat changes at constant pressure and heat changes at constant volume. Enthalpy. Heat capacities at constant pressure and constant volume. Derivation $C_p - C_v = R$.

Isothermal adiabatic processes. Reversible and irreversible processes. Reversible change and maximum work. Derivation of expression for maximum work for isothermal reversible process. Problems. Internal energy of an ideal gas. Joules experiment and Joule-Thompson coefficient. Adiabatic changes in ideal gas derivation of equation, $PV = \text{constant}$. P-V curves for isothermal and adiabatic processes. Heat of a reaction at constant volume and at constant pressure, relation between H and V . Variation of heat of reaction with temperature. Kirchhoff's equation and problems. Limitations of I law and need for II law. Statement of II law of thermodynamics. Cyclic process. Heat engine, Carnot's theorem, Carnot's cycle. Derivation of efficiency of heat engine problems. Thermodynamic scale of temperature.

Unit-IV (General Chemistry)**12 Hrs****S6-G-1: Proton Magnetic Resonance Spectroscopy****04 Hrs**

Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, position of signals. Chemical shift, NMR splitting of signals – spin-spin coupling, representation of proton NMR spectrum – Integrations. ^1H NMR spectrum of – ethyl bromide, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate and acetophenone.

S6-G-2: Mass Spectrometry**04 Hrs**

Electron Impact Mass: Basic principles, Nitrogen rule, types of ions: Molecular ion, fragment ion and isotopic ions, representation of mass spectrum, types of peaks (molecular ion, fragment and isotopic ion peaks). Determination of molecular weight Mass spectrum of ethyl chloride, ethyl bromide and acetophenone.

S6-G-3: Thermodynamics- II**04 Hrs**

Entropy: Definition from Carnot's cycle. Entropy as a state function. Entropy as a measure of disorder. Sign of entropy change for spontaneous and non-spontaneous processes & equilibrium processes. Entropy changes in i). Reversible isothermal process, ii). Reversible adiabatic process, iii). phase change, iv). reversible change of state of an ideal gas. Problems. Entropy of mixing inert perfect gases. Free energy Gibb's function (G) and Helmholtz's function (A) as thermodynamic quantities. Concept of maximum work and net work G as criteria for

spontaneity. Derivation of equation $G = H - T S$. significance of the equation. Gibbs equations and the Maxwell relations. Variation of G with P , V and T .

References :

Unit- I

1. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers (2001).
2. Inorganic Chemistry Principles of structure and reactivity by James E.Huhey, E.A. Keiter and R.L. Keiter 4th edn. (2006)
3. Metal Ions In Reaction mechanisms, K.Veera Reddy. Galgotia Publications Pvt Ltd(2004)

Unit- II

1. Text book of organic chemistry by Soni. Sultan Chand & Sons; Twenty Ninth edition (2012)
2. General Organic chemistry by Sachin Kumar Ghosh. New Age Publishers Pvt Ltd (2008)
3. Text book of organic chemistry by Morrison and Boyd. Person(2009)
4. Text book of organic chemistry by Graham Solomons. Wiley(2015)
5. Text book of organic chemistry by Bruice Yuranis Powla. 2nd Edition (2012)

Unit III

1. Principles of physical chemistry by Prutton and Marron. The Macmillan Company; 4th edition (1970)
2. Text Book of Physical Chemistry by Soni and Dharmahara. Sulthan Chand & sons.(2011)
3. Text Book of Physical Chemistry by Puri, Sharmaand Pattania. chand and Co.(2017)
4. Physical Chemistry by Atkins & De Paula, 8th Edition, 2009
5. Text Book of Physical Chemistry by K. L. Kapoor. (2012)
6. Physical Chemistry through problems by S.K. Dogra. (2015)
7. Text Book of Physical Chemistry by R.P. Verma.
8. Elements of Physical Chemistry byLewis Glasstone. Macmillan (1966)
9. Thermodynamics by Rajaram, Vishal Publishing Co,(2013)

Unit IV

1. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers (2001).
2. Organic Spectroscopy, William Kemp Palgrave Macmillan; 2nd Revised edition edition (1 February 1987)
3. Principles of physical chemistry by Prutton and Marron.(The Macmillan Company; 4th edition (1970)
4. Text Book of Physical Chemistry by Soni and Dharmahara. Sulthan Chand & sons.(2011).
5. Text Book of Physical Chemistry by Puri,Sharmaand Pattania. chand and Co.(2017)
6. Thermodynamics by Rajaram. Vishal Publishing Co,(2013)

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

LABORATORY COURSE

DSC-VI (P): CHEMISTRY-VII (Physical Chemistry-II)

(03 Hrs per week, 01 Credit) 45 Hrs

I. Distribution law

1. Determination of distribution coefficient of iodine between water and carbon Tetrachloride/determination of molecular status and partition coefficient of benzoic acid in Toluene and water.
2. Determination of distribution coefficient of acetic acid between n-butanol and water.

II. Electrochemistry

1. Determination of cell constant of conductivity cell.
2. Determination of dissociation constant (K_a) of acetic acid by conductivity measurements.
3. Determination of solubility and solubility product of $BaSO_4$

III. Colorimetry

1. Verification of Beer's - Lambert's law for $KMnO_4$ and determine the concentration of given solution.

IV. Adsorption

1. Adsorption of acetic acid on animal charcoal, verification of Freundlich isotherm.

V. Physical constants

1. Surface tension and viscosity of liquids.

Reference Books:

1. Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
2. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry*, Universities Press.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

ELECTIVE - A

DSE-IIA (T): MEDICINAL CHEMISTRY

(03 Hrs per week, 03 Credits) 45 Hrs

Unit- I: Introduction and Terminology **11Hrs**

S6-E-A-I: Diseases: Common diseases, infective diseases–insect borne, air-borne, water-borne and hereditary diseases.

Terminology in Medicinal Chemistry: Drug, Pharmacology, Pharmacophore, Pharmacodynamics, Pharmacokinetics, metabolites, anti metabolites and therapeutic index.

Drugs: Nomenclature: Chemical name, Generic name and Trade names with examples; Classification: Classification based on structures and therapeutic activity with examples.

ADME: a) Absorption: Definition, absorption of drugs across the membrane – active and passive absorption, routes of administration of drugs. b) Distribution: definition and effect of plasma protein binding. c) Metabolism: definition, phase I and phase II reactions. d) Elimination: definition and renal elimination.

Unit-II: Enzymes and Receptors **11Hrs**

S6-E-A-II: Enzymes: Introduction. Mechanism and factors affecting enzyme action, Specificity of enzyme action (including stereo specificity), Enzyme inhibitors and their importance. Types of inhibition - reversible, irreversible and their subtypes with examples.

Receptors: Introduction, Drug action-receptor theory, Mechanism of drug action, concept of agonists and antagonists with examples. Drug receptor interactions involved in drug receptor complex. binding role of –OH group, -NH₂ group, quaternary ammonium salts and double bond. Structure – activity relationships of drug molecules, explanation with sulfonamides.

Unit- III: Synthesis and Therapeutic Activity of Drugs **12Hrs**

S6-E-A-III: Introduction, synthesis and therapeutic activity of :

Chemotherapeutics: Sulphanilamide, dapsone, Pencillin-G (semi synthesis), Chloroquin, Isoniazid, Cisplatin and AZT.

Drugs to treat metabolic disorders: Anti diabetic - Tolbutamide; Antiinflammatoriory – Ibuprofen; Cardiovascular- Glyceryl trinitrate; Antipyretic (paracetamol, aspirin) and Antacid- Omeprazole.

Drugs acting on nervous system: Anesthetics-definition, Classification-local and general. Volatile- Nitrous oxide, chloroform uses and disadvantages. Local anesthetics – benzocaine.

Unit- IV: Molecular Messengers and Health Promoting Drugs **11Hrs**

S6-E-A-IV: Molecular Messengers: Introduction to hormones and neurotransmitters, Thyroid hormones, Antithyroid drug-Carbimazol. Adrenaline: Adrenergic drugs- salbutamol, atenelol. Serotonin: SSRIs- fluoxetine. Dopamine: Antiparkinson drug- Levodopa .

Health promoting drugs: Introduction, sources, Deficiency disorders and remedy of Vitamins A,B, C, D, E, K and micronutrients – Na, K, Ca, Cu, Zn and I .

Reference books

1. G.L. Patrick: Introduction to Medicinal Chemistry, Oxford University Press, New York. 2013.
2. Thomas Nogrady, Medicinal Chemistry, Oxford Univ. Press, New York.2005.
3. David William and Thomas Lemke, Foye’s Principles of Medicinal Chemistry, Lippincott Williams & Wilkins, 2008.
4. Ashutosh Kar Medicinal Chemistry, New Age International, 2005.
5. O.D.Tyagi & M.Yadav Synthetic Drugs by, Anmol Publications,1998.
6. Medicinal Chemistry by Alka L. Gupta, Pragati Prakashan.
7. G. L. David Krupadanam, D.Vijaya Prasad, K.Varaprasad Rao, K. L. N. Reddy, C. Sudhakar, Drugs, Universities Press (India) Ltd. 2012.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

ELECTIVE - A

LABORATORY COURSE
DSE: CHEMISTRY LAB –VIII
(Qualitative analysis of Organic Compounds)
(02 Hrs per week, 01 Credit) 30 Hrs

I. Qualitative Analysis of Organic Compounds

Identification of an organic compound through the functional group analysis. Determination of melting point and preparation of suitable derivatives.

Reference Books:

1. Vogel A I, Tatchell A R, Furnis B S, Hannaford A J & Smith P W G., *Textbook of Practical Organic Chemistry*, Prentice-Hall, 5th edition, 1996
2. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry* Orient-Longman, 1960.
3. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry*, Universities Press.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

ELECTIVE-B

DSE-IIB (T): AGRICULTURAL AND FUEL CHEMISTRY

(03 Hrs per week, 03 Credits) 45 Hrs

Unit I: Pesticides

12Hrs

S6-E-B-I: Introduction, Definition, classification of pesticides based on use (target). Toxicity and chemical structure with examples. Adverse effects of pesticides and its impact on environmental pollution. Synthesis, technical manufacture and uses of representative pesticides in the following classes: Organochlorines (Cypermethrin); Organophosphates (Parathion); Carbamates (carbaryl); Quinones (Chloranil), Anilides (Alachlor).

Pesticide formulations: Dusts, Granules, Wettable powders, Emulsions and Aerosols.

Biopesticides : Introduction: Potential pesticidal plants of India, Role of Neem in plant protection-constituents, Azadirachtin and its role in pest control, Structure and mode of action of Pyrethrins(pyrethrin-1) and Pyrethroids (permethrin) and nicotinoids (Imidacloprid).

Unit II: Fertilizers

11Hrs

S6-E-B-II: Introduction: (need of fertilizers), functions of essential plant nutrients (N, P, K), Classification formula and uses of fertilizers:

Nitrogenous fertilizers: Ammonium nitrate, Urea, Calcium Cyanamide, Calcium Ammonium Nitrate, Sodium Nitrate, Ammonium Chloride and their uses.

Phosphate fertilizers: Normal super phosphate, Triple Super Phosphate, Ammonium Phosphate and their uses.

Potassium fertilizers: Potassium chloride, potassium nitrate, potassium sulphate and uses.

Complex fertilisers: Diaammonium Phosphate and mixed fertilizers their uses. Manufacture of urea and Super phosphate of lime and their reactions in the soil.

Biofertilizers: Introduction, definition, classification, Rhizobium, Azatobactor, Azospirillum, Azolla, Blue Green Algae, Vermicomposting and uses.

Organic farming: The principal methods, crop rotation, green manures and compost, biological pest control, and mechanical cultivation and uses.

Unit III: Energy Sources and Coal

11Hrs

S6-E-B-III: Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value.

Coal: Uses of coal (fuel and nonfuel) in various industries, its composition, carbonization of coal. Coal gas, producer gas and water gas—composition and uses. Fractionation of coal tar, uses of coal tar bases chemicals, requisites of a good metallurgical coke, Coal gasification (Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining.

Unit IV: Petroleum, Petrochemical Industry and Lubricants

11Hrs.

S6-E-B-IV: Petroleum and Petrochemical Industry: Composition of crude petroleum, Refining and different types of petroleum products and their applications.

Fractional Distillation - Principle and process, Cracking -Thermal and catalytic cracking, Reforming of Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass), fuel from waste, synthetic fuels (gaseous and liquids), clean fuels. Petrochemicals: Vinyl acetate, Propylene oxide, Isoprene and their uses.

Lubricants: Classification of lubricants, Properties and functions of lubricants (viscosity index, point, pour point) and their determination. Lubricating oils (conducting and nonconducting) Solid and semisolid lubricants, synthetic lubricants.

Reference books:

1. N. N. Melnikov, Chemistry of pesticides; Springer-Verlag- Technology & Engineering (2012).
2. Thomas A. Unger Pesticide Synthesis Handbook; Elsevier, (2000).
3. R. Cremlyn Pesticides; John Wiley, 1980.
4. A. K. Kolay Manures and Fertilisers; Published by Atlantic (2007).
5. Stocchi, E. Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK (1990).
6. Jain, P.C. & Jain, M. Engineering Chemistry Dhanpat Rai & Sons, Delhi.
7. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Elective-B

LABORATORY COURSE

DSE: CHEMISTRY LAB –VIII

(Synthesis of Drugs & Organic Compounds)

(02 Hrs per week, 01 Credit) 30 Hrs

1. Preparation of Aspirin
2. Preparation of Paracetamol
3. Preparation of Acetanilide
4. Preparation of Barbituric Acid
5. Preparation of Antipyrine

Reference Books:

1. Medicinal Chemistry, Ashutoshkar, New Age International Ltd
2. Vogel's Text book of Organic Chemistry

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Elective-C

CHEMISTRY PAPER-VIII
DSE: GREEN CHEMISTRY
(03 Hrs per week, 03 Credits) 45 Hrs

UNIT-I **11Hrs**

S6-E-C-1: Introduction of Green Chemistry

Introduction- Definition of green Chemistry, need of green chemistry, basic principles of green chemistry. Green synthesis- Evaluation of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method: apparatus required examples of sonochemical reactions (Heck, Hundsdiecker and Wittig reactions).

UNIT-II **11 Hrs**

S6-E-C-2: Selection of Solvent

i) Aqueous phase reactions ii) Reactions in ionic liquids, Heckreaction, Suzuki reactions, epoxidation. iii) Solid supported synthesis

Super critical CO₂: Preparation, properties and applications, (decaffeination, dry cleaning)

UNIT-III **11Hrs**

S6-E-C-3: Microwave and Ultrasound assisted green synthesis

Apparatus required, examples of MAOS (synthesis of fused Anthraquinone, Leukart reductive amination of ketones) - Advantages and disadvantages of MAOS. Aldol condensation-Cannizzaro reaction-Diels-Alder reactions-Strecker's synthesis

UNIT-IV **12 Hrs**

S6-E-C-4: Examples of green synthesis / reactions and some real world cases:

1. Green synthesis of the following compounds: adipic acid , catechol , disodium imino di acetate (alternative Strecker's synthesis)

2. Microwave assisted reaction in water – Hoffmann elimination – methyl benzoate to benzoic acid – oxidation of toluene and alcohols – microwave assisted reactions in organic solvents. Diels-Alder reactions and decarboxylation reaction.

3. Ultrasound assisted reactions – sonochemical Simmons –Smith reaction (ultrasonic alternative to iodine)

Reference books

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia., Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M., Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications.

KAKATIYA UNIVERSITY
U.G. CHEMISTRY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Elective-C

LABORATORY COURSE

DSE: CHEMISTRY LAB –VIII (Preparation of Organic Compounds by Green Methods)

(02 Hrs per week, 01 Credit) 30 Hrs

1. Acetylation of 1^o amine by green method: Preparation of acetanilide
2. Rearrangement reaction in green conditions: Benzil-Benzilic acid rearrangement
3. Electrophilic aromatic substitution reaction: Nitration of phenol
4. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol
5. Green oxidation reaction: Synthesis of adipic acid
6. Green procedure for Diels Alder reaction between furan and maleic anhydride

Reference Books:

1. Green Chemistry Theory and Practice. P.T. Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 40

Unit – I ARITHMETICAL ABILITY

- 1.1 Arithmetical Ability:** Ratio & Proportion
- 1.2 Arithmetical Ability:** Time & Work, Time & Distance
- 1.3 Arithmetical Ability:** Simple Interest, Compound Interest
- 1.4 Arithmetical Ability:** Stocks & Shares

Unit – II DATA INTERPRETATION

- 2.1 Data Interpretation:** Tabulation
- 2.2 Data Interpretation:** Bar Graphs
- 2.3 Data Interpretation:** Pie Charts
- 2.4 Data Interpretation:** Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Plant Physiology

DSC-1F (3hrs./week)

Theory Syllabus

Credits-3
(45 hours)

Unit – I

1. Water Relations: Importance of water to plant life, physical properties of water, diffusion, imbibition, osmosis; water, osmotic and pressure potentials; absorption, transport of water, ascent of sap; transpiration; Stomatal structure and movements. (7h)
2. Mineral Nutrition: Essential macro and micro mineral nutrients and their role; symptoms of mineral deficiency. (3h)
3. Translocation of organic substances: Mechanism of phloem transport; source-sink relationships. (2h)

Unit – II

4. Enzymes: Nomenclature, characteristics, mechanism and regulation of enzyme action, enzyme kinetics, factors regulating enzyme action. (4h)
5. Photosynthesis: Photosynthetic pigments, absorption and action spectra; Red drop and Emerson enhancement effect; concept of two photosystems; mechanism of photosynthetic electron transport and evolution of oxygen; Factors effecting Photosynthesis, photophosphorylation (4h)
6. Carbon assimilation pathways: C₃, C₄ and CAM. (4h)

Unit – III

7. Respiration: Aerobic and Anaerobic; Glycolysis, Krebs cycle; electron transport system, mechanism of oxidative phosphorylation, pentose phosphate pathway. (6h)
8. Nitrogen Metabolism: Biological nitrogen fixation, nitrate reduction, ammonia assimilation, (GS-GOGAT, transamination) (4h)
9. Lipid Metabolism: Structure and function of lipids. (3h)

Unit – IV

10. Growth and Development: Physiological effects of phytohormones–Auxins, gibberellins, cytokinins, ABA, ethylene and Brassinosteroids (3h)
11. Physiology of flowering and photoperiodism. Role of Phytochrome in flowering. (3h)

12. Stress physiology: concept and plant responses to water, salt and temperature stresses (2h)

References:

1. Hopkins, W. G. 1995. Introduction to Plant Physiology. John Wiley & Sons Inc., New York, USA
2. Jain, J.L., S. Jain and Nitin Jain. 2008. Fundamentals of Biochemistry. S. Chand & Company Ltd., New Delhi.
3. Pandey, B. P. 2007. Botany for Degree Students: Plant Physiology, Biochemistry, Biotechnology, Ecology and Utilization of Plants. S. Chand & Company Ltd., New Delhi.
4. Salisbury, F. B. and C. W. Ross. 1992. Plant Physiology. 4th edn. (India Edition), Wordsworth, Thomson Learning Inc., USA.
5. Taiz, L. and E. Zeiger. 1998. Plant Physiology (2nd Ed.). Sinauer Associates, Inc., Publishers, Massachusetts, USA.
6. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Plant Physiology
Practical Syllabus

(45 hours)

1. Determination of osmotic potential of vacuolar sap by Plasmolytic method using leaves of *Rheodiscolor / Tradescantia.* (6h)
2. Determination of rate of transpiration using Cobalt chloride method (3h)
3. Determination of stomatal frequency using leaf epidermal peelings / impressions (6h)
4. Determination of catalase activity using potato tubers by titration method (6h)
5. Separation of chloroplast pigments using paper chromatography technique (12h)
6. Estimation of protein by Biurette method (6h)
7. Mineral deficiency- Detail study of Micronutrients and Macro nutrients (3h)
8. Identification of C₃, C₄ and CAM plants (3h)

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective I

A) Tissue Culture and Biotechnology

DSE-1F	(3 hrs./week)	Theory Syllabus	Credits-3 (45 hours)
Unit – I			
1.		Tissue culture: Introduction, sterilization procedures, explants, culture media – composition and preparation; Micropropagation.	(5h)
2.		Organ culture: Vegetative Organs-Root, Shoot, Leaf culture Reproductive Organs-Anther, Ovary, Ovule, Embryo culture	(6h)
3.		Callus culture, Cell and Protoplast culture	(4h)
Unit – II			
4.		Somatic hybrids and Cybrids.	(4h)
5.		Applications of tissue culture: Production of pathogen free plants and somaclonal variants, production of stress resistance plants, secondary metabolites and synthetic seeds.	(6h)
6.		Production of hairy roots and its applications in production of secondary metabolites.	(2h)
Unit – III			
7.		Biotechnology: Introduction, history, scope and applications.	(3h)
8.		rDNA technology: Basic aspect of of gene cloning, Enzymes used in gene cloning – Restriction enzymes, Ligases, Polymerases.	(4h)
9.		Gene cloning-Vectors – cloning vehicles (Plasmid , Cosmids, Bacteriophages, & Phasmids) application of r DNA technology.	(5h)
Unit – IV			
10.		Gene Libraries: Genomic Libraries, cDNA Libraries, Polymerase chain reaction and its applications.	(4h)
11.		Method of gene transfer in plants (<i>Agrobacterium</i> and Microprojectile)	(4h)
12.		Production of transgenic plants, Bt –application in cotton and brinjal. Application of Transgenic in crop improvement.	(3h)

References:

1. Balasubramanian, D., C. F. A. Bryce, K. Dharmalingam, J. Green and K. Jayaraman. 2004.
2. Biotechnology. Universities Press (India) Private Limited, Hyderabad.
3. Channarayappa. 2007. Molecular Biotechnology – Principles and Practices. Universities Press
4. (India) Private Limited, Hyderabad.
5. Chawala, H. S. 2002. Introduction to Plant Biotechnology. Oxford & IBH Publishing Company,
6. New Delhi.
7. Dubey, R. C. 2001. A Textbook of Biotechnology. S. Chand & Company Ltd., New Delhi
8. Edmond, J. B., T. L. Senn, F. S. Adrews and R. J. Halfacre. 1977..
9. Jha, T.B. and B. Ghosh. 2005. Plant Tissue Culture – Basic and Applied. Universities Press
(India)
10. Private Limited, Hyderabad..
11. Ramawat, K. G. 2008. Plant Biotechnology. S. Chand & Company Ltd., New Delhi.
12. Salisbury, F. B. and C. W. Ross. 1992. Plant Physiology. 4th edn. (India Edition), Wordsworth,
13. Thomson Learning Inc., USA..

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective I

A) Tissue Culture and Biotechnology
Practical Syllabus

1. Estimation of plant DNA. (Tomato) (6h)
2. Production of synthetic seeds /Encapsulation of embryo (3 h)
3. Preparation of plant tissue culture medium. (6h)
4. Callus Micropropagation (3h)
5. Demonstration of Micropropagation/ multiple shoots (6h)
6. Anther culture (3 h)
7. PCR –Demonstration (3h)
8. Study of biotechnology products: Samples of antibiotics and vaccines (6h)
9. Photographs of transgenic plants – Bt Cotton, Bt –Brinjal. (3h)
10. Instruments used in Biotechnology lab- Autoclave, Laminar air flow, Hot air oven and Incubator. (6h)

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective

B) Seed Technology

DSE-1F (3 hrs./week)

Theory Syllabus

Credits-3
(45 hours)

Unit – I

1. Seed: Structure and types. Seed dormancy: causes and methods of breaking dormancy. (4h)
2. Seed storage: Long term and short term storage. Orthodox and recalcitrant seeds.
Packing of seeds – Principles, practices, bagging and labeling. (3h)
3. Physico and Bio-chemical changes during seed storage. (2h)

Unit – II

4. Seed viability, factors affecting seed viability and genetic erosion. (3h)
5. Cultural practices and harvesting of Seed: Isolation, Sowing, Cultural practices, harvesting and threshing of the following crops: (a) Rice, (b) Cotton, (c) Sunflower (9h)
6. Seed Treatment to control seed borne disease –General account (3h)

Unit – III

7. Structure of pollen and ovule-Types of ovules, Collection and storage of pollen (3h)
8. Principles of hybrid seed production-Cross pollination, Emasculation, Self pollination, role of pollinators and their management. (5h)
9. Seed development in cultivated plants, seed quality concept, importance of genetic purity of seed. Hybrid seed production and Heterosis. (4h)

Unit – IV

10. Seed production technology; seed testing- Procedures of seed testing, seed testing laboratories and importance of seed testing. (3h)
11. Seed certification- History, Seed certification agency, Indian minimum, general and specific seed certification standard. (3h)
12. Seed banks- National, International and Millennium seed banks. (3h)

References:

1. Agrawal, P. K. 1993. Hand Book of Seed Technology. Dept. of Agriculture and Cooperation. National Seed Corporation Ltd., New Delhi
2. Balasubramanian, D., C. F. A. Bryce, K. Dharmalingam, J. Green and K. Jayaraman. 2004. Biotechnology. Universities Press (India) Private Limited, Hyderabad.
3. Bedell, Y. E. Seed Science and Technology. Indian Forest Species. Allied Publishers Limited, New Delhi.
4. Channarayappa. 2007. Molecular Biotechnology – Principles and Practices. Universities Press (India) Private Limited, Hyderabad.
5. Chawala, H. S. 2002. Introduction to Plant Biotechnology. Oxford & IBH Publishing Company, New Delhi.
6. Dubey, R. C. 2001. A Textbook of Biotechnology. S. Chand & Company Ltd., New Delhi
7. Edmond, J. B., T. L. Senn, F. S. Adrews and R. J. Halfacre. 1977..
8. Hartman, H. T. and D. E. Kestler. 1976. Plant Propagation: Principles and Practices. Prentice & Hall of India, New Delhi.
9. Jha, T.B. and B. Ghosh. 2005. Plant Tissue Culture – Basic and Applied. Universities Press (India) Private Limited, Hyderabad..
10. Ramawat, K. G. 2008. Plant Biotechnology. S. Chand & Company Ltd., New Delhi.
11. Salisbury, F. B. and C. W. Ross. 1992. Plant Physiology. 4th edn. (India Edition), Wordsworth, Thomson Learning Inc., USA..
12. Tiwari, G. N. and R. K. Goal. Green House Technology – Fundamentals, Design, Modelling and Application. Narosa Publishing House, New Delhi.
13. Tunwar, N. S. and S. V. Singh. 1988. Indian Minimum Seed Certification Standards. The Central Seed Certification Board, Govt. of India, New Delhi.

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective

B) Seed Technology Practical syllabus

(45 hours)

1. Testing of seed viability using 2, 3, 5-triphenyl tetrazolium chloride (TTC). (3h)
2. Estimation of amylase activity of germinating seeds (Qualitatively). (3h)
3. Demonstration of seed dressing using fungicides to control plant diseases. (3h)
4. Demonstration of seed dressing using Biofertilizers (BGA) to enrich nutrient supply. (3h)
5. Emasculation, bagging of flower for hybrid seed production. (6h)
6. Dissection of Dicot embryo (bean) and Monocot embryo (maize). (6h)
7. Pollen viability test using Evan's blue staining. (*Hibiscus*). (3h)
8. Harvesting and Importance of following seeds:
Rice,
Maize,
Cotton,
Groundnut and
Sunflower. (6h)
9. Types of ovules: Orthotropous, Anatropous and Campylotropous. (3h)
10. Structure of pollen grains: *Hibiscus* and grass. (3h)
11. Study visits to research institutes, seed tests and certification laboratories and places seed banks. (6h)

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective

C) Bio-Control of Plant Diseases and Pests

DSE-1F	(3 hrs./week)	Theory Syllabus	Credits-3 (45 hours)
Unit – I			
1.		Introduction to various approaches to the control of Pests and Diseases of Plants	(4h)
2.		Biological Control of Fungal Diseases	(3h)
3.		Biological Control of Bacterial and Viral Diseases of Plants	(4h)
Unit – II			
4.		Pheromones and Semi-chemicals	(4h)
5.		Botanical Insecticides	(3h)
6.		Plant Parasitic Nematodes: Introduction, Susceptible response of Plants to Nematodes and Control of Nematodes	(4h)
Unit – III			
7.		Progress towards commercialization of Baculovirus Insecticides	(4h)
8.		Biology of Bacteria and Fungi used for control of Weeds	(4h)
9.		Genetic Engineering approaches for Weed Resistance	(4h)
Unit – IV			
10.		Integrated Pest management Strategies	(4h)
11.		Insect Growth Regulators	(3h)
12.		Regulatory aspects of Biological Control Agents	(4h)

References:

- 1) Campbell R. 1989. Biological Control of Microbial Plant Pathogens. Cambridge Univ. Press, Cambridge.
- 2) Cook RJ & Baker KF. 1983. Nature and Practice of Biological Control of Plant Pathogens. APS, St. Paul, Minnesota.
- 3) Dhaliwal GS and Arora R.1994. Trends in Agriculture insect pest management. Common wealth Publishers, New Delhi.
- 4) Fokkema MJ. 1986. Microbiology of the Phyllosphere. Cambridge Univ. Press, Cambridge.
- 5) Gnanamanickam SS (Eds). 2002. Biological Control of Crop Diseases. CRC Press, Florida.
- 6) Heikki MT & Hokkanen James M (Eds.). 1996. Biological Control - Benefits and Risks. Cambridge Univ. Press, Cambridge.
- 7) Mukerji KG, Tewari JP, Arora DK & Saxena G. 1992. Recent Developments in Biocontrol of Plant Diseases. Aditya Books, New Delhi.
- 8) Mukherji KG and Chincholkar SB.2006. Biological control of plant diseases. Heaworth Food and Agricultural Products Press, New Delhi.
- 9) Sharma PD.1993.Environmental Biology and Toxicology. Rastogi and company

KAKATIYA UNIVERSITY
U.G. BOTANY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective

C) Bio-Control of Plant Diseases and Pests
Practical Syllabus

(45 hours)

1. Extraction of Biopesticide from *Neem/Annona*. (6h)
2. Extraction of Biopesticide from *Tagetes/Chrysanthemum*. (6h)
3. Formulation of Biopesticide from fungal organism (*Trichoderma* spp.). (6h)
4. Formulation of Biopesticide from Bacteria (*Bacillus thuringiensis/Pseudomonas* spp.)(9h)
5. Improved technique and staining of plant tissues for detection of plant nematodes.(6h)
6. Identification of disease based on the histo-pathogenesis. (6h)
7. Formulation of viral Biopesticide (*Nuclear Polyhedrosis Virus*) (6h)

KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 40

Unit – I ARITHMETICAL ABILITY

1.1 Arithmetical Ability: Ratio & Proportion

1.2 Arithmetical Ability: Time & Work, Time & Distance

1.3 Arithmetical Ability: Simple Interest, Compound Interest

1.4 Arithmetical Ability: Stocks & Shares

Unit – II DATA INTERPRETATION

2.1 Data Interpretation: Tabulation

2.2 Data Interpretation: Bar Graphs

2.3 Data Interpretation: Pie Charts

2.4 Data Interpretation: Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER - VI

Elements of Scripting Languages

Unit I

HTML, Browsers and their types, URL's, web sites, Domain Names, static and dynamic sites and active web pages, Files Creation, Web Server, Web Client/Browser Hyper Text Markup Language, HTML Tags, Paired Tags, Commonly used HTML Commands Titles and Footers, Paragraph Breaks, Line Breaks, Heading Styles, Drawing Lines, Text Styles, Other Text Effects, Indenting Text, Lists, Types of Lists.

Unit II

Using the Border attribute, Using the Width and Height Attribute, Using the Align Attribute, Tables - Header, Data rows, The Caption Tag, Attributes - Width and Border, BGCOLOR, COLSPAN, ROWSPAN, External Document References, Internal Document References, Images as Hyperlinks, Introduction to Frames, tag, <FRAME> tag.

DHTML Introduction, use and its elements, Cascading Style Sheets – Introduction, Using Inline Styles, Sample Examples, Defining Your Own Styles, Properties in Values in Styles, A worked example, Formatting Blocks of Information, Layers, Embedded Style Sheets, Linking external sheets.

Unit III

JavaScript, Advantages, JavaScript Syntax, Data Types and Literal, Type Casting, Variables, Incorporating variables in a Script, Array, Operators and Expressions, Arithmetic Operators, Logical Operators, Comparison Operators, String Operators, Assignment Operators, Conditional Expression, Ternary and Special Operators

JavaScript Programming Constructs, If - then - else, Immediate If, For Loop, Built-in Functions, User Defined functions, Declaring functions, Place of Declaration, Passing Parameters, Variable Scope, Return Values, Recursive Functions, Placing text in a Browser, Dialog Boxes - Alert dialog box, Prompt dialog box, Confirm dialog box.

Unit IV

The Form Object, The Form Object's Methods, Text Element, Password Element, Button Element, Submit Button Element, Reset Button Element, Checkbox Element, Radio Element, Text Area Element, Select and Option Element, Multi Choice Select Lists Element, Form Validations using JavaScript.

Built-In Objects in JavaScript - String, Math, Date Object, Creating a User Defined Object.

Text Books:

1. Web Programming –Chris Bates – Third Edition.(Wiley)
2. Internet & World Wide Web- H. M. Deitel, P.J. Deitel, A. B. Goldberg-Third Edition

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER - VI

Elements of Scripting Language Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
 - External Vice-Voce is compulsory.
1.
 - a. Write a HTML program using basic text formatting tags, <p>,
, <pre>.
 - b. Write a HTML page for Example Cafe using above text formatting tags.
 2.
 - a. Write a HTML program using presentational element tags , <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
 - b. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
 3.
 - a. Write a HTML program using different list types.
 - b. Write a HTML page that displays ingredients and instructions to prepare a recipe.
 4.
 - a. Write a HTML program using grouping elements <div> and .
 - b. Write a HTML Menu page for Example cafe site.
 5.
 - a. Write a HTML program using images, audios, videos.
 - b. Write a HTML program to create your time table.
 6. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
 7. Write a HTML program to create frames and links between frames.
 8. Write a HTML program to create different types of style sheets.
 9. Write a HTML program to create CSS on links, lists, tables and generated content.
 10. Write a HTML program to create your college web site using multi column layouts.
 11. Write a HTML program to create your college web site using for mobile device.
 12. Write a HTML program to create login form and verify username and password.
 13.
 - a. Write a JavaScript program to calculate area of rectangle using function.
 - b. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
 14.
 - a. Write a JavaScript program using switch case?
 - b. Write a JavaScript program to print multiplication table of given number using loop.
 15.
 - a. Write a JavaScript programs using any 5 events.
 - b. Write a JavaScript program using JavaScript built in objects.
 16. Write a JavaScript program to create registration Form with Validations.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER - VI

Elective 2

A) Operating Systems

Unit I

Introduction: Computer-System Architecture, Computing Environments.

Operating-System Structures: Operating-System Services, User Interface for Operating-System, System Calls, Types of System Calls, Operating System Structure.

Process Management: Process Concept, Process Scheduling, Operations on Processes, Inter process Communication, Examples–Producer-Consumer Problem.

Unit II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.

Process Synchronization: Critical-Section Problem, Peterson’s Solution, Synchronization, Semaphores, Monitors.

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Unit III

Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging.

Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing.

Unit IV

Mass-Storage Structure: Overview, Disk Scheduling, RAID Structure.

File Systems: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, Protection. File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management.

Text Book:

Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts (9e)

References:

1. Naresh Chauhan, Principles of Operating Systems
2. Thomas W. Doepner, Operating Systems in Depth
3. Andrew S. Tanenbaum, Modern Operating Systems
4. William Stallings, Operating Systems – Internals and Design Principles
5. Dhananjay M. Dhandhere, Operating Systems – A Concept Based Approach

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

A.) Operating Systems Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1.
 - a) Use vi editor to create different files, writing data into files, modifying data in files.
 - b) Use different types of Unix commands on the files created in first program.
2. Write shell programs using 'case', 'then' and 'if' & 'else' statements.
3. Write shell programs using while, do-while and for loop statements.
4.
 - a) Write a shell script that accepts two integers as its arguments and compute the value of first number raised to the power of the second number.
 - b) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.
5.
 - a) Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers..
 - b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
6.
 - a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
 - b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.
7. Write a program to simulate the UNIX commands like ls, mv, cp.
8. Write a program to convert upper case to lower case letters of a given ASCII file.
9. Write a program to program to search the given pattern in a file.
10. Write a program to demonstrate FCFS process schedules on the given data.
11. Write a program to demonstrate SJF process schedules on the given data.
12. Write a program to demonstrate Priority Scheduling on the given burst time and arrival times.
13. Write a program to demonstrate Round Robin Scheduling on the given burst time and arrival times.
14. Write a program to implementing Producer and Consumer problem using Semaphores.
15. Write a program to simulate FIFO, LRU, LFU Page replacement algorithms.
16. Write a program to simulate Sequential, Indexed and Linked file allocation.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

B) PHP with My SQL

Unit I

Introducing PHP – What is PHP? Why use PHP? Evolution of PHP, Installing PHP, Other ways to run PHP, Creating your first script.

PHP Language Basics – Using variables, Understanding Data Types, Operators and Expressions, Constants. Decisions and Loops – Making Decisions, Doing Repetitive Tasks with Looping, Mixing Decisions and Looping with HTML.

Unit II

Strings – Creating and Accessing Strings, Searching Strings, Replacing Text with Strings, Dealing with Upper and Lowercase, Formatting Strings. Arrays – Creating Arrays, Accessing Array Elements, Looping Through Arrays with for-each, Working with Multidimensional Arrays, Manipulating Arrays.

Functions – What is a Function? Why Functions are useful? Calling Functions, Working with Variable Functions, Writing your own Functions, Working with References, Writing Recursive Functions.

Unit III

Objects – Introduction OOP Concepts, Creating Classes and Objects in PHP, Creating and using Properties, Working with Methods, Object Overloading with `_get()`, `_set()` and `_call()`, Using Inheritance to Extend Power of Objects, Constructors and Destructors, Automatically Loading Class Files, Storing as Strings.

Handling HTML Forms with PHP – How HTML form works, Capturing Form Data with PHP, Dealing with Multi-Value Fields, Generating Web Forms with PHP, Storing PHP Variables in Forms, Creating File Upload Forms, Redirecting After a Form Submission.

Unit IV

Working with Files and Directories - Getting Information on Files, Opening and Closing Files, Reading and Writing to Files, Copying, Renaming, and Deleting Files, Working with Directories.

Introducing Databases and SQL – Deciding How to Store Data, Understanding Relational Databases, Setting Up MySQL, A Quick Play with MySQL, Connecting MySQL from PHP.

Retrieving Data from MySQL with PHP – Setting Up the Book Club Database, Retrieving Data with SELECT, Creating a Member Record Viewer. Manipulating MySQL Data with PHP – Inserting, Updating, and Deleting Records, Building a Member Registration Application.

Text Book:

Matt Doyle, Beginning PHP 5.3 (Wrox – Wiley Publishing)

References:

1. Ellie Quigley, PHP and MySQL by Example
2. Joel Murach, Ray Harris, Murach's PHP and MySQL
3. Brett McLaughlin, PHP & MySQL: The Missing Manual
4. Luke Welling, Laura Thomson, PHP and MySQL Web Development
5. W. Jason Gilmore, Beginning PHP and MySQL From Novice to Professional
6. Andrew Curioso, Ronald Bradford, Patrick Galbraith, Expert PHP and MySQL

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

B.) PHP with My SQL Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1.

- a) Write a PHP script to find the factorial of a given number.
- b) Write a PHP script to find the sum of digits of a given number.

2.

- a) Write a PHP script to find whether the given number is a prime or not.
- b) Write a PHP script to demonstrate the use of break, continue statements using nested loops.

3.

- a) Write a PHP script to display the Fibonacci sequence with HTML page.
- b) Write a PHP script to create a chess board.

4.

- a) Write a PHP script using built-in string function like strstr(), stripslashes(), substr_count(), etc...
- b) Write a PHP script to transform a string to uppercase, lowercase letters, make a string's first Character uppercase.

5.

- a) Write a PHP script that inserts a new item in an array in any position.
- b) Write a PHP function to check whether all array values are strings or not.

6.

- a) Write a PHP script to count number of elements in an array and display a range of array elements.
- b) Write a PHP script to sort a multi-dimensional array set by a specific key.

7.

- a) Write a PHP script using a function to display the entered string in reverse.
- b) Write a PHP script using function for sorting words in a block of text by length.

8.

- a) Write a PHP script for creating the Fibonacci sequence with recursive function.
- b) Write a PHP script using pass by value and pass by reference mechanisms in functions.

9.

- a) Write a PHP script to demonstrate defining and using object properties.
- b) Write a PHP script to demonstrate inheritance.

10.
 - a) Write a PHP script to demonstrate the object overloading with `_get()`, `_set()`, and `_call()`.
 - b) Write a PHP script to demonstrate the overloading property accesses with `_get()` and `_set()`.
11.
 - a) Write a PHP script to demonstrate the method overloading and method overriding mechanisms.
 - b) Write a PHP script to demonstrate the use of final classes and final methods.
12.
 - a) Write a PHP script to demonstrate the use of interfaces.
 - b) Write a PHP script using constructors and destructors.
13. Write a PHP application to handling HTML forms with PHP script.
14.
 - a) Write a PHP script to create a file, write data into file and display the file's data.
 - b) Write a PHP script to check and change file permissions, copying, renaming and deleting files.
15.
 - a) Write a PHP application for connecting to MySQL and reading data from database table.
 - b) Write a PHP application for inserting, updating, deleting records in the database table.
16. Write a PHP application for student registration form.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

C) Cryptography

Unit I

Introduction: Security Trends, Security Attacks, Security Services, Security Mechanisms, Model for Network Security, Symmetric Ciphers: Classical Encryption Techniques, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography.

Unit II

Data Encryption Standard: Block Cipher Principles, The Data Encryption Standard, The Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles. Advanced Encryption Standard: Evaluation Criteria For AES, The AES Cipher.

Unit III

Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, the RSA Algorithm, Public-Key Cryptosystems: Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic, Elliptic Curve Cryptography.

Unit IV

Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs.

Digital Signatures and Authentication Protocols: Digital Signatures, Kerberos, X.509 Authentication Service, Public-Key Infrastructure.

Text Books:

1. W. Stallings, Cryptography and Network Security Principles and Practices, 4th Ed., Prentice-Hall of India, 2006.

References

1. C. Pfleeger and S.L. Pfleeger, Security in Computing, 3rd Ed., Prentice- Hall of India, 2007.
2. M.Y. Rhee, Network Security, John Wiley and Sons, NY, 2002.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

C) Cryptography Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Implement various cryptography techniques.
2. Implement the Pure Transposition Cipher
3. Implement Additive cipher
4. Implement DES Encryption and Decryption
5. Implement double transposition cipher
6. Implement RSA Encryption Algorithm
7. Implement RSA algorithm to achieve confidentiality
8. Implement RSA algorithm to create Digital Signatures
9. Implementation of Hash Functions
10. Implement Diffie Hellman Key Exchange.

**** The above programs can be implemented either in 'C' or in C++ or in Java.**

KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 40

Unit – I ARITHMETICAL ABILITY

- 1.1 Arithmetical Ability:** Ratio & Proportion
- 1.2 Arithmetical Ability:** Time & Work, Time & Distance
- 1.3 Arithmetical Ability:** Simple Interest, Compound Interest
- 1.4 Arithmetical Ability:** Stocks & Shares

Unit – II DATA INTERPRETATION

- 2.1 Data Interpretation:** Tabulation
- 2.2 Data Interpretation:** Bar Graphs
- 2.3 Data Interpretation:** Pie Charts
- 2.4 Data Interpretation:** Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics)- III Year
Semester – VI
Paper – VII:: Modern Physics
(DSC – Compulsory)
(w.e.f the academic year 2018-2019)

42 hrs
(3 hrs / week)

UNIT-I (11 hrs)

Atomic Spectra and Models - Inadequacy of classical physics:

Brief review of black body radiation, Photoelectric effect, Compton effect, dual nature of radiation, wave nature of particles. Atomic spectra, Line spectra of hydrogen atom, Ritz -Rydberg combination principle. Alpha particle scattering, Rutherford scattering formula, Rutherford model of atom and its limitations, Bohr's model of hydrogen atom, explanation of atomic spectra, correction for finite mass of the nucleus, Bohr correspondence principle, limitations of Bohr model, discrete energy exchange by atom, Frank Hertz experiment. Sommerfeld's modification of Bohr's theory.

UNIT-II (11 hrs)

Wave particle duality, de-Broglie hypothesis, Experimental confirmation of matter wave, Davisson-Germer experiment, velocity of de-Broglie wave, wave particle duality, Complementarity. Superposition of two waves, phase velocity and group velocity, wave packets, Gaussian wave packet, spatial distribution of wave packet, Localization of wave packet in time. Time development of a wave Packet; Heisenberg uncertainty Principle, Illustration of the principle through thought experiments of Gamma ray microscope and electron diffraction through a slit. Time-independent Schroedinger wave equation and its application to linear harmonic oscillator.

UNIT-III (9 hrs)

Nuclear physics: Size and structure of atomic nucleus and its relation with atomic weight; Impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Nature of nuclear force, NZ graph, Liquid-drop model: semi-empirical mass formula and binding energy, Nuclear shell model and magic numbers.

Unit IV(11 hrs)

Radioactivity: stability of the nucleus; Law of radioactive decay; Mean life and half-life; Alpha decay; Beta decay- energy released, spectrum and Pauli's prediction of neutrino; Gamma ray emission, energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus. Fission and fusion - Mass defect, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with Uranium 235; Fusion and thermonuclear reactions driving stellar energy (brief qualitative discussion).

Text Books:

1. Introduction to Atomic spectra – H. E. White, McGraw-Hill
2. Nuclear Physics – D. C. Tayal, Himalaya Publishing House
3. Quantum Theory and Nuclear Physics – V. K. Srivastava, ABD Publisher, Jaipur
4. Concepts of Modern Physics, Arthur Beiser, 2002, McGraw-Hill.
5. Modern Physics ---Murugesan and Sivaprasad --(S. Chand Higher Academics)



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl

Date: 24th Aug., 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

6. Introduction to Modern Physics, Rich Meyer, Kennard, Coop, 2002, Tata McGraw Hill
7. Introduction to Quantum Mechanics, David J. Griffith, 2005, Pearson Education.
8. Physics for scientists and Engineers with Modern Physics, Jewett and Serway, 2010, Cengage Learning.
9. Quantum Mechanics: Theory & Applications, A. K. Ghatak & S. Lokanathan, 2004, Macmillan

Reference Books

1. Modern Physics – Bernstein, Fishbane and Gasiorowicz (Pearson India) 2010
2. Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles -- R. Eisberg (Wiley India) 2012 Additional Books for Reference
3. Modern Physics, J.R. Taylor, C.D. Zafiratos, M.A. Dubson, 2004, PHI Learning.
4. Basic ideas and concepts in Nuclear Physics, K.Heyde, 3rd Edn., Institute of Physics Pub.
5. Six Ideas that Shaped Physics: Particle Behave like Waves, T.A.Moore, 2003, McGraw Hill
6. Modern Physics-Serway (CENGAGE Learnings) 2014



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B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics Practical) – III year Semester – VI Paper: VII: Modern Physics Lab

1. Measurement of Planck's constant using black body radiation and photo-detector
2. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
3. To determine the Planck's constant using LEDs of at least 4 different colors.
4. To determine the ionization potential of mercury.
5. To determine the absorption lines in the rotational spectrum of Iodine vapour.
6. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
7. To setup the Millikan oil drop apparatus and determine the charge of an electron.
8. To show the tunneling effect in tunnel diode using I-V characteristics.
9. To determine the wavelength of laser source using diffraction of single slit.
10. To determine the wavelength of laser source using diffraction of double slits.
11. To determine (1) wavelength and (2) angular spread of He-Ne laser using plane diffraction grating
12. To determine the value of e/m for electron by long solenoid method.
13. Photo Cell – Determination of Planck's constant.
14. To verify the inverse square law of radiation using a photo-electric cell.
15. To find the value of photo electric work function of a material of the cathode using a photo-electric cell.
16. Measurement of magnetic field – Hall probe method.
17. To determine the dead time of a given G.M. tube using double source.
18. Hydrogen spectrum – Determination of Rydberg's constant
19. Energy gap of intrinsic semi-conductor
20. G. M. Counter – Absorption coefficients of a material.
21. To draw the plateau curve for a Geiger Muller counter.
22. To find the half-life period of a given radioactive substance using a G.M. Counter.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Edn, 2011, Kitab Mahal

Note: Minimum of eight experiments should be performed.



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B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics)- III Year Semester – VI Paper – VIII(A):: Basic Electronics (DSE– Elective-1)

42 hrs
(3 hrs / week)

Unit-I: (10 Hrs)

Network Elements and Network Theorems

Passive elements, Power sources, Active elements, Network models: T and Transformations, Superposition theorem, Thevenin's theorem, Norton's theorem. Reciprocity theorem and Maximum power transfer theorem (Simple problems).

Two-port Networks – Introduction - Z-parameters, Y-parameters, h-parameters and ABCD-parameters (Simple problems).

Unit – II: (10 Hrs)

Band theory of P-N junction

1. Energy band in solids (band theory), valence band, conduction band and forbidden energy gap in solids, insulators, semi conductors and pure or intrinsic semiconductors and impure or extrinsic semiconductors. N-type semi-conductors, P-type semi-conductors, Fermi level, continuity equation.

2. **Diodes:** P-N junction diode, Half-wave, full-wave and bridge rectifier. Zener diode & its characteristics. Zener diode as voltage regulator.

Unit-III: (11 Hrs)

1. **Bipolar Junction Transistor (BJT)** – p-n-p and n-p-n transistors, current components in transistors, CB, CE and CC configurations – transistor as an amplifier - RC coupled amplifier – Frequency response (Qualitative analysis).

2. **Feedback concept & Oscillators:** Feedback, General theory of feedback – Concepts of oscillators, Barkhausen's criteria, Phase shift oscillator – Expression for frequency of oscillation.

Unit-IV: (11 Hrs)

1. Digital Electronics

Binary number system, conversion of binary to decimal and vice-versa. Binary addition and subtraction (1 's and 2 's complement methods). Hexadecimal number system. Conversion from binary to hexadecimal and vice-versa, Decimal to hexadecimal and vice-versa.

2. Logic gates:

OR, AND, NOT gates, truth tables, realization of these gates using discrete components. NAND, NOR as universal gates, Exclusive – OR gate (EX-OR). De Morgan's Laws – Statement and proof.

NOTE: Problems should be solved from every chapter of all units.

Textbooks

1. Electronic devices and circuits – Millman and Halkias. *Mc.Graw-Hill Education*.
2. Principles of Electronics by V.K. Mehta – *S. Chand & Co.*
3. Basic Electronics (Solid state) – B. L. Theraja , *S. Chand & Co.*



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Date: 24th Aug., 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

4. A First Course in Electronics- Anwar A. Khan&Kanchan K. Dey, PHI.

Reference Books

1. Basic Electronics – BernodGrob.
2. Third year Electronics – Telugu Academy
3. Digital Principles & Applications – A.P. Malvino and D.P. Leach
4. Circuit theory- Umesh.

B.Sc. (Physics Practical) – III year Semester – VI Paper: VIII(A): Basic Electronics Lab

1. AND, OR, NOT, gates – Truth table Verification
2. AND, OR, NOT – gates constructions using universal gates – Verification of truth tables.
3. NAND and NOR gates truth table verification
4. Characteristics of a Transistor in CE configuration
5. R.C. coupled amplifier – frequency response.
6. Verification of De Morgan's Theorem.
7. Zener diode V-I characteristics.
8. P-n junction diode V- I characteristics.
9. Zener diode as a voltage regulator
10. Construction of a model D.C. power supply
11. R C phase shift Oscillator –determination of output frequency



Every student should complete minimum 06 experiments.

Text Books for LAB (Practical 6)

1. B.Sc. Practical Physics – C. L. Arora – S. Chand & Co.
2. Viva-voce in Physics – R.C. Gupta, PragathiPrakashan, Meerut.
3. Laboratory manual for Physics Course by B.P. Khandelwal.
4. Practical Physics by M. Arul Thakpathi by Comptex Publishers.
5. B.Sc. practical physics – Subbi Reddy.

Note: Minimum of eight experiments should be performed.



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B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics)- III Year Semester – VI Paper – VIII (B):: Physics of Semiconductor Devices (DSE – Elective-2)

42 hrs
(3 hrs / week)

Unit-I: (11 hrs)

Semiconductor Physics: Conductors, semiconductors, forbidden gap, energy levels, crystals and covalent bonds, free electrons and holes, recombination and life-time, energy bands. Intrinsic semiconductor - intrinsic carrier concentration, density of electrons in conduction band, Fermi-level, Mass action law. Carrier transport phenomena - mobility, resistivity, diffusivity, Einstein's relation, current density equation. Extrinsic semiconductor - n-type semiconductor, p-type semiconductor, energy band diagram of extrinsic semiconductor. Hall effect- mobility and Hall angle, experiment arrangement for the study of Hall effect, significance of Hall effect.

Unit – II: (11 hrs)

P-N junction - Depletion layer, Energy level diagram of p-n junction, Band structure of an open circuited p-n junction, Biasing of p-n junction, effect of barrier potential on forward bias, reverse leakage current, reverse breakdown, p-n junction under various conditions - thermal equilibrium, forward and reverse bias, current-voltage characteristics. Derivation of ideal diode equation of p-n junction, diode model and its approximations. Forward and reverse resistance of diode. Dynamic characteristic of diode.

Unit-III: (10 hrs)

Special diodes – Construction and characteristics of Zener diode, Light emitting diode (LED), Photo-diode, Schottky diode, Backward diodes and Tunnel diode.

Transistors - Bipolar junction transistor (BJT), transistor characteristics, transistor equation in active region, Field effect transistor (FET), MOSFET and photo transistor.

Unit-IV: (10 hrs)

Control devices- Shockley diode, Silicon controlled rectifier (SCR), Silicon controlled switch (SCS), Unijunction transistor (UJT), Solar cells, Opto-couplers.

Textbooks

1. A First Course in Electronics- Anwar A. Khan&Kanchan K. Dey, PHI
2. Physics of Semiconductor Devices- S. M. Sze
3. Physics of Semiconductors- Streetman.



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Date: 24th Aug., 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal
CBCS pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics Practical) – III year
Semester – VI
Paper: VIII (B): Physics of Semiconductor Devices Lab

1. Characteristics of a Transistor in CE configuration
2. Zener diode V-I characteristics.
3. P-n junction diode V- I characteristics.
4. Zener diode as a voltage regulator
5. Determination of carrier concentration using Hall effect
6. Thermistor characteristics
7. Efficiency of a LED
8. Solar cell: fill factor and efficiency
9. FET characteristics
10. SCR characteristics
11. UJT characteristics



Every student should complete minimum 06 experiments.

Text Books:

1. Basic electronics - Grob
2. Practical Electronics – Zbar

A handwritten signature in black ink, appearing to read 'B. Venkatram Reddy'.

Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics) – III year

Semester – VI

(DSE – Elective-3)

Paper: VIII (C): ELECTRONIC INSTRUMENTATION

42 hrs

(3 hrs / week)

Unit- I(10 hrs)

Qualities of Measurement: Specifications of instruments, their static and dynamic characteristics, errors in measurement, types of static error, sources of error, dynamic characteristics and statistical analysis.

Basic Measurement Instruments: DC measurement: dc voltmeter, ohmmeter and ammeter. Digital type voltmeter, Ammeter and ohmmeter, Digital multimeter.

Unit –II (10 hrs)

AC measurement: AC voltmeter & ammeter.

Digital frequency meter: Elements of frequency meter, universal counter and its different modes, measurement errors and extending the frequency range. Digital LCR-Q meter, digital wattmeter.

Unit-III (11 hrs)

Signal Generators: Types of generators and their operation: Audio oscillator, Function generators, Pulse generators, RF generators.

Electronic Displays: The Cathode Ray Oscilloscope (CRO): Block diagram of a General Purpose Oscilloscope and its basic operation, electrostatic focusing and deflection, screen for CRT, CRT connections, CRO probes.

Unit –IV (11 hrs)

Transducers: Various types of transducers for measurement of displacement, speed, stress and strain. Classification and selection of transducers. Strain Gages: bonded and un-bonded strain gages, strain gage transducer sensitivity. Position Transducer: capacitive, inductive, linear variable differential transformer (LVDT), Piezoelectric, potentiometer. Temperature transducers: Resistance thermometers, thermocouples, thermistor and semiconductor p-n junction transducer.

TEXT BOOKS:

1. H. S. Kalsi, Electronic Instrumentation, Tata McGraw Hill (2006)
2. Joseph J Carr, Elements of electronic instrumentation and measurement, Pearson Education (2005)
3. C. S. Rangan, G. R. Sarma and V. S. Mani, Instrumentation Devices and Systems, Tata McGraw Hill (1998)
4. H. Cooper, Modern electronic instrumentation and measurement techniques, Pearson Education (2005)
5. R. A. Witte, Electronic test instruments: analog and digital measurements, Tata McGraw Hill (2004)
6. S. Wolf and R. F. M. Smith, Student Reference Manual for Electronic Instrumentation Laboratories, Pearson Education (2004)

REFERENCES:

1. Electrical Measurement in Measuring Instruments. Goldwing E.W. and Widdies
2. Electrical and Electronics Measurement and Instrumentation Sahwany A.K.
3. Instrumentation devices and systems: Rangan, Sarma, Mani, TMH
4. Instrumentation measurement and analysis: Nakra B C, Chaudry K K, TMH
5. Handbook of biomedical instrumentation: Khandpur R S, TMH
6. Measurement systems applications and design: Doebelin E O, McGraw Hill, 1990.
7. Electron measurements and instrumentation techniques: Cooper W D and Helfric AD, PHI, 1989.

**B.Sc. (Physics) Syllabus, Kakatiya University, Warangal
CBCS pattern in Semester System (w. e. from 2018-2019)**

**B.Sc. (Physics Practical) – III year
Semester – VI**

Paper: VIII (C): ELECTRONIC INSTRUMENTATION LAB

1. Design of multi range ammeter and voltmeter using galvanometer.
 2. To determine the Characteristics of resistance transducer - Strain Gauge
 3. Measurement of Strain using half and full bridge
 4. To determine the Characteristics of LVDT.
 5. To determine the Characteristics of RTD.
 6. Measurement of temperature by Thermocouples and study of transducers like AD 590
 7. Two terminal temperature sensor PT-100, J- type, K-type.
 8. Measurement of temperature using thermistor
 9. Calibration of resistance thermometer
 10. Frequency response of series LCR circuit
- ❖ Every student should complete minimum 06 experiments.

KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 40

Unit – I ARITHMETICAL ABILITY

1.1 Arithmetical Ability: Ratio & Proportion

1.2 Arithmetical Ability: Time & Work, Time & Distance

1.3 Arithmetical Ability: Simple Interest, Compound Interest

1.4 Arithmetical Ability: Stocks & Shares

Unit – II DATA INTERPRETATION

2.1 Data Interpretation: Tabulation

2.2 Data Interpretation: Bar Graphs

2.3 Data Interpretation: Pie Charts

2.4 Data Interpretation: Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management



Prof. T. RAVINDER REDDY

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KAKATIYA UNIVERSITY
U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Immunology and Animal Biotechnology (Theory)

Max. Marks: 60

UNIT – I

- 1.1. Basic concepts of immunology. Cells of immune system Primary and secondary Organs of immune system
- 1.2 Types of Immunity – Innate and acquired
- 1.3. Basic properties of antigens. Structure, function and types of an antibody.
- 1.4. B and T cell epitopes, haptens, adjuvants Antigen-antibody reactions,
- 1.5 T-Cell and B-Cell activation Monoclonal antibodies and their production

UNIT – II

- 2.1 Structure and functions of major histocompatibility complex.
- 2.2 Basic properties and functions of Cytokines, Interferons and complement proteins
- 2.3 Humoral and Cell mediated immunity.
- 2.4 Types of hyper sensitivity.
- 2.5 Concepts of autoimmunity and immunodeficiency. Introduction to Vaccines and types of Vaccines

UNIT – III

- 3.1. Concept and Scope of Animal Biotechnology.
- 3.2 Cloning vectors - Plasmids, Cosmids, Lambda bacteriophage, YAC,
- 3.3 Cloning- Cloning methods (Cell, Animal and Gene cloning)
- 3.4 Animal Cell culture - Equipment and materials for animal cell culture
- 3.5 Applications of cell culture techniques

UNIT – IV

- 4.1 Recombinant DNA technology and its applications
- 4.2 Transgenesis – Methods of Transgenesis.
- 4.3 Production of Transgenic animals
- 4.4 Application of Transgenic animals in Biotechnology.
- 4.5 Stem cells –types and their applications



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Suggested Readings;

Arthur C. Guyton MD, *A Text Book of Medical Physiology*, Eleventh ed., John E. Hall, Harcourt Asia Ltd.

William F. Ganong, *A Review of Medical Physiology*, 22 ed, McGraw Hill, 2005

Sherwood, Klandrof, Yanc, *Human Physiology*, Thompson Brooks/Coole, 2005.

Knut Schmidt-Nielson, *Animal Physiology*, 5th ed, Cambridge Low Price Edition.

Richard A. Glodsky, Thomas J Kind, Barbara A. Osborne, Janis Kuby,
Immunology, 5th ed, Freeman and Co. New York

Ivan Roitt, *Immunology*, 4th ed, Johanthan Brostoff, Mosby, London.

Thomas C. Chung, *General Parasitology*, Hardcourt Brace and Co ltd. Asia. New Delhi.

Gerard D. Schmidt and Larry S Roberts, *Foundations of Parasitology*, McGraw Hill

Kindt, T. J., Goldsby, R. A., Osborne, B. A., Kuby, J. (2006). VI Edition.

Immunology. W.H. Freeman and Company.

Delves, P. J., Martin, S. J., Burton, D. R., Roitt, I.M. (2006). XI Edition. Roitt's
Essential Immunology, Blackwell Publishing.



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KAKATIYA UNIVERSITY
U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER – VI

Immunology and Animal Biotechnology (Practical)

Max. Marks: 25

I. Immunology

1. Identification of Blood groups
2. Histological study of spleen, thymus and lymph nodes (through prepared slides)
3. Enumeration of RBC & WBC from a given blood sample
4. Enumeration of Differential count of WBC from a given blood sample
5. Demonstration of
 - a. ELISA , b. Immunoelectrophoresis
6. Identification of Autoimmune disease through charts.

II. Animal Biotechnology

1. Study the following techniques through photographs / virtual lab
 - a. Southern blotting
 - b. Western blotting
 - c. DNA sequencing (Sanger's method)
 - d. DNA finger printing
 - e. Identification of Vectors
 - f. Identification of Transgenic animals
2. PCR demonstration /virtual lab

- **Laboratory Record work shall be submitted at the time of practical examination**
- **Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006). Immunology, VI Edition. W.H. Freeman and Company.

David, M., Jonathan, B., David, R. B. and Ivan R. (2006). Immunology, VII Edition, Mosby, Elsevier Publication.

Abbas, K. Abul and Lechtman H. Andrew (2003.) Cellular and Molecular Immunology. V Edition. Saunders Publication.



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KAKATIYA UNIVERSITY
U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective Paper – VIII

A) Reproductive Biology (Theory)

Max. Marks: 60

Unit 1: Reproductive Endocrinology

Gonadal hormones and mechanism of hormone action, steroids, glycoprotein hormones, and prostaglandins, hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophin secretion in male and female; Reproductive System: Development and differentiation of gonads, genital ducts, external genitalia, mechanism of sex differentiation.

Unit 2: Functional anatomy of male reproduction

Outline and histological of male reproductive system in rat and human; Testis: Cellular functions, germ cell, system cell renewal; Spermatogenesis: kinetics and hormonal regulation; Androgen synthesis and metabolism; Epididymal function and sperm maturation; Accessory glands functions; Sperm transportation in male tract

Unit 3: Functional anatomy of female reproduction

Outline and histological of female reproductive system in rat and human; Ovary: folliculogenesis, ovulation, corpus luteum formation and regression; Steroidogenesis and secretion of ovarian hormones; Reproductive cycles (rat and human) and their regulation, changes in the female tract; Ovum transport in the fallopian tubes; Sperm transport in the female tract, fertilization; Hormonal control of implantation; Hormonal regulation of gestation, pregnancy diagnosis, foeto – maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its regulation

Unit 4: Reproductive Health

Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies; Demographic terminology used in family planning.



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B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective Paper – VIII

A) Reproductive Biology (Practical)

Max. Marks: 25

1. Study of animal house: set up and maintenance of animal house, breeding techniques, care of normal and experimental animals.
2. Examination of vaginal smear rats from live animals.
3. Surgical techniques: principles of surgery in endocrinology. Ovariectomy, hysterectomy, castration and vasectomy in rats.
4. Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.
5. Human vaginal exfoliate cytology.
6. Sperm count and sperm motility in rat
7. Study of modern contraceptive devices

SUGGESTED READINGS

- Austin, C.R. and Short, R.V. reproduction in Mammals. Cambridge University Press.
- Degroot, L.J. and Jameson, J.L. (eds). Endocrinology. W.B. Saunders and Company.
- Knobil, E. et al. (eds). The Physiology of Reproduction. Raven Press Ltd.
- Hatcher, R.A. et al. The Essentials of Contraceptive Technology. Population Information Programme.



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B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective Paper – VIII

B) Aquatic Biology (Theory)

Max. Marks: 60

UNIT – I

- 1.1 Brief introduction of the aquatic biomes
- 1.2 Freshwater ecosystem (lakes, wetlands, streams and rivers), Estuaries, intertidal zones.
- 1.3 Oceanic pelagic zone, marine benthic zone.
- 1.4 Coral reefs

UNIT – II

- 2.1 Lakes Origin and classification of lakes, Lake as an Ecosystem, Lake morphometry,
- 2.2 Physico-chemical Characteristics of fresh water bodies: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity: dissolved gases (Oxygen, Carbon dioxide).
- 2.3 Nutrient Cycles and Lakes- Nitrogen, Sulphur and Phosphorous.
- 2.4 Streams: Different stages of stream development, Physico-chemical environment, adaptation of hill-stream fishes.

UNIT – III

- 3.1 Salinity and density of sea water,
- 3.2 Continental shelf,
- 3.3 Adaptation of deep sea organisms.
- 3.4. Sea weeds.

UNIT – IV

- 4.1 Aquatic pollution - Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills,
- 4.2 Eutrophication
- 4.3 Management and conservation
- 4.4 Water pollution acts of India, Sewage treatment and water quality assessment - BOD and COD.



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SEMESTER – VI

Elective Paper – VIII

B) AQUATIC BIOLOGY (Practical)

Max.Marks:25

PRACTICAL

1. Study of the topography of a lake
2. Physico-Chemical and biological analysis of a lake
Physico-Chemical analysis of water - O₂, CO₂, BOD, COD
Biological– Zooplanktons – Identification and population density of Zooplanktons of a lake
3. Determination of - Turbidity / transparency, Dissolved Oxygen, Free Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from a nearby lake / water body.
4. Instruments used in limnology (sacchi disc, van dorn bottle, conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.
5. A Project Report on a visit to a Sewage treatment plant / Marine bio-reserve/Fisheries Institutes.

Suggested Readings:

1. Ananthkrishnan : Bioresources Ecology 3rd Edition
2. Goldman – Limnology, 2nd Edition
3. Odum and Barrett – Fundamentals of Ecology, 5th Edition\
4. Pawlowski: Physicochemical Methods for water and Wastewater Treatment, 1st Edition
5. Wetzel: Limnology, 3rd edition
6. Trivedi and Goyal: Chemical and biological methods for water pollution studies
7. Welch: Limnology Vols.I-II



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U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective Paper – VIII

C) Sericulture (Theory)

Max.Marks:60

Unit-1: Silk industry and mulberry production

- 1.1 Historical account and types of silkworms
- 1.2 Sericulture as rural industry and employment generation
- 1.3 Morphology and anatomy of mulberry.
- 1.4 Mulberry plantation and package of practices.
- 1.5 Pest and diseases of mulberry.

Unit-2: Silkworm biology and silkworm seed production

- 2.1 External characters of silkworms
- 2.2 Anatomy of silkworm.
- 2.3 Establishment of modal grainage house and grainage equipments
- 2.4 Seed production process.
- 2.5 Egg preservation and hibernation schedules.

Unit-3: Silkworm cocoon production and crop production

- 3.1 Rearing requirements- rearing house, equipments and disinfection.
- 3.2 Rearing of silkworm - incubation, hatching, brushing and rearing methods (Chawkie and late age silkworm).
- 3.3 Mounting, spinning and harvesting of cocoons
- 3.4 Pests of silkworm
- 3.5 Diseases of silkworm.

Unit-4: Post cocoon production

- 4.1 Physical and commercial characteristics of cocoon.
- 4.2 Natural and synthetic fibres- types, identification and uses.
- 4.3 Cocoon handling- stifling, cooking and brushing.
- 4.4 Silk reeling process.
- 4.5 Raw silk testing and grading.



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KAKATIYA UNIVERSITY
U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

Elective Paper – VIII

C) Sericulture (Practical)

Max.Marks:25

1. Morphology of mulberry plant with reference to various vegetative and floral parts.
2. Collection and identification of pests and disease of mulberry and control measures.
3. Anatomy of stem, root, leaf petiole (section cuttings & preparation of permanent slides)
4. Anatomy of silkworm- digestive system, silk gland, respiratory system.
5. Mother moth Examination (Individual and mass mother moth examination)
6. Identification of Mulberry and non mulberry silkworm
7. Identification of rearing equipments, chawkie and late age worms.
8. Identification different diseases and pest of silkworm and control measures.
9. Determination of silk ratio percentage of cocoons
10. Identification test for natural and synthetic fibres.



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KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

B.Sc. Programme under CBCS

With effect from the A.Y: 2019

Optional Paper

(Common to all Science Courses)

III Year SEMESTER – VI

PUBLIC HEALTH AND HYGIENE

UNIT-I: Nutrition, Environment and Health

- 1.1 Classification of foods – Carbohydrates, Proteins, Lipids and Minerals.
- 1.2 Nutritional deficiencies and disorders of Carbohydrates, Proteins, Lipids and Minerals.
- 1.3 Concept, Steps and Applications of Environment and Health Impact Assessment.
- 1.4 Industrial, Agricultural and Urban Health. Environmental Pollution and Associated Health Hazards.

UNIT-II : Communicable and Non-Communicable Diseases

- 2.1 Causes, symptoms, diagnosis, treatment and prevention of Communicable Diseases (Malaria, Filaria, Tuberculosis and AIDS).
- 2.2 Causes, symptoms, diagnosis, treatment and prevention of Non-Communicable Diseases (Hypertension, Coronary Heart Diseases, Diabetes and Obesity).
- 2.3 Symptoms, treatment and prevention measures of Water Borne Diseases (Diarrhea, Typhoid, Hepatitis and Amebiasis).
- 2.4 Symptoms, treatment and prevention measures Air Borne Diseases (COVID-19, Influenza, Whooping cough and Chickenpox).

UNIT-III :Food and Diet Systems

- 3.1 Definition of Food, Types of foods (Texturized foods, Novel foods and Organic foods).
- 3.2 Food safety system and issues; Physical, chemical and microbiological contaminants; The significance of foodborne diseases.
- 3.3 Principles of diet in diseases, Classification of diets according to nutrients.
- 3.4 Etiology, Symptom and Dietary Management in Obesity, Underweight, Hypertension, Diabetes Mellitus, Atherosclerosis.

UNIT-IV : Personal Hygiene and Sanitation

- 4.1 Definition of Hygiene and Sanitation, Personal Hygiene of food handler, Techniques of Washing Hands, Pest control and Garbage Disposal.
- 4.2 Definition of Public Health, Hygiene, Social and Preventive Medicine, Basic aspects of Personal Hygiene and Disposal of Waste.
- 4.3 The Hygiene Practices of the different categories of family members (children, parents and aged members)
- 4.4 Definition of Sanitation, Environmental Sanitation, Sanitation of Food Serving Institution, The importance of proper sanitation practices.

Suggested Readings:

Department of Commerce & Business Management, Kakatiya University, Warangal.
Paper DSC 103: FUNDAMENTALS OF INFORMATION TECHNOLOGY

Hours Per Week: 6 (4T+2P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand the basic concepts and terminology of information technology and to identify issues related to information security.

UNIT-I: INTRODUCTION TO COMPUTERS:

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer. Role of I/O devices in a computer system. **Input Units:** Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, **Output Units:** Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT -II: COMPUTER ARITHMETIC & STORAGE FUNDAMENTALS:

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another. Primary Vs Secondary Storage, Data storage & retrieval methods. **Primary Storage:** RAM ROM, PROM, EPROM, EEPROM. **Secondary Storage:** Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

UNIT-III: SOFTWARE:

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

UNIT-IV: OPERATING SYSTEM:

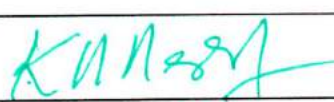
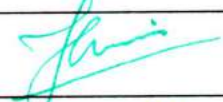
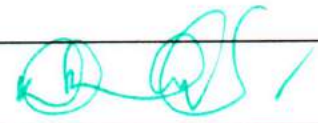



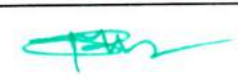
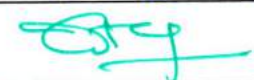

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

UNIT-V: DATA COMMUNICATION:

Data, Communication, Basic Networking Devices, Communication Process, Data Transmission speed, Communication Types(modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

SUGGESTED READINGS:

Computer Fundamentals: P.K.Sinha


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Kakatiya University, Warangal.

Faculty of Commerce, Kakatiya University

B.COM CBCS COURSE STRUCTURE w.e.f. 2019-'20

Sl.No. (1)	Code (2)	Course Title (3)	HPW (5)	Credits (6)	Exam Hrs (7)	Marks (8)
SEMESTER - I						
1.	ELS1	Communication Skills	4	4		
2.	SLS1	Modern Indian Language	4	4		
3.	AEC1	Environmental Science/ Basic Computer Skills	2	2		
4.	SEC1	Principles of Insurance/ Foundations of Digital Marketing	2	2	1 ½ hrs	40U+10I
5.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
6.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
7.	DSC103	Foreign Trade	5	5	3 hrs	80U+20I
Total			25	25		
SEMESTER - II						
8.	ELS2	Advanced Communication Skills	3	3		
9.	SLS2	Modern Indian Language	3	3		
10.	AEC2	Basic Computer Skills/ Environmental Science	2	2		
11.	SEC2	Practice of Life Insurance/ Web Design & Analytics	2	2	1 ½ hrs	40U+10I
12.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
13.	DSC202	Business Laws	5	5	3 hrs	80U+20I
14.	DSC203	Banking and Financial Services	5	5	3 hrs	80U+20I
Total			25	25		
SEMESTER - III						
15.	ELS3	Gender Sensitization	3	3		
16.	SLS3	Modern Indian Language	3	3		
17.	AEC3	Advanced Computer Skills/ Managerial Skills	2	2		
18.	SEC3	Practice of General Insurance/ Social Media Marketing	2	2	1 ½ hrs	40U+10I
19.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
20.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
21.	DSC303	Financial Institutions and Markets	5	5	3 hrs	80U+20I
Total			25	25		
SEMESTER - IV						
22.	ELS4	Human Values and Ethics	3	3		
23.	SLS4	Modern Indian Language	3	3		
24.	AEC4	Managerial Skills/ Advanced Computer Skills	2	2		
25.	SEC4	Regulation of Insurance Business/ Search Engine Optimization & Online Advertising	2	2	1 ½ hrs	40U+10I

Faculty of Commerce, Kakatiya University

26.	DSC401	Income Tax	5	5	3 hrs	80U+20I
27.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
28.	DSC403	Corporate Accounting	5	5	3 hrs	80U+20I
		Total	25	25		
		SEMESTER - V				
29.	ELS1	Verbal Reasoning	3	3		
30.	SLS4	Modern Indian Language	3	3		
31.	GE	Business Economics	4	4	3 hrs	80U+20I
32.	DSE501	a) Cost Accounting/ b) Financial Planning & Performance/ c) Financial Reporting	5	5	3 hrs	80U+20I
33.	DSE502	a) Computerized Accounting/ b) Financial Decision Making-I/ c) International Tax Regulation	3T+4P/ 5	5	3 hrs	50T+35 P+ 15I/ 80U+20I
34.	DSE503	a) Auditing/ b) Corporate Accounting/ c) Financial Management	5	5	3 hrs	80U+20I
		Total	27/25	25		80U+20I
		SEMESTER - VI				
35.	ELS6	Employability Communication Skills	3	3		
36.	SLS6	Modern Indian Language	3	3		
37.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15VV
38.	DSE601	a) Cost Control and Management Accounting/ b) Financial Reporting and control/ c) Auditing and Practice	5	5	3 hrs	80U+20I
39.	DSE602	a) Theory and Practice of GST/ b) Financial Decision Making-II / c) Business Environment & Concepts	3T+4P/ 5	5	3 hrs	50T+35 P+ 15I/ 80U+20I
40.	DSE603	a) Accounting Standards/ b) Corporate Governance/ c) Investment management	5	5	3 hrs	80U+20I
		Total	29/27	25		
		GRAND TOTAL	156/ 152	150		

ELS: English Language Skill; **SLS:** Second Language Skill; **AEC:** Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective; **T:** Theory; **P:** Practical; **I:** Internal Exam **U:** University Exam; **PR:** Project Report; **VV:** Viva-Voce Examination.

Note: i) A student should opt for either a or b or c of DSE Groups in V and VI Semesters.
ii) Project work should be done by a group of 4 students.

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UMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	3	18
2	Modern Language	6	3	18
3	AEC	4	2	8
4	SEC	4	2	8
5	GE	1	4	4
6	Project Report	1	4	4
7	DSC	12	5	60
8	DSE	6	5	30
	TOTAL	40		150
	Commerce	24		106

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Paper SEC1: PRINCIPLES OF INSURANCE

Objectives: 1) to provide a basic understanding of the Insurance Mechanism; 2) to identify the relationship between Insurers and their Customers and the importance of Insurance Contracts; 3) to give an overview of major Life Insurance and General Insurance Products.

UNIT I: RISK MANAGEMENT AND INSURANCE AND INSURANCE TERMINOLOGY: Risk Management–Types of Risks – Actual and Consequential Losses – Management of Risks – Different Classes of Insurance – Importance of Insurance –Management of Risk by Individuals and Insurers – Fixing of Premiums – Reinsurance– Role of Insurance in Economic Development and Social Security –Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies –Role of Regulators –Common and specific terms inLife and Non Life Insurance –Understanding Insurance Customers –Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior.

UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS: Insurance Contract Terms–Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause–Life Insurance Products: Risk of Dying Early–Risk of Living too Long –Products offered – Term Plans – Pure Endowment Plans – Combinations of Plans –Traditional Products – Linked Policies – Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets – Exposure to Perils – Features of Products Covering Fire and Allied Perils – Products covering Marine and Transit Risks – Products covering Financial Losses due to Accidents – Products covering Financial Losses due to Hospitalization – Products Covering Miscellaneous Risks.

SUGGESTED READINGS

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Role of Insurance in Financial inclusion: Brinda Publishing House, Hyderabad
3. Guide to Risk Management : SagarSanyal
4. Insurance and Risk Management : P.K. Gupta
5. Insurance Theory and Practice : Tripathi PHI
6. Principles of Insurance Management : Neelam C Gulati, Excel Books
7. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
8. Principles of Risk Management and Insurance : George E Rejda(13th Edition)
9. Risk Management and Insurance : Trieschman , Gustavson and Hoyt . South Western College Publishing ,Cincinnati, Ohio

Suggested Websites:

- 1) www.irda.gov.in
- 2) www.policyholder.gov.in
- 3) www.irdaindia.org.in

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Paper 101: FINANCIAL ACCOUNTING-I

Objective: to acquire conceptual knowledge of basics of accounting and preparation of final accounts of sole trader.

UNIT-I: ACCOUNTING PROCESS: Financial Accounting: Introduction – Definition – Evolution – Functions-Advantages and Limitations –Users of Accounting Information-Branches of Accounting – Accounting Principles: Concepts and Conventions- Accounting Standards– Meaning – Importance –Types of Accounts – Accounting Cycle – Journal-Ledger and Trial Balance (Including problems).

UNIT-II: SUBSIDIARY BOOKS: Meaning –Types - Purchases Book - Purchases Returns Book - Sales Book - Sales Returns Book - Bills Receivable Book - Bills Payable Book – Cash Book: Single Column, Two Column, Three Column and Petty Cash Book - Journal Proper(Including problems).

UNIT-III: BANK RECONCILIATION STATEMENT: Meaning – Need - Reasons for differences between cash book and pass book balances –Favourable and over draft balances – Ascertainment of correct cash book balance (Amended Cash Book) - Preparation of Bank Reconciliation Statement (Including problems).

UNIT-IV: RECTIFICATION OF ERRORS AND DEPRECIATION: Capital and Revenue Expenditure – Capital and Revenue Receipts: Meaning and Differences - Differed Revenue Expenditure - Errors and their Rectification: Types of Errors - Suspense Account – Effect of Errors on Profit (Including problems).

Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortization and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method (Including problems).

UNIT-V: FINAL ACCOUNTS: Final Accounts of Sole Trader: Meaning -Uses -Preparation of Manufacturing, Trading and Profit & Loss Account and Balance Sheet – Adjustments – Closing Entries(Including problems).

SUGGESTED READINGS:

1. Introduction to Accountancy: T.S. Grewal, S.Chand and Co.
2. Financial Accounting-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
3. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
4. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
5. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
6. Financial Accounting-I: Dr. Yogeshweran, PBP
7. Financial Accounting-I:Srihari Krishna Rao, Himalaya Publishing House
8. Financial Accounting: B.Vishwanadham, S.Chand.
9. Accountancy–I: Tulasian, Tata McGraw Hill Co.
10. Financial Accounting: N.Padmalatha,L.V Kamala Devi, RachanaSharma,PBP
11. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
12. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
13. Financial Accounting: JawaharLal, Himalaya Publishing House.
14. Financial Accounting-I: PrasanthaAthma, Himalaya Publishing House.
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Paper 102: BUSINESS ORGANISATION AND MANAGEMENT

Objective: To acquaint the students with the basics of Commerce and Business concepts and functions, forms of Business Organization and functions of Management.

UNIT-I: INTRODUCTION AND FORMS OF BUSINESS ORGANISATIONS: Concepts of Business, Trade, Industry and Commerce - Objectives and functions of Business –Social Responsibility of a business - Forms of Business Organization - Meaning, Characteristics, Advantages and Disadvantages of Sole Proprietorship –Meaning, Characteristics, Advantages and Disadvantages of Partnership -Kinds of Partners - Partnership Deed -Concept of Limited liability partnership – Meaning, Characteristics, Advantages and Disadvantages of Hindu Undivided Family – Meaning, Advantages and Disadvantages of Co-Operative Organization.

UNIT-II: JOINT STOCK COMPANY: Joint Stock Company - Meaning - Definition - Characteristics - Advantages and Disadvantages - Kinds of Companies -Promotion - Stages of Promotion - Promoter - Characteristics - Kinds - Preparation of Important Documents - Memorandum of Association - Clauses - Articles of Association - Contents – Prospectus - Contents – Red herring Prospectus-Statement in lieu of Prospectus (As per Companies Act. 2013).

UNIT-III:INTRODUCTION TO FUNCTIONS OF MANAGEMENT: Management - Meaning - Characteristics - Functions of Management - Levels of Management – Skills of Management-Scientific Management - Meaning - Definition - Objectives - Criticism – Fayol’s 14 Principles of Management .

UNIT-IV:PLANNING AND ORGANISING: Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages – Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits –Weaknesses—Definition of Organizing-Organization-Process of Organizing - Principles of Organization - Formal and Informal Organizations - Line, Staff Organizations - Line and Staff Conflicts - Functional Organization - Span of Management - Meaning - Determining Span - Factors influencing the Span of Supervision.

UNIT-V: AUTHORITY, COORDINATION AND CONTROL: Meaning of Authority, Power, responsibility and accountability - Delegation of Authority - Decentralization of Authority - Definition, importance, process, and principles of Coordination- techniques of Effective Coordination - Control - Meaning - Definition – Relationship between planning and control-Steps in Control – Types (post, current and pre-control) - Requirements for effective control.

SUGGESTED READINGS:

1. Business Organization & Management: Sharma Shashi K. Gupta, Kalyani Publishers
2. Business Organization & Management: Patrick Anthony, Himalaya Publishing House
3. Business Organization & Management: Dr. Manish Gupta, PBP.
4. Organization & Management: R. D. Agarwal, McGraw Hill.
5. Modern Business Organization: S.A. Sherlekar, V.S. Sherlekar, Himalaya Publishing House
6. Business Organization & Management: C.R. Basu, Tata McGraw Hill
7. Business Organization & Management: M.C. Shukla S. Chand,
8. Business Organisation and Management: D.S. Vittal, S. Chand
9. Organizational Behaviour Text & Cases: V.S.P. Rao, Himalaya Publishing House
10. Business Organization & Management: Uma Shekaram, Tata McGraw Hill
11. Business Organization & Management: Niranjana Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr. Neeru Vasihth, Tax Mann Publications.

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Paper 103: FOREIGN TRADE

Objective: to gain knowledge of India's foreign trade procedures policies, and international institutions.

UNIT-I: INTRODUCTION: Foreign Trade: Meaning and Definition - Types - Documents used-Commercial Invoice - Bills of Lading / Airway Bill - Marine Insurance Policy and Certificate - Bills of Exchange - Consumer Invoice - Customs Invoice - Certificate of Origin - Inspection Certificate - Packing List.

UNIT-II: BALANCE OF TRADE AND BALANCE OF PAYMENTS: Introduction - Meaning - Components of BOT & BOP - Concept of Disequilibrium - Causes -Remedies for Correcting Balance of Payments in International Trade.

UNIT-III: INDIAN TRADE POLICY: Importance and its Implementation - Current Export Policy and Import Policy.

UNIT-IV: FOREIGN TRADE AND TRADE BLOCS:Growth - Significance of Foreign Trade - Merits - Demerits - Trade Blocs: Types - Preferential Trade Area, Free Trade Area, Customs Unions, Common Markets, Economic Unions, Monetary Unions, Customs and Monetary Unions, and Economic and Monetary Unions.

UNIT-V: INTERNATIONAL ECONOMIC INSTITUTIONS:IMF: Objectives - Functions - World Bank: Objectives - Functions - Subsidiaries of World Bank - IMF Vs. IBRD; New Development Bank (NDB) - Objective Functions - Features - Membership - Shareholding, Criticism, Asian Infrastructure Investment Bank (AIIB) - Objective Functions - Features - Membership - Shareholding, Criticism; Trans-Pacific Partnership (TPP) -Objective Functions - Features - Membership - Shareholding, Criticism; UNCTAD: Aims - Features; WTO - Aims - Features - Agreements.

SUGGESTED READINGS:

1. International Marketing: Rathore& Jain, Himalaya Publishers.
2. International Marketing: Kushpat S. Jain &RimiMitra, Himalaya Publishers
3. International Economics: SSMDesai&NirmalBhalerao, Himalaya Publishers.
4. International Business Environment & Foreign Exchange Economies: Singh & S. Srivastava,
5. Foreign Trade and Foreign Exchange: O.PAgarwal & B.K.Chaudri, Himalaya Publishers
6. International Financial Markets & Foreign Exchange: ShashiK.Gupta & PraneetRangi, Kalyani
7. International Economics: Theory & Practice: Paul R. Krugman, Pearson Publishers.

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Paper SEC2: PRACTICE OF LIFE INSURANCE

Objectives: 1) to make the student understand Life Insurance Market in India, 2) to discuss the issues related to risk management in view of life insurance.

UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE POLICIES AND PREMIUM CALCULATION: Meaning evolution, growth and principles of Life Insurance – Life Insurance Organizations in India – Competition and Regulation of Life Insurance – Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes .Computation of Premiums - Meaning of Premium, its calculation-Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITINGS AND FINANCIAL PLANNING & TAX SAVING: Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

SUGGESTED READINGS:

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
5. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
6. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
7. Life Insurance in India: Sadhak, Respose Books, New Delhi

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Paper 201:FINANCIAL ACCOUNTING-II

Objective: to acquire conceptual knowledge and application of depreciation methods and single entry system, and preparation of accounts related to non-profit and partnership organizations.

UNIT-I: DEPRECIATION: Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortisation and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method - Sinking Fund Method - Sum of Digits Method - Annuity Method.

UNIT-II: ACCOUNTS FROM INCOMPLETE RECORDS: Features – Ascertainment of Profit - Statement of Affairs and Conversion method.

UNIT-III: ACCOUNTING FOR NOT-FOR-PROFIT ORGANIZATIONS: Not for Profit entities – Features – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet - Accounting for Organization and Individuals.

UNIT-IV: PARTNERSHIP ACCOUNTS-I: Meaning – Partnership Deed - Capital Accounts (Fixed and Fluctuating) – Admission of a Partner – Retirement and Death of a Partner (Excluding Joint Life Policy).

UNIT-V: PARTNERSHIP ACCOUNTS-II: Dissolution of Partnership – Insolvency of a Partner (excluding Insolvency of all partners) – Sale to a Company.

SUGGESTED READINGS:

1. Accountancy-I: S.P. Jain & K.L Narang, Kalyani.
2. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
3. Financial Accounting-II Dr.Yogeshweran, PBP.
4. Financial Accounting: S. N. Maheshwari&V.L. Maheswari, Vikas.
5. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
6. Accountancy-I: Tulasian, Tata McGraw Hill Co.
7. Advanced Accountancy-I: S. N. Maheshwari&V.L.Maheswari, Vikas.
8. Financial Accounting-I , Prasanthaathma, Himalaya Publishing House
9. Financial Accounting-I , Srihari Krishna Rao, Himalaya Publishing House
10. Financial Accounting: B.Vishwanadham, S Chand.
11. Financial Accounting-II: Padma Priya, Himalaya Publishing house
12. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
13. Financial Accounting: M.N Arora, Tax Mann Publications.

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Paper 202: BUSINESS LAWS

Objective: to understand basics of contract act, sales of goods act, IPRs and legal provisions applicable for establishment, management and winding up of companies in India.

UNIT-I: INDIAN CONTRACT ACT: Agreement and contract - Essentials of a valid contract - Types of contracts - Offer and Acceptance - Essentials of valid offer and acceptance - Communication and revocation of offer and acceptance - Consideration definition - Essentials of valid consideration - Modes of Discharge of a contract - Performance of Contracts - Breach of Contract - Remedies for Breach.

UNIT-II: SALE OF GOODS ACT AND CONSUMER PROTECTION ACT: Contract of Sale: Essentials of Valid Sale - Sale and Agreement to Sell - Definition and Types of Goods - Conditions and Warranties - Caveat Emptor - Exceptions - Unpaid Seller - Rights of Unpaid Seller. Consumer Protection Act 1986: Definitions of Consumer - Person - Goods - Service - Consumer Dispute - Consumer Protection Councils - Consumer Dispute Redressal Agencies - Appeals.

UNIT-III: INTELLECTUAL PROPERTY RIGHTS: Trade Marks: Definition - Registration of Trade Marks - Patents: Definition - Kinds of Patents - Transfer of the Patent Rights - Rights of the Patentee - Copy Rights: Definition - Rights of the Copyright Owner - Terms of Copy Right - Copy Rights Infringement - Other Intellectual Property Rights: Trade Secrets - Geographical Indications.

UNIT-IV: MANAGEMENT OF COMPANIES AND MEETINGS: Director: Qualification - Disqualification - Position - Appointment - Removal - Duties and Liabilities - Loans - Remuneration - Managing Director - Corporate Social Responsibility - Corporate Governance. Meeting: Meaning - Requisites - Notice - Proxy - Agenda - Quorum - Resolutions - Minutes - Kinds - Shareholder Meetings - Statutory Meeting - Annual General Body Meeting - Extraordinary General Body Meeting - Board Meetings.

UNIT-V: WINDING UP: Meaning - Modes of Winding Up - Winding Up by tribunal - Voluntary Winding Up - Compulsory Winding Up - Consequences of Winding Up - Removal of name of the company from Registrar of Companies - Insolvency and Bankruptcy code - 2016.

SUGGESTED READINGS:

- 1) Company Law: ND Kapoor, Sultan Chand and Co.
- 2) Company Law: Rajashree. - HPH
- 3) Business Law - Kavitha Krishna, Himalaya Publishing House
- 4) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
- 5) Company Law and Practice: GK Kapoor & Sanjay Dhamija, Taxmann Publication.
- 6) Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
- 7) Corporate Law: PPS Gogna, S Chand.
- 8) Business Law: D.S. Vital, S Chand
- 9) Company Law: Bagriyal AK, Vikas Publishing House.

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Paper 203: BANKING AND FINANCIAL SERVICES

Objectives: to familiarize with Fund-based and Non-fund-based Financial Services.

UNIT-I:INTRODUCTION:Functions of Commercial Banks - Emerging Trends in Commercial Banking in India:E-Banking – Mobile Banking - Core Banking – Bank Assurance – OMBUDSMAN.RBI Constitution - Organizational Structure – Management - Objectives – Functions – Monetary Policy - Brief description on various types of banks--District Co-Operative Central Banks – Contemporary Banks - Regional Rural Banks -National Bank for Agriculture and Rural Development (NABARD) – SIDBI – Development Banks.

UNIT-II: BANKER AND CUSTOMER RELATIONSHIP:Definition of Banker and Customer - Relationship Between Banker and Customer - KYC norms- General and Special Features of Relationship - Opening of Accounts - Special Types of Customers Like Minor, Married Women, Partnership Firms, Companies, Clubs and other Non-Trading Institutions.

UNIT-III:NEGOTIABLE INSTRUMENTS:Descriptions and their Special Features - Duties and Responsibilities of Paying and Collecting Banker - Circumstances under which a Banker can refuse Payment of Cheques - Consequences of Wrongful Dishonors - Precautions to be taken while Advancing Loans Against Securities – Goods - Documents of Title to Goods - Loans against Real Estate -Insurance Policies - Against Collateral Securities – Banking Receipts.

UNIT-IV: INTRODUCTION TO FINANCIL SERVICES: Financial Services: Meaning-Functions-Classification- Scope – Fund Based Activities - Non-fund Based Activities – Modern Activities - Causes for Financial Innovation – New Financial Products and Services – Innovative Financial Instruments – Challenges Facing the Financial Service Sector – Present Scenario.

UNIT-V: MERCHANT BANKING, VENTURE CAPITAL, LEASING, DISCOUNTING, FACTORING AND FORFEITING: Definition –Services of Merchant Banks –Problems and Scope of Merchant Banking in India-Venture Capital: Meaning, Features, Scope, Importance - Leasing-Definition and Steps- Types of Lease – Financial Lease – Operating Lease – Leverage Lease – Sale and Lease Back –Discounting:Concept – Advantages of Bill Discounting –Factoring-Meaning and Nature– Parties in Factoring – Merits and Demerits of Factoring –Forfeiting-Parties to Forfeiting – Costs of Forfeiting – Benefits of Forfeiting for Exporters and Importers .

SUGGESTED READINGS:

1. Banking Theory & Practices: Dr. P. K. Srivatsava, Himalaya Publishers
2. Banking Theory & Practices: K.C. Shekar, Vikas Publications
3. Banking and Financial Services: SanthiVedula&Kavitha Krishna Himalaya Publishing House
4. Banking and Financial Services: Dr.Jayanthi, PBP.
5. Banking Theory, Law & Practices: R. R Paul, Kalyani Publishers
6. Money Banking and Financial Markets: Averbach, Rabort. D, MacMillan. Landon
7. Financial Markets and Services: Gordon and Natarajan, Himalaya Publishing House.
8. Financial Services: T. Siddaiah, Pearson Education

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B.Com. III Semester - Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objectives: To make Students to learn Principles of Insurance.

UNIT I: RISK MANAGEMENT AND INSURANCE:

Risk Management -Types of Risks - Actual and Consequential Losses - Management of Risks - Different Classes of Insurance - Importance of Insurance - Management of Risk by Individuals and Insurers - Fixing of Premiums – Reinsurance - Role of Insurance in Economic Development and Social Security - Constituents of Insurance Market - Operations of Insurance Companies - Operations of Intermediaries - Specialist Insurance Companies - Role of Regulators - Common and specific terms in Life and Non-Life Insurance - Understanding Insurance Customers - Customer Behavior at Purchase Point - Customer Behavior when Claim Occurs - Importance of Ethical Behavior


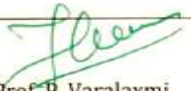





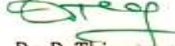

UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS:

Insurance Contract Terms - Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause - Life Insurance Products: Risk of Dying Early - Risk of Living too Long - Products offered - Term Plans - Pure Endowment Plans - Combinations of Plans - Traditional Products - Linked Policies - Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets - Exposure to Perils - Features of Products Covering Fire and Allied Perils - Products covering Marine and Transit Risks - Products covering Financial Losses due to Accidents - Products covering Financial Losses due to Hospitalization - Products Covering Miscellaneous Risks

SUGGESTED READINGS:

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
4. Principles of Insurance : Dr V Padmavathi, Dr V Jayalakshmi - PBP
5. Insurance and Risk Management: P.K. Gupta
6. Insurance Theory and Practice : Tripathi PHI
7. Principles of Insurance Management: Neelam C Gulati, Excel Books

Suggested Websites: 1) www.irda.gov.in 2) www.policyholder.gov.in
3) www.irdaindia.org.in

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somaiah	 Dr. S. Narayana Swamy
 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

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B.Com. III Semester - Paper SEC1 (b): FOUNDATION OF DIGITAL MARKETING

Objective: To make students to understand Foundation of digital marketing.

UNIT I: DIGITAL MARKETING FOUNDATIONS:


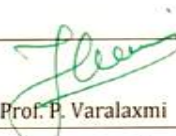





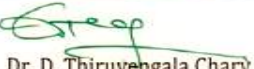
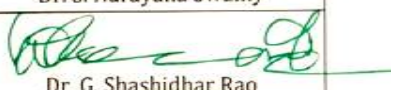
Digital Marketing Strategy - Exploring Digital Marketing - Starting with the Website - Foundations of Analytics - Search Engine Optimization - Search and Display Marketing - Social Media Marketing - Video Marketing – Advantages & Limitations of Digital Marketing.

UNIT II: ONLINE MARKETING, MOBILE MARKETING FOUNDATIONS:

Online marketing tools and setup – E-Marketing: Segmentation, personalization and mobile marketing - Content marketing: Blogs for content marketing - Content marketing for staying relevant - Newsletters for content marketing.

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Foundations of Digital Marketing: Dr. K.V. Nagaraj.K Usha Rani - PBP
4. Digital Marketing by Vandana Ahuja, Oxford
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somaiah	 Dr. S. Narayana Swamy
 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

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B.Com. III Semester - Paper SEC1 (c) FUNDAMENTALS OF BUSINESS ANALYTICS

Objective: To make students to learn Fundamentals of Business Analytics.

UNIT I: USING DATA TO DRIVE BUSINESS DECISIONS:


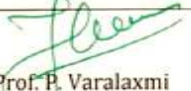





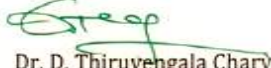

Need for data-driven decision making: Solving the business problem using Analytics - Overview of the Business Analytics cycle - Hierarchy of information user -The complete Business Analytics professional: Understanding Business Analyst roles and responsibilities - Identify the Popular Business Analytics Tools.

UNIT II: DATA ANALYTICS USING EXCEL:

Basics of Excel: Organizing data with Excel - Performing simple computations and aggregations using Excel - Working with Summing and other Reporting functions in Excel - Working with pivot tables and charts - Using Excel for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips - Display tips - Keyboard shortcuts - Mouse shortcuts - Standardized layouts - Understanding table based and spreadsheet-based layouts - Best practices Setting data rules and Cleaning data - Format as table - Data cleansing techniques using External Data - Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Query data from SQL - Working in the Select Part of an SQL Query - Managing SQL commands - Managing Tables - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - Using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data - Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options

SUGGESTED READINGS:

1. Fundamentals of Business Analytics, 2nd Edition; R N Prasad; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Monetizing Your Data: A Guide to Turning Data into Profit-Driving Strategies and Solutions; Andrew Roman Wells, Kathy Williams Chiang; Wiley
4. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
5. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
6. Excel Statistics: A Quick Guide, 3rd edition; Neil J. Salkind; Sage Publications
7. Microsoft Excel 2019: For Beginners; J. Davidson
8. Microsoft Excel 2019: Learn Excel Basics with Quick Examples; James Jackson

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B.Com. III Semester - Paper SEC2 (a): PRACTICE OF LIFE INSURANCE

Objective: To make students to learn Practice of Life Insurance.

UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE


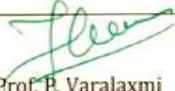
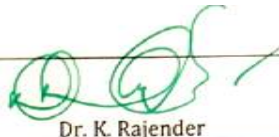




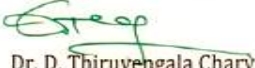

POLICIES AND PREMIUM CALCULATION: Meaning evolution, growth and principles of Life Insurance –Life Insurance Organizations in India – Competition and Regulation of Life Insurance - Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes. Computation of Premiums - Meaning of Premium, its calculation- Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITTINGS AND FINANCIAL

PLANNING & TAX SAVING: Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis- Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

SUGGESTED READINGS:

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Principles of Life Insurance – Dr. V. Padmavathi, Dr. V. Jayalakshmi - PBP
5. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
6. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
7. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
8. Life Insurance in India: Sadhak, Respose Books, New Delhi.

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B.Com. III Semester - Paper SEC2 (b): WEB DESIGN AND ANALYTICS

Objective: To make students to understand the Fundamentals of Web design and Analytics.

UNIT I: WEB DESIGN AND OPTIMIZING CONVERSION RATES:

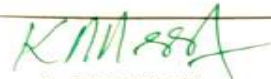








Exploring and learning web design – Understanding Conversion rate optimization (CRO) – Setting CRO – Understanding target audience – Optimization champion

UNIT II: GOOGLE ANALYTICS:

Getting started with Google Analytics – Core concepts – Additional interface features – Using reports – Audience reports – Acquisition reports – Social reports – Behavior reports – Track events – Conversion reports – Additional features

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry
6. Don't Make Me Think Revisited: A Common Sense Approach to Web Usability By Steve Krug
7. Web Analytics 2.0 – Avinash Kaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

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B.Com. III Semester - Paper SEC2 (c): APPLICATION OF BUSINESS ANALYTICS

Objective: To make students to understand the Application of Business analytics.

UNIT I: STATISTICS USING EXCEL:

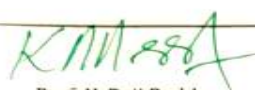
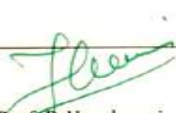


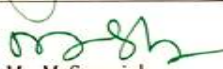


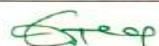
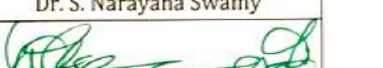
Descriptive statistics using Excel: Describe data using charts and basic statistical measures – Histograms - Pareto charts – Boxplots - Tree map and Sunburst charts - Inferential Statistics using Excel: Correlation and Regression - Probability distribution – Sampling techniques – Hypothesis testing

UNIT II: GETTING STARTED WITH R:

Introduction to R and R Studio components: Read datasets into R - Export data from R - Manipulate and Process Data in R - Use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R

SUGGESTED READINGS:

1. Microsoft Business Intelligence Tools for Excel Analysis; Michael Alexander, Jared Decker, Bernard Wehbe; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
4. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
5. Microsoft Excel Data Analysis for Dummies, 3rd edition; Stephen L. Nelson, E. C. Nelson; Wiley
6. Data Analytics with R; Bharti Motwani; Wiley

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B.Com. III Semester - Paper DSC 301: ADVANCED ACCOUNTING

Objective: To acquire accounting knowledge of partnership firms and joint stock companies

UNIT-I: PARTNERSHIP ACCOUNTS-I:

Meaning - Partnership Deed - Capital Accounts (Fixed and Fluctuating) - Admission of a Partner - Retirement and Death of a Partner (Excluding Joint Life Policy)(Including problems)

UNIT-II: PARTNERSHIP ACCOUNTS-II:

Dissolution of Partnership - Insolvency of a Partner (excluding Insolvency of all partners) - Sale to a Company (Including problems)

UNIT-III: ISSUE OF SHARES, DEBENTURES, UNDERWRITING AND BONUS SHARES:

Issue of Shares at par, premium and discount - Pro-rata allotment - Forfeiture and Re-issue of Shares - Issue of Debentures with Conditions of Redemption - Underwriting: Meaning - Conditions - Bonus Shares: Meaning - SEBI Guidelines for Issue of Bonus Shares - Accounting of Bonus Shares (Including problems)

UNIT-IV: COMPANY FINAL ACCOUNTS AND PROFIT PRIOR TO INCORPORATION:


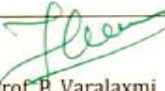






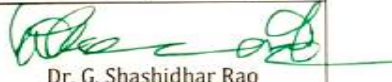
Companies Act, 2013: Structure - General Instructions for preparation of Balance Sheet and Statement of Profit and Loss - Part-I: Form of Balance Sheet - Part-II: Statement of Profit and Loss - Preparation of Final Accounts of Companies - Profits Prior to Incorporation - Accounting treatment (Including problems)

UNIT-V: VALUATION OF GOODWILL AND SHARES:

Valuation of Goodwill: Need - Methods: Average Profits method, Super Profits method and Capitalization Method -Valuation of Shares: Need - Net Assets method, Yield method and Fair Value Method. (Including problems)

SUGGESTED READINGS:

1. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
2. Advanced Accountancy: Shukla and Grewal, S.Chand & Co.
3. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons.
4. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
5. Advanced Accountancy: Dr. G. Yogeshwaran, Julia Allen - PBP
6. Accountancy-III: Tulasian, Tata McGraw Hill Co.
7. Advanced Accountancy: Arulanandam; Himalaya.
8. Accountancy-III: S.P. Jain & K.L Narang, Kalyani Publishers.

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B.Com. III Semester - Paper DSC 302: BUSINESS STATISTICS -I

Objective: To inculcate analytical and computational ability among the students.

UNIT-I: INTRODUCTION:

Origin and Development of Statistics - Definition - Importance and Scope - Limitations of Statistics - Distrust of Statistics.

Statistical Investigation: Planning of statistical investigation - Census and Sampling methods - Collection of primary and secondary data - Statistical errors and approximation - classification and Tabulation of data - Frequency distribution

UNIT - II: DIAGRAMMATIC AND GRAPHIC PRESENTATION:

Diagrammatic presentation: One Dimensional and Two Dimensional Diagrams - Pictograms - Cartograms - Graphic presentation: Technique of Construction of Graphs - Graphs of Frequency Distribution - Graphs of Time Series or Histograms

UNIT-III: MEASURES OF CENTRAL TENDENCY:

Introduction -Significance - Arithmetic Mean - Geometric Mean - Harmonic Mean – Mode - Median - Quartiles and Percentiles - Simple and Weighted Averages - Uses and Limitations of different Averages

UNIT-IV: MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS:

Measures of Dispersion: Significance - Characteristics - Absolute and Relative Measures – Range - Quartile Deviation - Mean Deviation- Standard Deviation - Coefficient of Variation


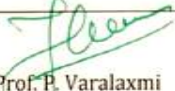
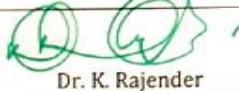




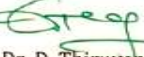
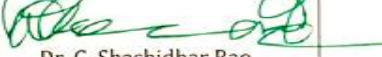
Measures of Skewness - Karl Pearson's Coefficient of Skewness - Bowley's Coefficient of Skewness - Kelly's Measure of Skewness - Kurtosis: Mesokurtosis, Platy kurtosis and Leptokurtosis

UNIT-V: CORRELATION:

Meaning -Types - Correlation and Causation - Methods: Scatter Diagram - Karl Person's Coefficient of Correlation - Probable Error and Interpretation of Coefficient of Correlation - Rank Correlation - Concurrent Deviation Method

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Statistics: E. Narayanan Nadar, PHI Learning
4. Business Statstics –I: Dr. Obul Reddy, Dr. D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata McGraw Hill
7. Fundamentals of Statistical: S. P Gupta, Sultan Chand
8. Business Statistics: J. K. Sharma, Vikas Publishers
9. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications

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B.Com. III Semester - Paper DSC 303: FINANCIAL INSTITUTIONS & MARKETS

Objective: To familiarize with various Financial Institutions and Markets.

UNIT-I: INDIAN FINANCIAL SYSTEM:

Components - Functions - Flow of Funds Matrix - Financial System and Economic Development - Recent Developments in Indian Financial System - Weaknesses of Indian Financial System

UNIT-II: FINANCIAL INSTITUTIONS:

Commercial Banking: Types - Functions - Lending by Commercial Banks - Recent Developments - Merchant Banking – functions - Venture Capital – objectives - Private Equity - role in start-ups - Hire purchase and leasing - Non-banking Finance Companies: Types - Functions

UNIT-III: MONEY MARKET:

Functions of Money Market - Organization of Money Market - Dealers - Money Market Instruments - RBI - Functions - Role of RBI in Money Market - LAF (Liquidity Adjustment Facility), MSF (Marginal Standing Facility), Repo, and Reverse Repo.

UNIT-IV: DEBT MARKET:

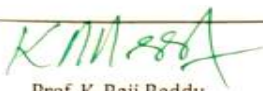
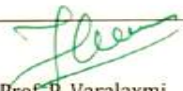
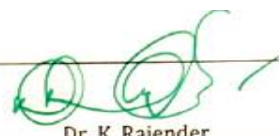

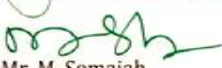


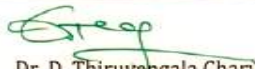
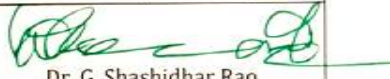
Evolution of Debt Markets in India - Instruments and Players in Debt Market: Government Securities - PSU Bonds - Corporate Bonds - Securities Trading Corporation of India - Primary Dealers in Government Securities - Bonds: Features of Bonds - Types of Bonds - Bond Ratings.

UNIT-V: EQUITY MARKET:

Meaning - Development of Equity Market in India - Primary Market: IPO and FPO - Methods of IPO - Role of Merchant Bankers in Fixing the Price - Red Herring Prospectus – Sweat Equity - ESOP - Rights Issue - Secondary Market: Meaning and Functions of Stock Exchanges - Evolution and Growth of Stock Exchanges - Stock Exchanges in India - Recent Developments in Indian Stock Exchanges - Stock Market Indices - SEBI: Objectives and Functions

SUGGESTED READINGS:

- 1) Bhole, L.M., Financial Markets and Institutions. Tata McGraw Hill Publishing Company, New Delhi, India.
- 2) Prof. Prashanta Athma, Financial Institutions and Markets: PBP
- 3) Gordon & Natarajan, Financial Markets and Services. Himalaya Publishing House, New Delhi, India.
- 4) Khan and Jain, Financial Services, Tata McGraw Hill, New Delhi, India.
- 5) Khan, M.Y., Indian Financial System -Theory and Practice. Vikas Publishing House, New Delhi, India.

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Paper DSC 303: RELATIONAL DATABASE MANAGEMENT SYSTEMS

(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: to acquire basic conceptual background necessary to design and develop simple database system, Relational database mode, ER model and distributed databases, and to write good queries using a standard query language called SQL.

UNIT-I: BASIC CONCEPTS: Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary -Types of Database. Relational and ER Models: Data Models - Relational Model – Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint - Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model – Entities – Attributes – Relationships - More about Entities and Relationships - Defining Relationship for College Database - E-R Diagram - Conversion of E-R Diagram to Relational Database.

UNIT-II: DATABASE INTEGRITY AND NORMALISATION: Relational Database Integrity - TheKeys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems – Single Valued Dependencies – Normalisation - Rules of Data Normalisation - The First Normal Form -The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless-join Decomposition - Dependency Preservation. File Organisation : Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation

- Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation - Inverted File Organisation.


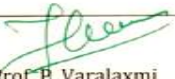
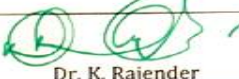




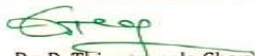

UNIT-III: STRUCTURES QUERY LANGUAGE (SQL): Meaning–SQL commands – Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by – Where - Group by - Nested Queries. Joins – Views – Sequences - Indexes and Synonyms - Table Handling.

UNIT-IV: TRANSACTIONS AND CONCURRENCY MANAGEMENT: Transactions – Concurrent Transactions - Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control. Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity - Database Security - Authorization.

UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES: Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution - Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

ADVANCED TOPICS: Overview: Parallel Database - Multimedia Database - Mobile Database - Web Database - Multidimensional Database. Data Warehouse - OLTP Vs OLAP - NoSQL Database. **LAB:** SQL QUERIES BASED ON VARIOUS COMMANDS.

SUGGESTED READINGS: 1) Database Systems: R.Elmasri& S.B. Navathe, Pearson.; 2) Introduction to Database Management System: ISRD Group, McGraw Hill.; 3) Database Management System: R.Ramakrishnan&J.Gehrke, McGrawHill.; 4) Modern Database Management: J.A.Hoffer,V.Rames&H.Topi, Pearson.;5) Database System Concepts: Silberschatz,Korth&Sudarshan,McGrawHill.6) Simplified Approach to DBMS: Parteek Bhaia, Kalyani Publishers.

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B.Com. IV Semester - Paper SEC3 (a): PRACTICE OF GENERAL INSURANCE

Objective: To make the student understand general policies and accounting.

UNIT I: GENERAL INSURANCE POLICIES:








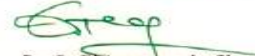
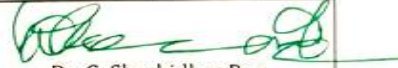
Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability, Personal Accident and Specialty Insurance, Engineering and other insurance.

UNIT II: UNDERWRITING, PREMIUMS, CLAIMS AND INSURANCE RESERVES AND ACCOUNTING:

Concept of Underwriting—Underwriting Process—Risk sharing and its methods—risk management and steps involved in it—Rating and Premiums—concept of soft and hard markets—Concept of Claim-understanding the process of claim management—claims fraud and fraud prevention—Insurance reserves and accounting—different types of reserves of insurance companies—reserving process followed by insurance companies—Insurance accounting.

SUGGESTED READINGS:

1. Practice of General Insurance - Insurance Institute of India.
2. Practice of General Insurance - D.S. Vittal-HPH.
3. Principles & Practice of Insurance- Dr. P. Periasamy - HPH.
4. Risk Management: A Publication of the Insurance Institute of India.
5. Practice of General Insurance: Dr. V. Padmavathi, Dr. V. Jayalakshmi, PBP.
6. Insurance Theory and Practice: Tripathi PHI
7. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
8. Risk Management and Insurance : Trieschman, Gustavson and Hoyt
9. South Western College Publishing Cincinnati, Ohio.

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B.Com. IV Semester - Paper SEC3 (b): SOCIAL MEDIA MARKETING

Objective: To make students to understand the Social Media marketing.

UNIT I: SOCIAL MEDIA MARKETING:










Building an online community – Understanding Social Media Marketing – Marketing and building presence on Facebook – Marketing and building presence on Twitter – Employer branding on LinkedIn

UNIT II: ONLINE ADVERTISING ON SOCIAL MEDIA:

Facebook advertising overview – How Facebook ads work – How to create Facebook ads – Additional advertising options and best practices for Facebook advertising – Marketing and monetizing on YouTube – Customize your YouTube Channel – Video optimization on YouTube – YouTube Analytics

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Tuten: Social Media Marketing, sage
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Social Media Marketing All-In-One for Dummies By Jan Zimmerman and Deborah Ng
7. Facebook Growth Hacking: How to Correctly Set Up and Maintain Your Facebook Presence and Gain Massive Amounts of Fans (Social Media Marketing) by Jeff Abston
8. Youtube Influencer: How To Become a Youtube Influencer, Why Influencer Marketing Matters, and How To Monetize Your Channel by Jeff Abston

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B.Com. IV Semester - Paper SEC-3 (c): BUSINESS INTELLIGENCE

Objective: To make students to understand the Business Intelligence.

UNIT I: BUSINESS INTELLIGENCE USING POWER BI:

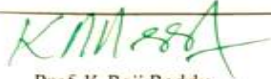
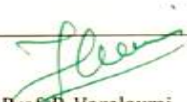





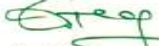

Getting data in Power BI: Overview of Power BI Desktop - Connect to data sources in Power BI Desktop - Clean and transform data with the Query Editor - advanced data import and cleaning techniques - Cleaning irregularly formatted data - Modeling the data: Manage data relationships - Create calculated columns - Optimizing data models - Create calculated measures - Create calculated tables - Explore time-based data - Exploring data: Introduction to the Power BI service - Turn business intelligence data into data insights

UNIT II: POWER BI AND EXCEL:

Using Excel data in Power BI: Uploading an Excel workbook with a simple table into Power BI - Upload workbooks created with Excel Power Pivot and Power View - Publishing and sharing: Publish Power BI Desktop reports - Print and export dashboards and reports - Manually republish and refresh data - Power BI Mobile - Create groups in Power BI - Publish to web

SUGGESTED READINGS:

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Create space Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; Teo Lachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

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B.Com. IV Semester - Paper SEC4 (a): REGULATION OF INSURANCE BUSINESS

Objective: To equip the students with the knowledge regarding Insurance Business Regulations.

UNIT I: INSURANCE LEGISLATION IN INDIA:


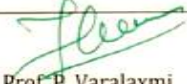


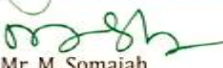


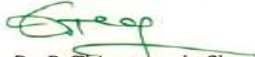
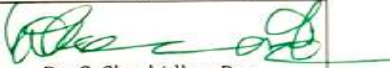
History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS-insurance repositories-TPAs—Role and duties of surveyors—Origin and development of micro-insurance—regulation of ULIPs— pension schemes—money laundering—KYC—methods of receipt of premium—Exchange control regulations relating to General and Life Insurance—IRDA Health Insurance Regulations, 2016—Health plus life combo products.

UNIT II: POLICY HOLDERS RIGHTS OF ASSAIGNMENT, NOMINATION AND TRANSFER:

Assignment and transfer of insurance policies—provisions related to nomination—repudiation— Fraud—protection of policyholder interest—stages in insurance policy—presale stage—post sale stage—free look period—grievance redressal—claim settlement—key feature document—dispute resolution mechanism—insurance ombudsman—solvency margin and investments— international trends in insurance regulation.

SUGGESTED READINGS:

1. Regulation of Insurance Business - Insurance Institute of India
2. Regulation of Insurance Business - D.S. Vittal, HPH
3. Regulation of Insurance Business: Dr. V. Padmavathi, PBP
4. Risk Management : A Publication of the Insurance Institute of India
5. Insurance Theory and Practice: Tripathi PHI
6. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
7. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt
8. South Western College Publishing Cincinnati, Ohio.
9. Insurance Management - S.C. Sahoo & S.C. Das-HPH.

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Faculty of Commerce & Business Management,

**B.Com. IV Semester - Paper SEC4 (b): SEARCH ENGINE OPTIMIZATION AND
ONLINE ADVERTISING**

***Objective:** To make students to understand the Search engine optimization and online advertising.*

UNIT I: SEO FOUNDATIONS AND SEO KEYWORD STRATEGY:

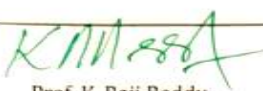






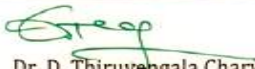
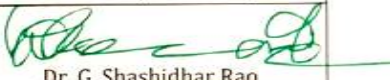
Understanding SEO – Keyword strategy – Content optimization – Long-term content planning – Link-building strategies – Measuring SEO effectiveness – SEO for Ecommerce – Local search – Mobile SEO

UNIT II: GOOGLE ADWORDS AND REMARKETING:

Pay-Per-Click Advertising – Getting started with Google Adwords – Advertising tracking – Key Google Adwords strategies – Remarketing with Google – Budget and ROI tips – B2B Remarketing Campaigns

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. SEO for Dummies, 6th Edition, by John Kent
6. SEO Fitness Workbook: 2018 Edition: The Seven Steps to Search Engine Optimization Success on Google By Jason McDonald
7. The Art of SEO: Mastering Search Engine Optimization By Eric Enge, Stephan Spencer and Jessie Stricchiola
8. Google Adwords for Beginners: A Do-It-Yourself Guide to PPC Advertising By Cory Rabazinsky, 2015

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**B.Com. IV Semester - Paper SEC-4 (c) DATA VISUALIZATION &
STORYTELLING**

Objective: To make students to understand the Data visualization & Storytelling.

UNIT I: DATA VISUALIZATION USING POWER BI:

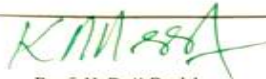
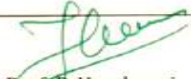





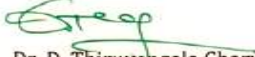
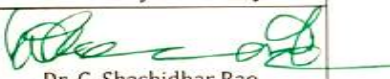
Visuals in Power BI: Bar charts – Pie charts – Treemaps – Combination charts – Slicers – Map visualizations – Matrixes and Tables – Scatter charts – Waterfall and funnel charts - Gauges and single-number cards - Modifying visuals and reports: Modify colors in charts and visuals – Add shapes, text boxes, and images to reports - Page layout and formatting - Other Data Visualization features and options: Group interactions among multiple visualizations on the same report page - Summarization and category options – Z-order - Visual hierarchies and drill-down

UNIT II: TELLING STORIES WITH DATA:

Data Storytelling: Apply storytelling principles to business analytics - Improve business analytics presentations through storytelling - Creating high-impact reports and presentations: Guidelines and best practices

SUGGESTED READINGS:

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; Teo Lachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
5. Microsoft Power BI Dashboards Step by Step, Errin O'Connor, Microsoft Press
6. Storytelling with Data: A Data Visualization Guide for Business Professionals; Cole Nussbaumer Knaflic; Wiley

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: INCOME TAX

Objective: To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from different heads with reference to an Individual Assessee.

UNIT-I: INTRODUCTION:

Direct and Indirect Taxes – Canons of Taxation - Features and History of Income Tax in India – Definitions and Basic Concepts of Income Tax: Assessee – Deemed Assessee – Assessee-in-default – Assessment Year – Previous Year - Person – Agricultural Income – Heads of Income – Gross Total Income – Total Income -- Incomes Exempt from Tax. Residential Status and Scope of Total Income: Meaning of Residential Status – Conditions applicable to an Individual Assessee – Incidence of Tax – Types of Incomes (Theory only)

UNIT-II: INCOME FROM SALARIES:

Definition of Salary – Characteristics of Salary – Computation of Salary Income: Salary u/s 17(1) – Annual Accretion – Allowances – Perquisites – Profits in lieu of Salary – Deductions u/s. 16 – Problems on computation of Income from Salary

UNIT-III: INCOME FROM HOUSE PROPERTY:

Definition of House Property – Exempted House Property incomes– Annual Value – Determination of Annual Value for Let-out House and Self-occupied House – Deductions u/s.24 – Problems on computation of Income from House Property

UNIT-IV: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

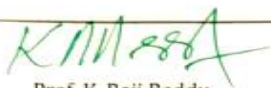
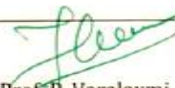





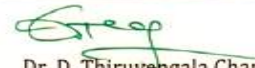

Definition of Business and Profession – Procedure for computation of Income from Business – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Problems on computation of Income from Business. Income from Profession: Rules– procedure – problems on computation of Income from Profession.

UNIT-V: CAPITAL GAINS AND INCOME FROM OTHER SOURCES:

Introduction - Meaning – Basis of charge – Short term and Long term Capital Assets – Transfer – Deemed Transfer –Determination of Cost of Acquisition – Procedure for computation of Long-term and Short-term Capital Gains/Losses – Exemptions in respect of certain Capital Gains u/s. 54 – Problems on computation of capital gains – Income from Other Sources - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, cross world puzzles, Races – Interest on Securities – Gifts received by an Individual – Casual Income – Family Pension – Rent received on let out of Furniture- Plant and Machinery with/without Building – Deductions u/s. 57. (Theory only)

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Taxation: Dr. M.N. Ravi, PBP.
3. Direct Taxes Law & Practice: Dr. Vinod K. Singhanian & Dr. Kapil Singhanian, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: EXCEL FOUNDATION

Objective: Students will learn how to start working with M S Excel right from basics to Tables, Templates and Printing of their work.

UNIT-I: INTRODUCTION TO EXCEL:

Workbooks and Worksheets, Moving Around a Worksheet, Ribbon tabs, Types of commands on the Ribbon, Using Shortcut Menus, Working with Dialogue Boxes, Task Panes, Getting started on your worksheet, Creating a chart, Printing your worksheet, Saving your worksheet, Exploring Data Types, Modifying Cell Contents, Deleting, Replacing, Editing of a cell. Some handy data entry techniques, Number Formatting.

UNIT-II: WORKSHEET OPERATIONS:

Moving and resizing windows, Switching among windows, Activating a worksheet, Adding, Deleting a worksheet, Changing a sheet tab color, Rearranging your worksheets, Hiding, un-hiding a worksheet, Worksheet View, Comparing sheets side by side, Selecting ranges, complete rows and columns, noncontiguous ranges, multi-sheet ranges, special types of cells. Copying or Moving Ranges. Paste Special dialogue box, Adding comments to cells.

UNIT-III: TABLES AND FORMATTING:

Creating a Table, Changing the Look of a Table, Navigating in a Table, Selecting parts of a Table, Adding, Deleting new rows or columns, Moving a Table, Working with the Total Row, Removing duplicate rows from a table. Sorting and filtering a table, Converting Table into Range. Formatting tools on the Home tab, Mini Toolbar, Fonts, Text Alignment, Wrapping text to fit a cell, Colors and Shading, Borders and Lines. Naming Styles.

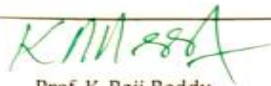
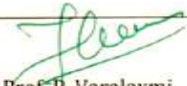


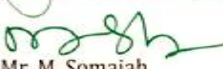


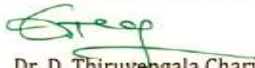

UNIT-IV: EXCEL FILES & TEMPLATES:

Creating a New Workbook, Filtering filenames, Saving and Auto Recovery, Password-Protecting a Workbook, Recovering unsaved work, Protect Workbook options, Checking Compatibility. Creating a Excel Templates, Modifying a template, Custom Excel Templates, Default Templates, Editing your Template, Resetting the default workbook, Saving your Custom Templates, Getting ideas for creating Templates.

UNIT-V: PRINTING YOUR WORK: Normal, Page Layout, Page Break View, Choosing your printer, Specifying what you want to print, Changing Page Orientation, Specifying paper size, Adjusting page margins, Inserting a page break, Removing manual page breaks, Printing Row and Column Titles, Scaling printed output, Header or Footer Options, Preventing certain cells, Objects from being printed, Creating Custom Views of your Worksheet. Creating PDF files. Introducing Excel:

SUGGESTED READINGS:

1. Excel 2013 Bible: John Walkenbach, Wiley.
2. Microsoft Excel 2013: Data Analysis and Business Modeling: Winston, PHI
3. Excel Data Analysis - Modeling and Simulation: Hector Guerrero, Springer.
4. Excel Functions and Formulas: Bernd Held, BPB Publications.
5. Financial Analysis and Modeling using Excel and VBA: Chandan Sengupta, Wiley

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Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper DSC 402: BUSINESS STATISTICS - II

Objective: to inculcate analytical and computational ability among the students.

UNIT-I: REGRESSION:

Introduction – Definition – Types – Uses - Correlation Vs. Regression - Regression Lines– Regression Equations - Using Regression Lines for Prediction.

UNIT-II: INDEX NUMBERS:

Introduction - Uses - Types - Problems in the Construction of Index Numbers - Methods of Constructing Index Numbers - Simple and Weighted Index Number (Laspeyre - Paasche, Marshall – Edgeworth) – Quantity of Volume Index Numbers – Value Index Numbers -Tests of Consistency of Index Number: Unit Test - Time Reversal Test Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers. Consumer Price Index Number – Need – Utility – Construction – Method.

UNIT-III: TIME SERIES:

Introduction –Definition – Utility - Components – Methods-Semi Averages - Moving Averages – Least Squares Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:


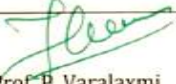







Introduction - Definition – Probability Concepts - Experiment – Types of Events - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye’s Theorem - Basics of Set Theory – Permutations & Combinations.

UNIT-V: THEORITCAL DISTRIBUTIONS:

Meaning – Importance –Types of Theoretical Distributions -Binomial Distribution: Introduction – Assumptions – Expansion – Constants -Fitting of Binomial Distribution - Poisson Distribution: Introduction – Features – Assumptions – Uses and importance – Models and Probability of Poisson Distributions – Constants - Fitting of Poisson Distribution. Normal Distribution: Concept – Properties - Importance - Central Limit Theorem - Fitting of a Normal Curve (Areas Method Only).

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson,
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Business Statistics: Theory & Application, P. N. Jani, PHI Learning
4. Business Statics – II: Obul Reddy, D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata Mc Graw Hill

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Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper DSC 403: CORPORATE ACCOUNTING

Objective: To acquire knowledge of AS-14 and preparation of accounts of banking and insurance companies.

UNIT-I: COMPANY LIQUIDATION:

Meaning – Modes - Contributory Preferential Payments – Statements of Affairs - Liquidator's Remuneration - Preparation of Liquidator's Final Statement of Account (Including problems)

UNIT-II: AMALGAMATION (AS-14):

Amalgamation: In the nature of Merger and Acquisition – Calculation of Purchase Consideration – Accounting Treatment in the books of transferor and transferee companies. (Including problems)

UNIT-III: INTERNAL RECONSTRUCTION AND ACQUISITION OF BUSINESS:

Internal Reconstruction: Accounting treatment – Preparation of final statement after reconstruction- Acquisition of business when new set of books are opened- Debtors and Creditors taken over on behalf of vendors- When same set of books are continued(Including problems)



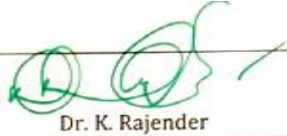






UNIT-IV: ACCOUNTS OF BANKING COMPANIES:

Books and Registers maintained – Slip system of posting – Rebate on Bills Discounted – Non-Performing Assets – Legal Provisions relating to final accounts – Preparation of Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCE COMPANIES AND INSURANCE CLAIMS: Introduction – Formats-Revenue Account–Net Revenue Account - Balance Sheet - Valuation - Balance Sheet – Net Surplus – General Insurance - Preparation of final accounts with special reference to Life Insurance - Insurance claims- Meaning – Loss of Stock and Assets – Average Clause – Treatment of Abnormal Loss - Loss of Profit. (Including problems)

SUGGESTED READINGS:

1. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
2. Accountancy–III: Tulasian, Tata McGraw Hill Co.
3. Advanced Accountancy: Arulanandam; Himalaya
4. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers
5. Advanced Accounting (Vol-II): Chandra Bose, PHI

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester -Paper DSC 403: WEB TECHNOLOGIES
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To gain skills of usage of Web Technologies to design Web pages.

UNIT-I: INTRODUCTION:

Art of creating a web site - Markup language (HTML) - Hypertext - Formatting text - Forms & formulating instructions & formulation elements - Commenting code - Anchors - Back grounds - Images - Hyperlinks - Lists - Tables - Frames - Web design principles.

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages and dynamic web page technologies: Introduction to Dynamic HTML programming - Cascading style sheets (CSS) - Basic syntax and structure - Events handling - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT & EVENTS AND EVENT HANDLERS:

Java Script: Introduction - Client side Java script - Server side Java script - Core features - Data types and variables - Operators - Expressions and statements - Functions - Objects - Array - Date and math related objects - Document object model - Event handling.

Events And Event Handlers: General information about Events - Event - OnAbort - OnClick - Ondbl click - Ondrag drop - Onerror - Onfocus - Onkey Press - Onkey Up - Onload - Onmouse Down - Onmouse Move - Onmouse Out - Onmouse Over - Onmove - Onrest - Onresize - Onselect - On submit - Onunload.

UNIT-IV: HYPER TEXT PRE PROCESSOR (PHP):

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads. Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies.

File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML) & JSP:

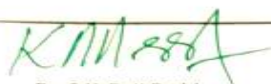
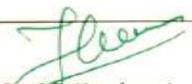





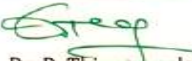
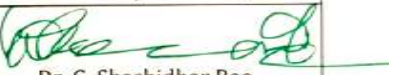
Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet - Hyperlinks in XML Document Object Model - XML Query Language.

JSP: Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT-SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:

1. Web Technology: Pradeep Kumar, HPH
2. Internet & World Wide Web How to Program: Deitel&Deitel, Pearson.
3. Web programming: Chris Bates.
4. HTML & XML An Introduction NIIT, PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson

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Faculty of Commerce & Business Management,
B.Com. V Semester - Paper GE: BUSINESS ECONOMICS

Objective: To acquire knowledge for application of economic principles and tools in business practices.

UNIT-I: INTRODUCTION:

Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Concepts used in Business Economics -Law of Diminishing marginal utility - Law of Equi-marginal utility.

UNIT- II: DEMAND ANALYSIS:

Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand –Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticities of Demand

UNIT-III: SUPPLY ANALYSIS:

Law of Supply - Factors influencing Supply - Market Equilibrium- Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

UNIT-IV: PRODUCTION ANALYSIS:










Concept of Production –production function-Total Production - Marginal Production - Average Production – Returns to a factor- Law of Variable Proportions - Law of Returns to Scale – Isocost – Isoquants - Economies and Dis-economies of Scale.

UNIT-V: COST AND REVENUEANALYSIS:

Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches -Revenue Curves–relationship between total marginal and average revenues- --Break Even Analysis—Meaning – Assumptions – Uses and Limitations.

SUGGESTED READINGS:

1. Business Economics: V. G. Mankar, Himalaya Publishing House
2. Managerial Economics: Vanith Agrawal, Pearson Education
3. Business Economics: H. L. Ahuja, S. Chand & Co. Ltd.
4. Business Economics : R. K. Lekhi, Kalyani Publishers
5. Business Economics: D. M. Mithani, Himalaya Publishing House
6. Business Economics: P. N. Chopra, Kalyani Publishers
7. Essential of Business Economics: D. N. Dwivedi, Vikas Publishers

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 501 (a) : COST ACCOUNTING

Objective: To make the students acquire the knowledge of cost accounting methods.

UNIT-I: INTRODUCTION:

Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting – Cost concepts – Cost Classification. (Theory Only)

UNIT-II: MATERIAL:

Direct and Indirect Material cost – Inventory Control Techniques – Stock Levels – EOQ – ABC Analysis – JIT - VED - FSND - Issue of Materials to Production – Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods. (Problems)

UNIT-III: LABOUR AND OVERHEADS:

Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods.

Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads. (Problems)

UNIT-IV: UNIT AND JOB COSTING:

Unit Costing: Features - Cost Sheet – Tender and Estimated Cost Sheet.


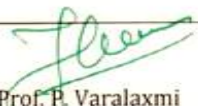
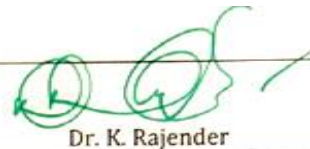




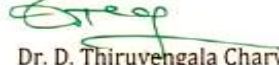

Job Costing: Features - Objectives – Procedure - Preparation of Job Cost Sheet. (Problems)

UNIT-V: CONTRACT AND PROCESS COSTING:

Contract Costing: Features – Advantages - Procedure of Contract Costing – Guidelines to Assess profit on incomplete Contracts. Process Costing: Meaning – Features – Preparation of Process Account – Normal and Abnormal Losses. (Problems)

SUGGESTED READINGS:

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: Prashanta Athma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 501 (b): FINANCIAL PLANNING & PERFORMANCE

Objective: To make students to understand the Financial Planning & Performance.

UNIT I: STRATEGIC PLANNING:

Strategic planning: Meaning – Characteristics – Environmental Scanning – Strategic Planning Vs. Tactical Planning – Strategic Planning Process

Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Financial statement projections - Cash flow projections.

UNIT II: BUDGETING AND FORECASTING:

Budgeting Concepts: Operations and performance goals - Characteristics of a successful budget process - Resource allocation - Forecasting techniques: Regression analysis - Learning curve analysis - Expected value - Budgeting Methodologies: Annual business plans (master budgets) - Project budgeting - Activity-based budgeting - Zero-based budgeting - Continuous (rolling) budgets - Flexible budgeting – Meaning & Problems.

UNIT III: COST AND VARIANCE ANALYSIS:

Cost and Variance Analysis: Comparison of actual to planned results - Use of flexible budgets to analyze performance - Management by exception - Standard Cost System: Use of standard cost systems - Analysis of variation from standard cost expectations

UNIT IV: PERFORMANCE MEASURES:








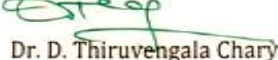

Performance Measures: Product profitability analysis - Business unit profitability analysis - Customer profitability analysis - Return on investment - Residual income - Investment base issues - Key performance indicators (KPIs) - Balanced scorecard - Responsibility Centers and Reporting Segments: Types of responsibility centers - Transfer pricing - Reporting of organizational segments

UNIT V: TECHNOLOGY AND ANALYTICS:

Information Systems: Accounting information systems - Enterprise resource planning systems - Enterprise performance management systems - Data Governance: Data policies and procedures - Life cycle of data - Controls against security breaches - Technology-enabled finance transformation: System Development Life Cycle - Process automation - Innovative applications
Data analytics: Business intelligence - Data mining - Analytic tools - Data visualization

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Strategic Management and Business Policy: Globalization, Innovation and Sustainability, 15th edition; Wheelen, Thomas L., et. al.; Prentice Hall
3. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
4. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
5. Quantitative Methods for Business, 13th Edition; Anderson, David, R., Sweeney, Dennis J., Williams, Thomas A., Camm, Jeff, and Martin, R. Kipp; Cengage Learning
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA.

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Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 501 (c) : INTERNATIONAL FINANCIAL
REPORTING - I

Objective: To make students to understand the International Financial Reporting.

UNIT I: GENERAL PURPOSE OF FINANCIAL ACCOUNTING AND REPORTING AS PER US GAAP AND IFRS:

Conceptual framework: Standard Setting Bodies & Hierarchy - Elements of F/S - Primary objectives of financial reporting - Qualitative Characteristics of F/S - Fundamental Assumptions & Principles - Accounting Cycle & Preparation of F/S - General-purpose financial statements: Balance sheet - Income statement - Statement of comprehensive income - Statement of changes in equity - Statement of changes cash flows - Public company reporting requirements: SEC Reporting Requirements - Interim Financial Reporting - Segment Reporting - Revenue recognition: 5-Step approach to Revenue Recognition - Certain Customer's Rights & Obligations - Specific Arrangements - Long Term Construction Contracts

UNIT II: CURRENT ASSETS AND CURRENT LIABILITIES (AS PER US GAAP AND IFRS):

Monetary Current Assets & Current Liabilities: Cash & Cash Equivalents - Accounts Receivable - Notes Receivable - Transfers & Servicing of Financial Assets - Accounts Payable - Employee-related Expenses Payable - Inventory: Determining Inventory & Cost of Goods Sold - Inventory Valuation - Inventory Estimation Methods

UNIT III: FINANCIAL INVESTMENTS AND FIXED ASSETS (AS PER US GAAP AND IFRS):

Financial Investments: Investments in Equity Securities - Investment in Debt Securities - Financial Instruments - Tangible Fixed Assets: Acquisition of Fixed Assets - Capitalization of Interest - Costs Incurred After Acquisition - Depreciation - Impairment - Asset Retirement Obligation - Disposal & Involuntary Conversions - Intangible Assets: Knowledge-based intangibles (R&D, software) - Legal rights based intangibles (patent, copyright, trademark, franchise, license, leasehold improvements) - Goodwill

UNIT IV: FINANCIAL LIABILITIES (AS PER US GAAP AND IFRS):

Bonds Payable: Types of Bonds - Convertible bonds vs. Bonds with detachable warrants - Bond Retirement - Fair Value Option & Fair Value Election - Debt Restructuring: Settlement - Modification of terms








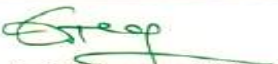

UNIT V: SELECT TRANSACTIONS (AS PER US GAAP AND IFRS):

Fair value measurements: Valuation techniques - Fair value hierarchy - Fair value concepts - Accounting changes and error correction: Changes in accounting estimate - Changes in accounting principle - Changes in reporting entity - Correction of an error - Contingencies: Possibility of occurrence (remote, reasonably possible or probable) - Disclosure vs. Recognition

Derivatives and Hedge Accounting: Speculation (non-hedge) - Fair value hedge - Cash flow hedge - Non-monetary exchanges: Exchanges with commercial substance - Exchanges without commercial substance - Leases: Operating lease - Finance lease - Sale leaseback

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (a): COMPUTERIZED ACCOUNTING

Objective: To make the students to acquire the knowledge of computer software

UNIT I: MAINTAINING CHART OF ACCOUNTS IN ERP:

Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shut Company-Select a Company-Alter Company Details-Company Features and Configurations-F11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger Creation-Single Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation-Multiple Group Creation-Displaying Groups and Ledgers-Displaying Groups-Display of Ledgers-Deletion of Groups and Ledgers – P2P procure to page.

UNIT II: MAINTAINING STOCK KEEPING UNITS (SKU):

Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock Group-Creation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports.

UNIT III: RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:

Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)-Contra Voucher (F4)-Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)-Journal Voucher (F7).


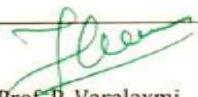





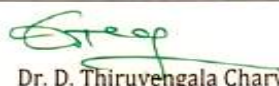

UNIT IV: ACCOUNTS RECEIVABLE AND PAYABLE MANAGEMENT: Introduction-Accounts Payables and Receivables-Maintaining Bill-wise Details-Activation of Maintain Bill-wise Details Feature-New Reference-Against Reference-Advance-On Account-Stock Category Report-Changing the Financial Year in ERP.

UNIT V: MIS REPORTS:

Introduction-Advantages of Management Information Systems-MIS Reports in ERP - Trial Balance - Balance Sheet-Profit and Loss Account-Cash Flow Statement-Ratio Analysis-Books and Reports - Day Book-Receipts and Payments-Purchase Register-Sales Register-Bills Receivable and Bills Payable.

SUGGESTED READINGS:

1. Computerised Accounting: Garima Agarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
5. Computerised Accounting and Business Systems: Kalyani Publications
6. Manuals of Respective Accounting Packages
7. Tally ERP 9: J.S. Arora, Kalyani Publications.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (b): FINANCIAL DECISION MAKING - I

Objective: To make students to understand the Financial Decision Making.

UNIT I: FINANCIAL STATEMENT ANALYSIS

Basic Financial Statement Analysis: Common size financial statements - Common base year financial statements - Financial Ratios: Liquidity - Leverage - Activity - Profitability - Market Profitability analysis: Income measurement analysis - Revenue analysis - Cost of sales analysis - Expense analysis - Variation analysis - Impact of changes in accounting treatment - Accounting and economic concepts of value and income - Earnings quality

UNIT II: FINANCIAL MANAGEMENT

Risk & Return: Calculating return - Types of risk - Relationship between risk and return Long-term Financial Management: Term structure of interest rates - Types of financial instruments - Cost of capital - Valuation of financial instruments

UNIT III: RAISING CAPITAL

Raising Capital: Sources of Long term Capital: Equity, Preference, Debt - Financial institutions - Initial and secondary public offerings - Dividend policy - Lease financing

UNIT IV: WORKING CAPITAL MANAGEMENT








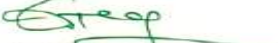

Managing working capital: Cash management - Marketable securities management - Accounts receivable management - Inventory management - Short-term Credit: Types of short-term credit - Short-term credit management

UNIT V: CORPORATE RESTRUCTURING AND INTERNATIONAL FINANCE

Corporate Restructuring: Mergers and acquisitions - Bankruptcy - Other forms of restructuring International Finance: Fixed, flexible, and floating exchange rates - Managing transaction exposure - Financing international trade.

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Interpretation and Application of International Financial Reporting Standards; Mackenzie, Bruce, Coetsee, Danie, Njikizana, Tapiwa, Chamboko, Raymond, Colyvas, Blaise, and Hanekom, Brandon; Wiley
3. Financial Reporting & Analysis, 13th edition; Gibson, Charles H.; South-Western Cengage Learning
4. Financial Statement Analysis, 10th edition; Subramanyam, K.R., and Wild, John L.; McGraw Hill
5. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (c) : INTERNATIONAL TAX & REGULATION

Objective: To make students to understand the International Tax & Regulation..

UNIT I: TAXATION OF INDIVIDUALS:

Individual Income Tax Return: Filing Status - Cash basis and Accrual basis. Gross Income: Wages, Salaries, Bonus, Commission, Fees & Tips - Interest & Dividend Income Business Income - Capital Gains & Losses - Passive Income - Farming Income - Deductions: Adjustments - Deductions from AGI - Calculating Tax: Tax Credits - Alternative Minimum Taxes - Other Taxes - Estimated Tax penalty

UNIT II: PROPERTY TRANSACTIONS & DEPRECIATION:

Capital Gains & Losses - Gains & Losses from Sale of Long-term Business property - Depreciation & Amortization

UNIT III: TAXATION OF CORPORATIONS:

C-Corporations: Formation - Income Tax Return - Income - Deductions - Reconciliation of Taxable Income with books - Calculating Tax - Corporate Earnings & Distributions - Corporate Liquidation & Reorganizations - S-Corporations: Eligibility criteria - Income Tax Return - Shareholder basis - Earnings and Distribution - Termination of Election

UNIT IV: TAXATION OF OTHER ENTITIES:








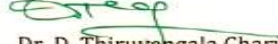

Partnerships: Formation - Income Tax Return - Partner basis - Partnership Distributions - Sale of Partnership Interest by a Partner - Termination of Partnership - Estate, Trust & Gift Taxation: Estate and Trust Fiduciary Income Tax Return - Estate Tax Return - Gift Tax Return - Generation-skipping transfer Tax - Tax Exempt Organizations: Formation - Income Tax Return

UNIT V: STATUTORY REGULATIONS, ACCOUNTANT RESPONSIBILITIES, BUSINESS STRUCTURES:

Federal Security Regulations: Securities Act of 1933 - Securities Exchange Act of 1934 - Other federal security regulations - Professional & Legal Responsibilities: Accountant Common Law Liabilities - Accountant Statutory Liabilities - Accountant Liabilities for Privileged Information - Accountant Criminal Liabilities - Employment Regulations - Environmental Regulations - Antitrust Regulations - Business Structures: Sole Proprietorships - Partnerships - Corporations

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Regulation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Regulation, Wiley
3. Internal Revenue Code: Income, Estate, Gift, Employment and Excise Taxes, CCH Tax Law Editors
4. Federal Income Tax: Code and Regulations--Selected Sections, Martin B. Dickinson, Wolters Kluwer
5. Federal Income Taxation by Katherine Pratt and Thomas D. Griffith, Wolters Kluwer

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Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503 (a) : AUDITING

Objective: to understand meaning and elements of auditing and gain knowledge for execution of audit.

UNIT-I: INTRODUCTION:

Auditing: Meaning – Definition – Evolution – Objectives – Importance - Types of Audit – Standards of Auditing – Procedure for issue of standards by AASB.

UNIT-II: AUDITOR AND EXECUTION OF AUDIT:

Appointment – Qualification and Disqualification – Qualities – Remuneration – Removal – Rights – Duties – Civil and Criminal Liabilities of Auditors – Commencement of Audit – Engagement Letter – Audit Program – Audit Note Book – Audit Workbook – Audit Markings.

UNIT-III: INTERNAL CONTROL, INTERNAL CHECK AND INTERNAL AUDIT: Meaning and Objectives of Internal Control – Internal Check and Internal Audit – Internal Check Vs. Internal Audit – Internal Control vs. Internal Audit.

UNIT-IV: VOUCHING:

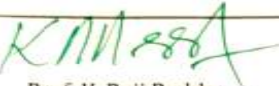
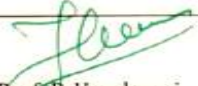







Meaning – Objectives – Types of Vouchers – Vouching of Trading Transactions – Vouching Cash Transaction – Auditing in an EDP Environment.

UNIT-V: VERIFICATION AND VALUATION OF ASSETS:

Meaning and Definition – Distinction – Verification and Valuation of various Assets and Liabilities – Audit Committee – Role of Audit Committee – Audit Reports.

SUGGESTED READINGS:

1. Principles and Practice of Auditing: RG Saxena, Himalaya Publishing House.
2. Auditing and Assurance for CA Integrated Professional Competence: SK Basu, Pearson.
3. Auditing : Mahitha HPH
4. Auditing: Dr. Nazia Sultana, PBP.
5. Auditing: Aruna Jha, Taxmann Publications.
6. Auditing Principles, Practices & Problems: Jagdish Prakash, Kalyani Publishers.
7. Auditing and Assurance: Ainapure & Ainapure, PHI Learning.
8. Principles and Practice of Auditing: Dinkar Pagare, Sultan Chand & Sons.
9. Fundamentals of Auditing: Kamal Gupta and Ashok Arora, Tata McGraw-Hill
10. A Hand Book of Practical Auditing: B.N. Tandon etal., S. Chand.

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503 (b) : ADVANCED CORPORATE ACCOUNTING

Objective: To gain knowledge of AS-19 & 21 and format accounts.

UNIT-I: HOLDING COMPANIES (AS-21):

Nature – Legal requirements – Capital and Revenue Profit/Reserves/Losses – Minority Interest – Cost of Control or Goodwill – Capital Reserve – Inter Company Transactions – Un-realized Profit on Unsold stock - Revaluation of Assets – Interim Dividend by Subsidiary Companies - Debentures in Subsidiary Companies – Consolidated Balance Sheet.

UNIT-II: ELECTRICITY COMPANIES (DOUBLE ACCOUNTING SYSTEM):

Meaning of Double Account System – Final Accounts - Calculation of Reasonable Return and Disposal of Surplus – Replacement of an Asset.

UNIT-III: ACCOUNTING FOR PRICE LEVEL CHANGES:

Introduction – History – Limitations – Profit measurement under different systems of accounting – Methods of Accounting for Price Level Changes: Current Purchasing Power (CPP) – Current Cost Accounting (CCA).

UNIT-IV: LEASE ACCOUNTS (AS-19):

Meaning – Terminology – Advantages and Disadvantages – Types: Financial and Operating Lease – Accounting Treatment in the books of both the parties.


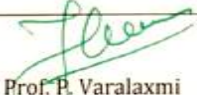





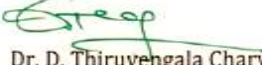

UNIT-V: HUMAN RESOURCE ACCOUNTING & SOCIAL RESPONSIBILITY ACCOUNTING:

Human Resource Accounting: Definition – Objectives – Assumptions – Advantages and Limitations – Approaches - Human resource accounting in India (Theory only).

Social Responsibility Accounting: Meaning – Nature – Need – Objectives – Accounting Concepts – Indicators of Social Performance (Theory only).

SUGGESTED READINGS:

1. Corporate Accounting: R.L.Gupta, M.Radha Swamy, Sultan Chand
2. Advanced Corporate Accounting: Srilatha Reddy, Himalaya
3. Advanced Corporate Accounting: Dr. Thangapandi, PBP
3. Advanced Accounting: Tulsania, TataMcGraw-hill Publishing Company
4. Corporate Accounting: Jain & Narang, Kalyani Publications
5. Advanced Accounting: S.M.Shukla, Sahitya Bhavan
6. Corporate Accounting: Prashanta Athma, Himalaya Publishers.
7. Advanced Accounting (Vol. II): Chandra Bose, PHI

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503 (c) : FINANCIAL MANAGEMENT

Objective: *To understand basics in Financial Management.*

UNIT-I: INTRODUCTION:

Financial Management: Meaning - Nature and Scope - Importance - Objectives - Profit Maximization vs Wealth Maximization - Traditional Functions of Finance Manager - Changing Role of Finance Manager - Relationship between Financial Management and Other Management Areas (Theory).

UNIT-II: FINANCIAL PLANNING:

Sources of Finance - Financial Planning: Meaning and Definition - Objectives - Characteristics - Process - Factors - Limitations (Theory).

UNIT-III: CAPITALIZATION:

Meaning of Capital and Capitalization - Sources of Capital - Theories of Capitalization - Over Capitalization: Meaning - Causes - Consequences - Remedies - Under Capitalization: Meaning - Causes - Consequences - Remedies - Comparison of Under and Over Capitalization - Watered Stock (Theory).

UNIT-IV: COST OF CAPITAL:

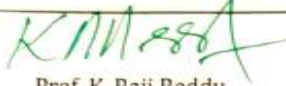
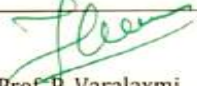





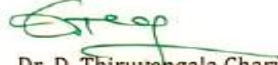
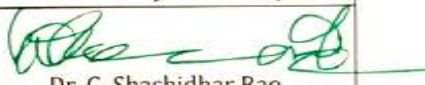
Meaning and Definition - Significance - Classification of Costs - Problems in Determination of Cost of Capital - Cost of Debt - Cost of Perpetual and Redeemable Debt - Cost of Preference Capital - Cost of Equity Capital - Cost of retained earnings - Weighted Average Cost of Capital (Simple Problems).

UNIT-V: CAPITAL STRUCTURE:

Meaning - Importance - Factors - Types - Optimal Capital Structure - Theories of Capital Structure: Net Income Approach - Net Operating Income Approach - Traditional Approach - Modigliani and Miller Approach (Simple Problems).

SUGGESTED READINGS:

1. Financial Management: I M Pandey, Vikas Publishing House Pvt Ltd.
2. Financial Management: M.Y. Khan & P.K. Jain, Tata McGraw-Hill
3. Financial Management: Shashi K. Gupta & R.K. Sharma, Kalyani Publishers,
4. Financial Management: Prasanna Chandra, McGraw Hill
5. Financial Management: Rustagi, Taxman Publications.
6. Financial Management: Tulsian, S. Chand.

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Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503a: MANAGEMENT INFORMATION SYSTEM

(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To equip the students with finer nuances of MIS.

UNIT-I: INTRODUCTION TO MIS:

The Technical and Business Perspective, Organization Structure, Evaluation of MIS through Information System, The Decision Making Process , System Approach to Problem Solving, The Structure of Management Information System, MIS Organization within the Company.

UNIT-II: INFORMATION SYSTEMS FOR DECISION MAKING:

Evolution of an Information System, Basic Information Systems, Decision Making and MIS, Decision Assisting Information System, Concepts of Balanced MIS Effectiveness and Efficiency Criteria.

UNIT-III: DEVELOPMENT OF MIS:

Methodology and Tools/Techniques for Systematic Identification, Evaluation and Modification of MIS. *Enterprise Resource Planning*: Introduction, Basics of ERP, Evolution of ERP, Enterprise Systems in Large Organizations, Benefits and Challenges of Enterprise Systems, *E-Enterprise System* : Introduction: Managing the E-enterprise, Organisation of Business in an E-enterprise, E-business, E-commerce, E-communication, E-collaboration.

UNIT-IV: ADVANCED MIS:


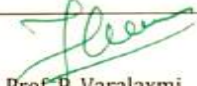







Concepts, Needs and Problems in Achieving Advanced MIS, DSS., Business intelligence + process management, systems development, and security.

UNIT-V: COLLABORATION, IMPACT & PITFALLS IN MIS:

Collaboration processes and information systems, Impact of Web 2.0 and social media on business process, Pitfalls in MIS Development: Fundamental Weakness, Soft Spots in Planning and Design Problems.

SUGGESTED READINGS:

- 1.Murdic, Rose and Clagett- Information Systems for Modern Management, PHI, New Delhi.
- 2.Process, Systems, and Information, David M. Kroenke,
3. MIS Cases Decision Making with Application Software, 4th Edition, Lisa Miller
- 4.Laudon-Laudon- Management Information Systems, Pearson Education, New Delhi.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503b: E-COMMERCE
(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: to acquire conceptual and application knowledge of ecommerce.

UNIT-I: INTRODUCTION:

E-Commerce: Meaning - Advantages & Limitations - E-Business: Traditional & Contemporary Model, Impact of E-Commerce on Business Models - Classification of E-Commerce: B2B - B2C - C2B - C2C - B2E - Applications of Ecommerce: E-Commerce Organization Applications - E-Marketing - E-Advertising - E-Banking - Mobile Commerce - E-Trading - E-Learning - E-Shopping.

UNIT-II: FRAMEWORK OF E-COMMERCE:

Framework of E-Commerce: Application Services - Interface Layers - Secure Messaging - Middleware Services and Network Infrastructure - Site Security - Firewalls & Network Security - TCP/IP - HTTP - Secured HTTP - SMTP - SSL.

Data Encryption: Cryptography - Encryption - Decryption - Public Key - Private Key - Digital Signatures - Digital Certificates.

UNIT-III: CONSUMER ORIENTED E-COMMERCE APPLICATIONS:

Introduction - Mercantile Process Model: Consumers Perspective and Merchant's Perspective - Electronic Payment Systems: Legal Issues & Digital Currency - E-Cash & E-Cheque - Electronic Fund Transfer (EFT) - Advantages and Risks - Digital Token-Based E-Payment System - Smart Cards.

UNIT-IV: ELECTRONIC DATA INTERCHANGE:

Introduction - EDI Standards - Types of EDI - EDI Applications in Business - Legal - Security and Privacy issues if EDI - EDI and E-Commerce - EDI Software Implementation.


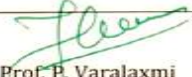







UNIT-V: E-MARKETING TECHNIQUES:

Introduction - New Age of Information - Based Marketing - Influence on Marketing - Search Engines & Directory Services - Charting the On-Line Marketing Process - Chain Letters - Applications of 5P's (Product, Price, Place, Promotion, People) E-Advertisement - Virtual Reality & Consumer Experience - Role of Digital Marketing.

Lab work: Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.

SUGGESTED READINGS:

1. Frontiers of Electronic Commerce: Ravi Kalakota, Andrew B Whinston, Pearson
2. E-Commerce: Tulasi Ram Kandula, HPH.
3. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
4. E-Commerce & Computerized Accounting: Rajinder Singh, Er. Kaiser Rasheed, Kalyani
5. E-Commerce & Mobile Commerce Technologies: Pandey, Saurabh Shukla, S. Chand

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503C: MOBILE APPLICATIONS
(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand and apply the mobile applications.

UNIT-I: INTRODUCTION:

What is Android, Android versions and its feature set The various Android devices on the market, The Android Market application store ,Android Development Environment - System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs), the Android Software Stack, The Linux Kernel, Android Runtime - Dalvik Virtual Machine, Android Runtime - Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings, Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files,

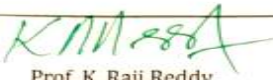
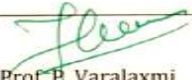







UNIT-II: MOBILE SOFTWARE:

Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project , Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application, Android Application Components, Android Activities: Defining the UI, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications Content Providers: Data Management, Android Intent Objects: Messaging for Components.

Android Manifest XML: Declaring Your Components, Designing for Different Android Devices, Views and View Groups, Android Layout Managers, The View Hierarchy, Designing an Android User Interface using the Graphical Layout Tool.

UNIT-III: MOBILE DISPLAY:

Displaying Text with Text View, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menus using views, Gallery, Image Switcher, Grid View, and Image View views to display images, Creating Animation, Saving and Loading Files, SQLite Databases, Android Database Design, Exposing Access to a Data Source through a Content Provider, Content Provider Registration, Native Content Providers

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UNIT-IV: MOBILE APPLICATIONS:

Intent Overview, Implicit Intents, Creating the Implicit Intent Example Project, Explicit Intents, Creating the Explicit Intent Example Application, Intents with Activities, Intents with Broadcast Receivers, An Overview of Threads, The Application Main Thread, Thread Handlers, A Basic Threading Example, Creating a New Thread, Implementing a Thread Handler, Passing a Message to the Handler. Sending SMS Messages Programmatically, Getting Feedback after Sending the Message Sending SMS Messages Using Intent Receiving, sending email

Introduction to location-based service, configuring the Android Emulator for Location-Based Services, Geo coding and Map-Based Activities, Playing Audio and Video, Recording Audio and Video, Using the Camera to Take and Process Pictures

UNIT-V: MOBILE APP DEVELOPMENT & INSTALLATION:





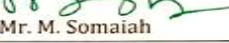


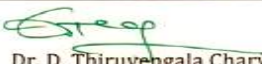

Introduction to Windows Phone App Development, Installing the Windows Phone SDK, Creating Your First XAML for Windows Phone App. Understanding the Role of XAP Files, the Windows Phone Capabilities Model, the Threading Model for XAML-Based Graphics and Animation in Windows Phone, Understanding the Frame Rate Counter, The Windows Phone Application Analysis Tool, Reading Device Information, Applying the Model-View-View Model Pattern to a Windows Phone App, Property Change Notification, Using Commands

SUGGESTED READINGS:

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015
3. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
4. AnubhavPradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2

Web Resource :

Google Developer Training, "Android Developer Fundamentals Course – Concept Reference", Google Developer Training Team, 2017.
<https://www.gitbook.com/book/google-developer-training/android-developerfundamentals-course-concepts/details> (Download pdf file from the above link)

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper PR : RESEARCH METHODOLOGY & PROJECT REPORT

Objective: To introduce the basics of conducting research in social sciences.

UNIT-I: INTRODUCTION, MEASUREMENT AND HYPOTHESIS TESTING:

Meaning of Research-Steps involved- Identification of Problem- Steps involved in the selection of problem-Research Design-Meaning and Types- Measurement Levels/Scales - Scaling Techniques-Hypothesis-Meaning - Types – Testing Procedure.

UNIT-II: PARAMETRIC AND NON-PARAMETRIC TESTS AND RESEARCH REPORT:







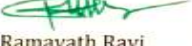
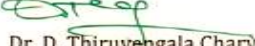

Introduction - t-Test - F-Test - Chi Square Test - Anova (One-Way Anova, Two-Way Anova).
Contents of a Research Report. (Concepts only)

SUGGESTED READINGS:

1. Research Methodology: Himalaya Publications.
2. Methodology of Research in Social Sciences: Krishna Swamy,
3. Research Methodology: Kothari & Garg, New Age Publication
4. Research Methodology: Paneerselvam R, PHI
5. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
6. Research Methodology: Sashi.K Gupta, Praneeth Rangi, Kalyani Publishers.

GUIDELINES FOR PROJECT WORK

- 1) Project work is a part of the prescribed curriculum to B. Com students.
- 2) Project work is allotted to a group of 4 students.
- 3) During the IV semester, students are expected to undergo internship at a business firm/ Government Department /Software organization/Voluntary organization as per the guidance of teacher concerned.
- 4) Students should get a certificate from the organization.
- 5) At the end of Semester-VI, the project reports would be evaluated by the external examiner designated by the Controller of Examinations, from the panel submitted by the Board of Studies in Commerce. The Examiner would evaluate the project reports for a maximum of 35 marks and conduct Viva-Voce examination for 15 marks. The award lists duly signed would be sent the Controller of Examinations.
- 6) Examiners will examine the following in the project report: i) Survey/Analysis on the topic chosen; ii) Method of data collection; iii) Presentation: Style, Comprehensiveness, graphs, charts etc.; iv) Analysis and inference and implications of the study; v) Bibliography.
- 7) Students must ensure that they maintain **regular contact with their supervisor** and also that they provide the supervisor with drafts of their work at regular intervals.
- 8) Students are required to submit a project report on a topic related/connected with trade, industry & commerce. Project can be done by taking the information from the select organization focusing on areas like marketing, finance, human resource, operations, general management etc.
- 9) Project should be a practical, in-depth study of a problem, issue, opportunity, technique or procedure or some combination of these aspects of business. The Students are required to define an area of investigation, assemble relevant data, analyse the data, draw conclusions and make recommendations.

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Faculty of Commerce & Business Management,

ORGANISATION OF PROJECT REPORT

1) Project report should be presented in the following sequence:

i) Title page; ii) Student's declaration; iii) Supervisor's certificate; iv) Internship certificate; V. Abstract; vi) Acknowledgements; vii) Table of contents; viii) List of tables; ix) List of figures; x) List of appendices.

2) Chapter Design should be as follows:

Chapter-I: Introduction: this chapter includes the research problem, need for study/significance of the project, objectives, methodology (hypotheses, statistical tools, data source, scope, sample, chapter design).

Chapter-II: Company Profile: this chapter should contain a brief historical retrospect about the entity of your study.

Chapter-III: Data Analysis and interpretation: this chapter should present the data analysis and inferences.

Chapter-IV: Conclusion and Suggestions: This Chapter should give an overview of the project, conclusions, implications, recommendations and scope for further research.

Bibliography: lists the books, articles, and websites that are referred and used for research on the topic of the specific project. Follow Harvard style of referencing.

Appendices: the data, used to prepare the tables for analysis, may not be feasible to incorporate as part of chapters, may given as appendices.

TECHNICAL SPECIFICATIONS OF THE PROJECT

1) Project should be typed on **A4 white paper**, and be **1.5 spaced**.

2) All pages should be **numbered**, and numbers should be placed at the centre of the bottom of the page.

3) **All tables, figures and appendices** should be consecutively numbered or lettered, and suitably labeled.


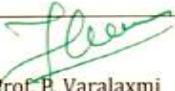
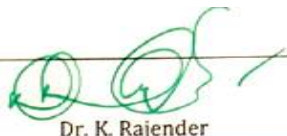




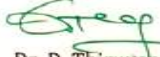

4) **3 bound copies & a soft-copy** should be handed in to the **principal/director of your college/institute** at the time of submission.

5) **bibliography and referencing: Referencing** is necessary to avoid plagiarism, to verify quotations and to enable readers to follow-up and read more fully the cited author's arguments. Reference is given within the text of the project as well as at the end of the project. The basic difference between citation and a reference list (bibliography) is that the latter contains full details of all the in-text citations.

Citation provides brief details of the author and date of publication for referencing the work in the body of the text.

Reference list is given at the end of the text and is a list of all references used with additional details provided to help identify each source.

Proper referencing is as crucial aspect of your project. You are therefore strongly advised to talk to your supervisor about this, in order to make sure that your project report follows the appropriate referencing system.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601 (a): COST CONTROL AND
MANAGEMENT ACCOUNTING

Objective: To be acquaint with Cost Control techniques, Managerial Accounting decision-making techniques and reporting methods.

UNIT-I: INTRODUCTION TO MANAGEMENT ACCOUNTING & MARGINAL COSTING:

Meaning and Importance of Management Accounting – Marginal Cost Equation – Difference between Marginal Costing and Absorption Costing – Application of Marginal Costing – CVP Analysis – Break Even Analysis: Meaning – Assumptions – Importance - Limitations. Marginal Costing for Decision Making-Make or Buy – Add or Drop Products – Sell or Process Further – Operate or Shut-down – Special Order Pricing – Replace or Retain. (Including Problems)

UNIT-II: BUDGETARY CONTROL AND STANDARD COSTING:

Budget: Meaning – Objectives – Advantages and Limitations – Essentials of Budgets - Budgetary Control - Classification of Budgets - Preparation of Fixed and Flexible Budgets. Standard Costing: Meaning – Importance – Standard Costing and Historical Costing - Steps involved in Standard Costing. Variance Analysis: Material variance - Labour variance - Overhead variance. (Including Problems)

UNIT-III: TECHNIQUES OF FINANCIAL STATEMENT ANALYSIS:

Meaning – Objectives - Techniques: Comparative Statement, Common Size Statement, Trend Analysis. Ratios- Meaning, Objectives and Classification—Computation of Activity, Liquidity, Solvency and Profitability Ratios. (Including Problems)

UNIT-IV: FUNDS FLOW ANALYSIS:


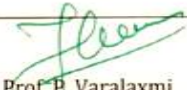






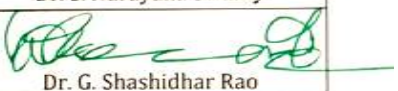
Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds. (Including Problems)

UNIT-V: CASH FLOW ANALYSIS (AS-3):

Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement. (Including Problems)

SUGGESTED READINGS:

1. Management Accounting- Principles & Practice: Sharma RK & Shashi K. Gupta, Kalyani
2. Advanced Managerial Accounting: Srihari Krishna Rao, Himalaya
3. Advanced Managerial Accounting: Dr. Sundaram, PBP
3. Advanced Management Accounting: Robert S. Kaplan & Anthony A. Atkinson, Prentice-Hall
4. Management Accounting: Rustagi R.P, Galgotia
5. Managerial Accounting: Ronald W. Hilton, TMH

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Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601 (b): FINANCIAL CONTROL

Objective: To make students to understand the Financial Control.

UNIT I: EXTERNAL FINANCIAL REPORTING DECISIONS (AS PER US GAAP & IFRS):

Financial Statements: Balance sheet - Income statement - Statement of Comprehensive Income - Statement of changes in equity - Statement of cash flows - Integrated reporting

UNIT II: RECOGNITION, MEASUREMENT, VALUATION, AND DISCLOSURE (AS PER US GAAP & IFRS) :

Assets, Liabilities & Equity: Asset valuation - Valuation of liabilities - Equity transactions
- Income: Revenue recognition - Income measurement - Major differences between U.S. GAAP and IFRS

UNIT III: COST MANAGEMENT:

Measurement concepts: Cost behavior and cost objects - Actual and normal costs - Standard costs - Absorption (full) costing - Variable (direct) costing - Joint and by-product costing - Costing Systems: Joint and by-product costing - Job order costing - Process costing - Activity-based costing - Life-cycle costing - Overhead costs: Fixed and variable overhead expenses - Determination of allocation base - Allocation of service department costs

UNIT IV: SUPPLY CHAIN MANAGEMENT AND BUSINESS PROCESS IMPROVEMENT:


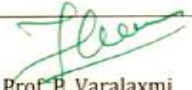





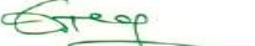

Supply chain management: Lean resource management techniques - Enterprise resource planning (ERP) - Theory of constraints - Capacity management and analysis - Business Process Improvement: Value chain analysis - Value-added concepts - Process analysis, redesign, and standardization - Activity-based management - Continuous improvement concepts - Best practice analysis - Cost of quality analysis - Efficient accounting processes

UNIT V: INTERNAL CONTROLS:

Governance, Risk & Compliance: Internal control structure and management philosophy - Internal control policies for safeguarding and assurance - Internal control risk - Corporate governance - External audit requirements - System Controls & Security Measures: General accounting system controls - Application and transaction controls - Network controls - Backup controls - Business continuity planning

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Intermediate Accounting, 17th edition; Kieso, Donald E., Weygandt, Jerry J., and Warfield, Terry D.; Wiley
3. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601(c) : INTERNATIONAL FINANCIAL
REPORTING - II

Objective: *To make students to understand the International Financial Reporting.*

UNIT I: PENSIONS & POST-EMPLOYMENT BENEFITS (AS PER US GAAP & IFRS):

Defined contribution pension plans - Defined benefit pension plans: Pension obligations - Pension plan assets - Net pension expense - Other Post-retirement benefits

UNIT II: INCOME TAXES (AS PER US GAAP & IFRS):

Income tax expense: Current income tax expense - Deferred income tax expense - Deferred taxes on balance sheet: Deferred tax assets - Deferred tax liabilities - Specific accounting considerations: Net Operating Losses (NOL) - Investee's undistributed dividends

UNIT III: EQUITY (AS PER US GAAP & IFRS):

Equity accounts: Common Stock - Preferred Stock - Additional Paid-In Capital - Retained Earnings - Accumulated Other Comprehensive Income - Treasury Stock - Specific accounting considerations: Share-based Payments to Employees - Equity Securities Classified as Debt Presentation of Equity: On Balance sheet - On Statement of Changes in Equity - Earnings per Share (EPS): Basic EPS - Diluted EPS

UNIT IV: SELECT TRANSACTIONS (AS PER US GAAP & IFRS):


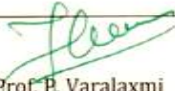





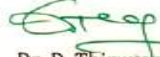

Business Combinations and Consolidations: Acquisitions - Non-controlling Interest - Intercompany Transactions - Variable Interest Entities (VIE) - Foreign currency: Remeasurement - Translation

UNIT V: NOT-FOR-PROFIT AND GOVERNMENTAL ACCOUNTING AND REPORTING (AS PER US GAAP):

Not-for-Profit (NFP) Entities: NFP Financial Statements - Contribution Revenue - Specific Accounting Considerations - Colleges and Universities - Voluntary Health and Welfare Organizations - Health Care Organizations - Governmental Entities: Fund types (Governmental funds, Proprietary funds, Fiduciary funds) - Modified Accrual Accounting - Inter-fund transactions - Government Financial Reporting

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602(a): THEORY AND PRACTICE OF GST

Objective: to equip the students with the knowledge regarding Theory and Practice of GST.

UNIT I: INTRODUCTION TO GST:

Introduction – GST - Taxes Subsumed under GST -Determination of Tax - Registration -Process of Registration - Cancellation and renovation of registration - Supply of Goods and Services - Transition to GST - Registered Business -Availed Input Tax Credit -Unavailed CENVAT credit and Input VAT on capital goods-Availing the input credit held in closing stock -Invoicing -Tax Invoice - Bill of Supply - Credit Note, Debit Note and Supplementary Invoice-Transportation of goods without issue of Invoice - Input Credit Mechanism - Input Tax - GST Returns - Payment of Tax.

UNIT II: GETTING STARTED WITH GST:

Introduction - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST - Intrastate Supply of Goods-Intrastate Inward Supply -Intrastate Outward Supply -Interstate - Interstate Outward Supply - Return of Goods -Purchase Returns -Sales Returns -Supplies Inclusive of Tax -Defining Tax Rates at Master and Transaction Levels - Defining GST Rates at Stock Group Level-Defining GST Rate at Transaction Level -Hierarchy of Applying Tax Rate Details –Reports.

UNIT III: RECORDING ADVANCED ENTRIES, GST ADJUSTMENT AND RETURN FILING:

Introduction -Accounting of GST Transactions -Purchases from Composition Dealer -Purchases from Unregistered Dealers-Exports -Imports -Exempted Goods -SEZ Sales -Advance Receipts and payments - Mixed Supply and Composite Supply under GST -Mixed Supply of Goods -Composite Supply of Goods -GST Reports - Generating GSTR- Report in ERP -Input Tax Credit Set Off -GST Tax Payment -Time line for payment of GST tax -Modes of Payment -Challan Reconciliation -Exporting GSTR- return and uploading in GST portal.

UNIT IV: GETTING STARTED WITH GST (SERVICES):

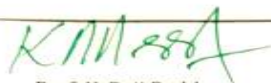
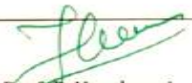





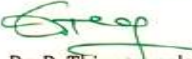
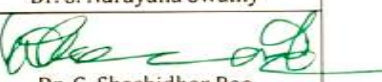
Introduction -Determination of supply of services -Determining the Place of Supply of Services - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods - Intrastate Inward Supply-Intrastate Outward Supply -Interstate Supply -Interstate Outward Supply - Interstate Inward Supply -Interstate Outward Supply of Services -Cancellation of Services - Cancellation of Inward Supplies -Cancellation of Outward Supply of Services -Defining Tax Rates at Master and Transaction Levels.

UNIT V: RECORDING ADVANCED ENTRIES AND MIGRATION TO ERP:

Introduction - Accounting Multiple Services in a Single Supply - Recording Partial Payment to Suppliers -Outward Supplies - Recording Outward Supply with Additional Expenses - Supply of services -Business to consumers - Time of Supply of Services - Place of Supply of Services - Determining place of supply of services - Exempt Supply of Services under GST -Export Supply of Services - Reverse Charge on Services under GST - Advance Receipts from Customers under GST - Advance Receipt and issuing Invoice on same month -Advance Receipt and issuing Invoice on different month - Reversal of GST on account of cancellation of advance receipt - Generating GSTR- Report in ERP - Input Tax Credit Set Off - Migration to ERP - Activate Goods and Services Tax (GST) in ERP - Set up GST rates - Update Masters - Update party GSTIN/UIN - Creation of GST Duty ledgers.

SUGGESTED READINGS:

1. Taxmann's Basics of GST
2. Taxmann's GST: A practical Approach
3. Theory & Practice of GST, Srivathsala, HPH
4. Theory & Practice of GST: Dr. Ravi M.N, PBP.

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602(b): FINANCIAL DECISION MAKING - II

Objective: To make students to understand the Financial Decision making.

UNIT I: DECISION ANALYSIS:

Cost/volume/profit analysis: Breakeven analysis - Profit performance and alternative operating levels - Analysis of multiple products - Marginal Analysis: Sunk costs, opportunity costs and other related concepts - Marginal costs and marginal revenue - Special orders and pricing - Make versus buy - Sell or process further - Add or drop a segment - Capacity considerations

UNIT II: PRICING:

Pricing decisions: Pricing methodologies - Target costing - Elasticity of demand - Product life cycle considerations - Market structure considerations

UNIT III: RISK MANAGEMENT:

Enterprise Risk: Types of risk - Risk identification and assessment - Risk mitigation strategies - Managing risk

UNIT IV: INVESTMENT DECISIONS:

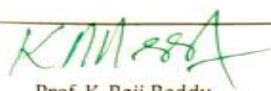
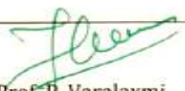





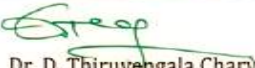
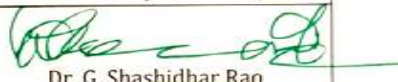
Capital budgeting process: Stages of capital budgeting - Incremental cash flows - Evaluating uncertainty - Capital investment method analysis: Net present value - Internal rate of return - Payback - Comparison of investment analysis methods

UNIT V: PROFESSIONAL ETHICS:

Business ethics: Moral philosophies and values - Ethical decision making - Ethical considerations for management accounting and financial management professionals: IMA's Statement of Ethical Professional Practice - Fraud triangle - Evaluation and resolution of ethical issues - Ethical considerations for the organization: Organizational factors and ethical culture - IMA's Statement on Management Accounting, –Values and Ethics: From Inception to Practice|| - Ethical leadership - Legal compliance - Responsibility for ethical conduct - Sustainability and social responsibility.

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
3. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
4. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602 (c): INTERNATIONAL AUDITING

Objective: To make students to understand the International Auditing.

UNIT I: ETHICS, PROFESSIONAL RESPONSIBILITIES AND GENERAL AUDITING PRINCIPLES:

Introduction to Auditing: Generally Accepted Auditing Standards (GAAS) - International Standards of Auditing (ISA) - Ethics, independence and professional conduct: AICPA Code of Professional Conduct - Sarbanes-Oxley Act (SOX), 2002 - Public Company Accounting Oversight Board (PCAOB) - Securities Exchange Commission (SEC) - International Standards - Engagement Understanding and Acceptance: Pre-Engagement Acceptance Activities - Engagement Letter - Auditor's communication with those charged with governance Quality Control: Statements on Quality Control Standards (SQCS) - Elements of a System of Quality control

UNIT II: ASSESSING AUDIT RISK AND DEVELOPING A PLANNED RESPONSE:

Audit Risk: Inherent Risk - Control Risk - Detection Risk - Fraud Risk: Fraudulent financial reporting - Misappropriation of assets - Fraud risk factors - Auditor's consideration of fraud
Planning the Audit: Audit Strategy - Audit Plan - Internal Controls: Auditor's Consideration of Internal Control - Operating Cycles - Internal Control Reports and Communications

UNIT III: PERFORMING FURTHER PROCEDURES AND OBTAINING AUDIT EVIDENCE:

Audit Evidence: Management's Assertions - Sufficient & Appropriate Audit Evidence - Audit Evidence determined by Risk of Material Misstatement (RMM) - Substantive Procedures: Revenue cycle - Expenditure cycle - Production cycle - Payroll cycle - Investing cycle - Financing cycle - Opening Balances - Illegal Acts - Related Parties - Contingencies - Estimates & Fair Value Measurements - Subsequent Events - Omitted Procedures & Subsequent Discovery of Facts - Using the Work of Others - Evaluating Audit Findings - Audit Documentation - Management Representation Letter - Audit Sampling: Sampling Risks - Attributes Sampling - Classical Variables Sampling - Probability Proportional to Size (PPS) Sampling

UNIT IV: AUDIT REPORTING:


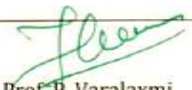
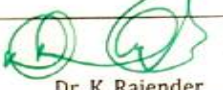




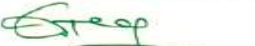

Audit Reports: Unmodified opinion - Unmodified Opinion with Emphasis-of-matter and/or Other-matter paragraph - Qualified Opinion - Adverse Opinion - Disclaimer of Opinion - Audit Reporting Considerations: Audit of Comparative financial statements - Supplementary Information - Audit of Group financial statements - Audit of Single financial statements & Specific financial statement elements, accounts or items - Audit of Special Purpose financial statements - Audit of financial statements prepared using financial reporting framework of another country

UNIT V: OTHER ENGAGEMENTS:

Accounting & Review Services: Preparation of financial statements - Compilation engagement - Review engagement - Attestation Engagements: Examination - Review Agreed-upon Procedures - Governmental Auditing: Governmental Auditing Standards - Single Audit Act

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Auditing and Attestation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Auditing and Attestation, Wiley
3. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 603(a): ACCOUNTING STANDARDS

Objectives: To make the students acquire the knowledge and application of Indian Accounting Standards.

UNIT-I: INTRODUCTON:

Introduction to Accounting – Concept of Accounting Theory – Role of accounting theory - Classification of Accounting Theory – Deductive and inductive approach in theory formulation – Accounting Principles: Concepts and Conventions - Accounting standard: Concept – Evolution. (Theory only)

UNIT-II: STANDARDS RELATING TO FINANCIAL REPORTING & DISCLOSURE:

Ind AS-101: First time adoption of Indian Accounting Standards – Ind AS-1: Presentation of Financial Statements – Ind AS-7: Cash Flow Statements (Including problems) – Ind AS-8:

Accounting Policies, Changes in Accounting Estimates and Errors – Ind AS-10: Events after the Balance Sheet Date -- Ind AS-24: Related Party Disclosures – Ind AS- 34: Interim Financial Reporting - Ind AS-105: Non-current assets held for sale and discontinued operations – Ind AS- 108: Operating Segments.

UNIT-III: STANDARDS PROVIDING GUIDANCE ON FINANCIAL STATEMENT ITEMS:

Ind AS-2: Inventories (Including simple problems) -- Ind AS-11: Construction contracts (Including simple problems) - Ind AS-12: Income taxes – Ind AS-16: Property, Plant and Equipment – Ind AS-17: Leases (Including simple problems) - Ind AS-18: Revenue – Ind AS-20: Accounting for Government Grants and Disclosure of Government Assistance – Ind AS-23: Borrowing Costs – Ind AS-38: Intangible Assets.

UNIT-IV: STANDARDS RELATING TO BUSINESS ACQUISITIONS AND CONSOLIDATIONS:








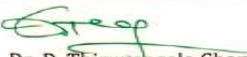

Ind AS-28: Investments in Associate and Joint Ventures - Ind AS-103: Business Combinations – Ind AS-110: Consolidated Financial Statements – Ind AS-111: Joint Arrangements – Ind AS- 112: Disclosure of interest in other entities

UNIT-V: FINANCIAL REPORTING:

Financial reporting – Concept -- Development in Financial reporting objectives: True blood Report (USA) – The Corporate Report (UK) – Stamp Report (Canada) - Objectives of Financial Reporting – Qualities of Financial Reporting - Recent trends in Corporate Reporting in India. (Theory only)

SUGGESTED READINGS:

1. Rawat D.S. –Ind ASs Converged IFRS|| Taxmann Allied Services Private Limited.
2. Accounting Theory and Practice: Jawaharlal, Himalaya Publishing Company
3. Accounting Standards: Rawat D.S, Taxmann Allied Services Private Limited
4. IFRS Concepts and Applications: Kamal Garg, Bharat Law House Pvt. Limited
5. Accounting Theory: Porwal L.S, TataMcGraw-Hill Publishing Company
6. Accounting Theory & Management Accounting: Jain S.P. &Narang K.L, Kalyani

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Faculty of Commerce & Business Management,

B.Com. VI Semester - PAPER DSE – 603 (B): CORPORATE GOVERNANCE

Objective: To acquaint the student with the finer nuances of Corporate Governance.

UNIT-1: CORPORATE GOVERNANCE: Evolution and Significance: Corporate Governance: Meaning – Definition - Evolution – Historical Perspective of Corporate Governance – Nature and Scope of Corporate Governance – Need for Corporate Governance – Essentials of Corporate Governance – Objectives of Corporate Governance - Benefits and Limitations of Corporate Governance - Structure – Theories.

UNIT – II: CORPORATE GOVERNANCE COMMITTEES AND MODELS:

CG Committees: Cadbury Committee, Greenbury Committee, Hampel Committee, Sarbanes-Oxley Act, 2002, Blue Ribbon Committee, King Committee, Kumara Mangalam Birla Committee, Narayana Murthy Committee, CII Task Force Committee – CG Models : Anglo-American, German, Japanese and Indian Model.

UNIT - III: CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY:

Corporate Social Reporting – Meaning – Types of CSR - Role of CSR towards Society – Employees, Government, Stakeholders and Consumers – Nature of CSR – CSR Principles and Strategies - Models – Best Practices of CSR - CSR: Indian Perspective – Sachar Committee Report.

UNIT - IV: ACCOUNTABILITY IN CORPORATE GOVERNANCE:

Definition – Importance - Accounts and Financial Reporting - Stakeholders Influence - Social Responsibility and Accountability - Reflection of Stakeholder's Accountability in Legislation.


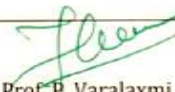






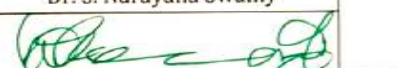
Guidance on Stakeholders and Shareholders Interest. Role of Top Management in Corporate Governance. Role of Auditors in Corporate. Role of Shareholders & Other Stakeholders in Corporate Governance.

UNIT – V: ISSUES IN CORPORATE GOVERNANCE :

Role of Promoters - Nominee Directors - Mismanagement –Corporate Frauds - Negligent Role of Auditors – Banks- Supervision and Control of Stock Exchanges – Whistle Blowing Policy - RBI – Ministry of Corporate Affairs – Towards Building Ethical and Sustainable Organization.

SUGGESTED READINGS:

1. Business Ethics and Corporate Governance, (2017) Prof. K. Viyyanna Rao, Dr. G. Nagaraju I.K., International Publishing House Pvt. Ltd,
2. Corporate Governance,(2014), Bholanath Dutta and S.K. Podder - Vision Book house,
3. Business Ethics,(2005)2ND Edition, R.V. Badi N.V. Badi,Vrinda Publication pvt Ltd
4. Business Ethics An Indian Perspective, 2015, A. C. Fernando - Pearson
5. Business Ethics and Corporate Governance, Reprint 2013, C.S.V. Murthy – Himalaya Publication
6. Corporate Governance,(2004) H.R. Machiraju, Himalaya Publication House

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 603(C) : INVESTMENT MANAGEMENT

Objective: To familiarize with concepts of risk and return relating to Investment.

UNIT-I: INTRODUCTION:

Investment Management: Meaning and Definition – Objectives - Scope – Investment Vs Speculation – Investment Vs Gambling - Factors affecting Investment Decisions – Investment Alternatives - Types of Investors (Theory).

UNIT-II: RISK AND RETURN:

Meaning of Risk – Risk Vs Uncertainty – Causes of Risk – Types of Risks – Risk and Return of Single Asset – Ex-Ante and Ex-Post – Risk-Return Relationship – Risk-Return Trade off (Simple Problems).

UNIT-III: MARKET INDICES:

Concept of Index – Methods of computing stock indices – Leading Stock Price Indices in India – Sensex and Nifty – Uses of Market Index (Simple Problems).

UNIT-IV: TIME VALUE OF MONEY:



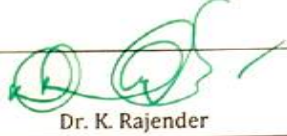




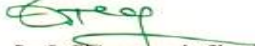

Concept - Techniques - Compounding Techniques - Doubling Period - Multiple Compounding Period - Present Value Techniques (Simple Problems).

UNIT-V: PORTFOLIO ANALYSIS:

Traditional Vs Modern - Rationale of Diversification - Markowitz portfolio theory - Effect of combining the securities - Measurement of expected return and risk of portfolio (Simple Problems).

SUGGESTED READINGS:

1. Investment Management (Text and Cases): V.K. Bhalla, S. Chand & Company.
2. Security Analysis and Portfolio Management: Shashi K. Gupta & Rosy Joshi, Kalyani Publishers.
3. Investment Management: Dr. V.A. Avadhani, Himalaya Publishing House.
4. Fundamentals of Investment Management: Preeti Singh, Himalaya Publishing House
5. Security Analysis and Portfolio Management: Kevin, PHI.
6. Investment Analysis and Portfolio Management: Prasanna Chandra, Tata McGraw-Hills
7. Investment Management, Prashanta Athma: Kalyani Publications.
8. Security Analysis and Portfolio Management: Madhumati Ranganathan, Pearson.
9. Investment Management: Mashewari, PHI.
10. Security Analysis and Portfolio Management: Dhanesh Khatri, Trinity Press.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE603a: MULTIMEDIA SYSTEMS
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To acquire the knowledge of multimedia systems.

UNIT-I: MEDIA AND DATA STREAMS:

Properties of multimedia systems, Data streams characteristics: Digital representation of audio, numeric instruments digital interface Bark concepts, Devices, Messages, Timing Standards Speech generation, analysis and transmission.

UNIT-II: DIGITAL IMAGE&ANIMATIONS:

Digital Image: Analysis, recognition, transmission, **Video:** Representation, Digitalization, transmission.

Animations: Basic concepts, animation languages, animations control transmission.

UNIT-III: DATA COMPRESSION STANDARDS&STORAGE:

Data Compression Standards: JPEG, H-261, MPEG DVI

Optical storage devices and Standards: WORHS, CDDA, CDROM, CDWO, CDMO.

Real Time Multimedia, Multimedia file System.

UNIT-IV: MULTIMEDIA COMMUNICATION SYSTEM, DATABASES&SYNCHRONIZATION:

Multimedia Communication System: Collaborative computing session management, transport subsystem, QOS, resource management.

Multimedia Databases: Characteristics, data structures, operation, integration in a database model.

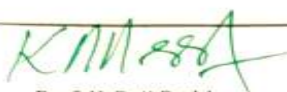
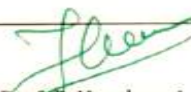







Synchronization: Issues, presentation requirements, reference to multimedia synchronization, MHEG.

UNIT-V: MULTIMEDIA APPLICATION:

Media preparation, Composition, integration communication, consumption, entertainment.

SUGGESTED READINGS:

1. Ralf Steninmetz, KlaraHahrstedt, *Multimedia: Computing, Communication and Applications*, PHI PTR Innovative Technology Series.
2. John F.KoegelBufford, *Multimedia System*, Addison Wesley, 1994.
3. Mark Elsom – Cook, *Principles of Interactive Multimedia* , Tata Mc-Graw Hill, 2001.
4. Judith Jefcoate, *Multimedia in Practice: Technology and Application* , PHI 1998.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 603b: CYBER SECURITY
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective To understand the cyber security, detection, network security, the law and cyber forensic.

UNIT-I: INTRODUCTION TO CYBER SECURITY, CYBER SECURITY VULNERABILITIES AND CYBER SECURITY SAFEGUARDS:

Introduction to Cyber Security: Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace.

Cyber Security Vulnerabilities: Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.

Cyber Security Safeguards: Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT-II: SECURING WEB APPLICATION, SERVICES AND SERVERS:

Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges.

UNIT-III: INTRUSION DETECTION AND PREVENTION:

Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

UNIT-IV: CRYPTOGRAPHY AND NETWORK SECURITY:

Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec.


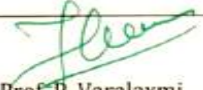







UNIT-V: CYBERSPACE AND THE LAW, CYBER FORENSICS:

Cyberspace and The Law: Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.

Cyber Forensics: Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

SUGGESTED READINGS:

1. Ramandeepkaurnagra, Cyber laws and Intellectual Property Rights, Kalyani Publishers, 7e,
2. Nina Godbole&SunitBelapureCyber Security, Wiley India Pvt Ltd, 2012.
3. Gerald. R. Ferrera, Reder and linchtenstein, Cyber laws – Text and Cases,3e, Cengage learning

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somaiah	 Dr. S. Narayana Swamy
 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 603c: DATA ANALYTICS
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To learn the different ways of data Analysis, data streams, mining and clustering and visualization.

UNIT-I: INTRODUCTION TO BIG DATA:

Introduction to Big Data Platform – Challenges of conventional systems – Web data – Evolution of Analytic scalability, analytic processes and tools, Analysis vs reporting – Modern data analytic tools, Stastical concepts: Sampling distributions, resampling, statistical inference, prediction error.

UNIT-II: DATA ANALYSIS:

Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics – Rule induction – Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods.

UNIT-III: MINING DATA STREAMS:

Introduction to Streams Concepts – Stream data model and architecture – Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window – Realtime Analytics Platform(RTAP) applications – case studies – real time sentiment analysis, stock market predictions.

UNIT-IV: FREQUENT ITEMSETS AND CLUSTERING:









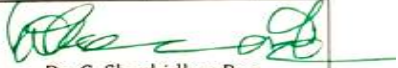
Mining Frequent itemsets – Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data – CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-euclidean space – Clustering for streams and Parallelism.

UNIT-V: FRAMEWORKS AND VISUALIZATION:

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases – S3 – Hadoop Distributed file systems – Visualizations – Visual data analysis techniques, interaction techniques; Systems and applications:

SUGGESTED READINGS:

1. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
2. AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge University Press, 2012.
3. Bill Franks, Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with advanced analytics, John Wiley & sons, 2012.

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somaiah	 Dr. S. Narayana Swamy
 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. ECONOMICS I Year

SEMESTER – I

PAPER – I MICRO ECONOMICS

(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module-I: Consumer Behaviour:

Cardinal Approach to Utility Analysis - Ordinal utility Analysis - Properties of Indifference curves - concept of budget line - equilibrium of consumer - price consumption curve - income consumption curve - derivation of demand curve with the help of Indifference Curves' Analysis - Concepts of price - income and substitution effects.

Module-II Production Analysis

Concept of Production Function - Linear and homogeneous production function - Short run and long run production function – Law of Variable Proportions - Laws of Returns to Scale - Properties of iso-product curves - concept of factor price line - analysis of least cost input combination - concepts of expansion path and economic region of production - Properties of Cobb-Douglas Production Function.

Module-III: Cost and Revenue Analysis

Cost concepts: Accounting, real, opportunity, explicit costs - Total cost- total fixed cost - total variable cost - average cost - average fixed cost - average variable cost - marginal cost and the relationship between average and marginal cost - derivation of long run average cost curve - Economies of scale: internal and external - Revenue concepts: total - average and marginal - relationship between Average revenue & marginal revenue and price elasticity of demand.

Module--IV: Analysis of Market Structure:

Concepts & Classification of Markets –Basic Features of Perfect Competition - Monopoly-Equilibrium of a monopolist – Concept of Price discrimination & degrees of price discrimination-Monopolistic competition – characteristics - concepts of product differentiation and selling cost - Equilibrium under Monopolistic competition – Oligopoly- characteristics of oligopoly – Price and output determination – Analysis of Kinked Demand Curve – Concept of Duopoly - Cournot's version of duopoly.

Module-V: Analysis of Business Firm and Profit

Characteristics of a business firm, objectives of business firm: profit maximization, sales revenue maximization, market share maximization, growth maximization. Profit concepts: Accounting and economic; break-even point and profit –volume analysis

References:

1. M L Seth : Micro Economics
2. M L Jhinguan: : Micro Economics
3. H L Ahuja: : Modern Micro Economics
4. Koutsainies; : Modern Micro Economics
5. Stonier and Hague : Micro Economics
6. Salvatore : Micro economics
7. Schaum Series : Micro economics
8. Pyndick : Micro economics
9. Gregory Mankiw : Principles of Micro Economics

B.A Political Science
I st Semester
Paper - I
Understanding Political Theory

- Unit-I Political Theory
- What is Political Theory, Evolution, Nature , Significance
 - Debates on Political Theory
 - a) Normative b) Contemplative c) Explanatory
- Unit-II What is Political?
- State: Theories of origin of the state, Divine, Social Contract, Evolution Theories
 - Power and Authority
 - Authoritative allocation of Values
 - Sovereign state : Challenges
- Unit- III Political Values and Theoretical Perspective
- Liberty :- A) Liberal B) Marxist C) Feminist
 - Equality :- A) Liberal B) Marxist C) Feminist
 - Justice :- A) Liberal B) Marxist C) Feminist
- Unit-IV Political Ideologies
- Liberalism
 - Nationalism
 - Multiculturalism
- Unit-V Political Institutions and Functions
- Legislature, Executive and Judiciary
 - Political Parties, Pressure Groups, Media

Reading list : -

1. Rajeev Bhargava & Ashok Acharya , editions , Political Theory : An Introduction , Pearson ,2019
2. Sushila Ramaswamy, Political Theory : Ideas and Concept , PHI Learning Pvt , Ltd .2015
3. O.P. Gauba, An Introduction to Political Theory , Macmillan, 2019
4. Michael G. Roskin , Robert L. Cord, James A. Medeiros , Walter S. Jones , Political Science : An Introduction , Pearson ,2018
5. Hoveyda Abbas , Ranjay Kumar , Political Theory , Pearson ,2019
6. John Hottman , Paul Graham , Introduction to Political Ideologies , Pearson ,2014
7. A. Appadorai, (2000), *Substance of Politics*, Oxford University Press, New Delhi, India.
8. George H Sabine, Thomas L Thorson, (1973), A History of Political Theory, Oxford & IBH Publishing Co., New Delhi.
9. Heywood, Andrew, (2012) Political Ideologies: An Introduction, Palgrave Macmillan, UK.
10. Heywood, Andrew, (2013), Politics, Palgrave Macmillan (UK).
11. Leon P. Baradat, (2011), Political Ideologies, Routledge.
12. Michael Freeden, Lyman Tower Sargent, Marc Stears,(eds) (2013), The Oxford Handbook of Political Ideologies, Oxford University Press, UK.
13. Ernest Barker : Principles of Social and Political Theory (London , Oxford University Press 1951)
14. Norman P. Barry : An Introduction to Modern Political Theory (London Macmillan, 1989)
15. Richard Bellamy (ed) : Theories and Concepts of Politics (New York , Manchester University Press 1993.)
16. Anthopny H. Birch : The Concepts and Theories of Modern Democracy (London , Routledge ,2001)
17. Martin Carnoy : The State and Political Theory (Princeton , Princeton University Press , 1984)

**TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - I**

**History of India (From Earliest Times to c.700 CE)
(DSC-101) Discipline Specific Course - Paper - I
(With Effect from 2019-2020)**

- Module-I: Definitions - Nature and Scope of History - History and Its Relationship with other Social Sciences - Geographical Features of India - Sources of Indian History: Pre-History - Paleolithic, Mesolithic, Neolithic, Chalcolithic and Megalithic Cultures.
- Module-II: Indus Valley Civilization - Its Features & Decline; Early Vedic and Later Vedic Civilizations - Vedic Literature - Society - Economy - Polity - Religion.
- Module-III: Rise of New Religious Movements - Charvakas, Lokayathas, Jainism and Buddhism; Mahajanapadas - Rise of Magadha; Alexander's Invasion and Its Impact.
- Module-IV: Foundation of the Mauryan Dynasty; Ashoka and His Dharma - Polity - Administration - Society - Economy - Religion - Literature - Art and Architecture; Disintegration of the Mauryan Empire; Post-Mauryan Kingdoms - Indo-Greeks - Kushanas and Kanishka - Society - Economy - Literature - Art and Architecture; The Satavahanas; Sangam Age - Literary Development.
- Module-V: Gupta Empire: A Brief Political Survey - Polity and Administration, Social and Economic Conditions, Agriculture and Land Grants - Feudalism, Caste System, Position of Women, Education, Literature, Science and Technology, Art and Architecture - Harshavardana and His Achievements.

Recommended Books:

- A.L. Basham, *The Wonder that was India*, Rupa & Co., New Delhi, 2001.
- Allchin, Bridget & Raymond, *The Rise of Civilization in India and Pakistan*, CUP, New Delhi, 1996.
- E.H. Carr, *What is History?* Penguin Books, England, 1990.
- Majumdar, R.C., *History and Culture of the Indian People*, Vols. I, II & III.
- Romila Thapar, *Asoka and the Decline of the Mauryas*, OUP, New Delhi, 1995.
- Romila Thapar, *Early India (From the earliest to AD 1300)*.
- Romila Thapar, *A History of India*, Vol. I, Penguin Books, New Delhi, 1990.
- Upinder Singh, *A History of Ancient and Medieval India*.


[R. SUMALATHA]


(S. Ganapathikiran)


Bos


Head.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS I Year
SEMESTER –II

PAPER – II MACRO ECONOMICS

(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module– I: Introduction

Macro Economics – Concept of Circular Flow of Incomes –National Income Analysis: Concepts and Components – Methods of Measurement –Difficulties and Limitations in the Estimation of National Income.

Module– II: Theories of Income and Employment

Classical Theory of Income and Employment - Keynesian Theory of Income and Employment- Effective Demand – Consumption Function- Average Propensity to Consume (APC) and Marginal Propensity to Consume (MPC) – Factors Determining Consumption Function – Savings Function- Average Propensity to Save and Marginal Propensity to Save – Concepts of Multiplier and Accelerator

Module– III: Investment & Theories of Interest Rate

Capital and Investment- Types of Investment- Determinants of Level of Investment – Marginal Efficiency of Capital and Marginal Efficiency of Investment- Neo-Classical and Keynesian Theories of Interest.

Module – IV: Supply of Money & Demand for Money

Functions and Classification of Money – Money Supply – Measures of Money Supply with reference to India: M1, M2, M3 and M4 – Classical Theories of Money: Fisher's and Cambridge Versions of Quantity Theory of Money – Keynes' Theory of Money and Prices.

Module– V: Inflation & Trade Cycles

Inflation: Concept, Types, Causes and Measurement – Effects of Inflation – Measures to Control Inflation – Concepts of Phillips Curve, Deflation and Stagflation – Trade Cycles: Concept, Causes and Phases of trade cycle.

Reference Books:

- Ackley, G (1976) : Macro Economics: Theory and Policy, Macmillan, New York
Shapiro, E (1996) : Macro Economic Analysis, Galgotia Publications, New Delhi
Hansen A H (1953): A Guide to Keynes, McGraw Hill, New York
Keynes JM (1936) : The General Theory of Employment, Interest and Money,
MC Vaish : Macro Economic Theory
HL Ahuja : Macro Economic Theory & Policy
Vanitha Agarwal : Macro Economic Theory & Policy, Pearson Education
HL Ahuja : Macro Economic Analysis
Gupta, SB : Monetary Economics: Institutions, Theory and Policy
M.L. Seth : Macro Economics, Lakshmi Narain Agarwal, Agra, 2006

B.A Political Science
II st Semester
Paper - II
Western Political Thought

Unit- I Greek Political Thought

- Greek Political Thought – Sophists
- Plato:- Concept of Justice , Ideal State , Education and Communism.
- Aristotle :- Forms of Governments, On revolution , Slavery , Best state

Unit- II : Medieval and Early Modern Thought

- Thomas Aquinas :- Theory of Laws, Christianized Aristotle
- Church – State Controversy
- Niccolo Machiavelli – Human Nature , StateCraft

Unit- III Social Contractualists

- Thomas Hobbes :- Individualism and Absolute (State) Sovereignty
- John Locke :- Natural Rights Limited Government
- J. J. Rousseau :- Romanticism, General will , Popular Sovereignty

Unit- IV : Utilitarian Thought

- Jeremy Bentham :- Utilitarian Principles; Hedonism
- J. S. Mill :- On liberty , Representative Government

Unit- V : Philosophy of Dialectics

- G.W. F. Hegal :- Dialectics Purpose of History Geist (Spirt) and State
- Karl Marx:- Historical Materialism, Class war and Revolution.

Reading list :

1. . D.Mackenzie Brown, (1959), Indian Political Thought from Manu to Gandhi., University of California Press, Berleley and Los Angeles.
2. George Klosko, (eds), (2011), The Oxford Handbook of The History of Political Philosophy, Oxford University Press, New York.
3. Gregory Claeys, (eds)(2013), Encyclopedia of Modern Political Thought, Sage Publication, New Delhi.
4. M.P.Singh and Himanshu Roy, (eds), (2011), Indian Political Thought: Themes and Thinkers, Pearson, New Delhi.
5. N.D.Arora and S.S.Awashthy, (2007), Political Theory and Political Thought, Har-Anand Publications, New Delhi.
6. S.K.Sarma and Urmila Sharma, (2006), Western Political Thought (from Plato to Burke), Atlantic Publishers, New Delhi.
7. Subrata Mukherjee & Sushila Ramaswamy, (2011), A History of Political Thought,: Plato to Marx, PHI Learning Private Limited, New Delhi.
8. Thomas Pantham, Kenneth L. Deutsch, (1986), Political Thought in Modern India, Sage Publication, New Delhi.

BA 203 Semester-H: Development Dynamics and Emerging Trends

Module-I: Comparative & Development Administration

- a. Comparative Administration
- b. Development Administration
- c. Changing Dynamics of Development Administration

Module-II: Emerging Trends-I

- a. New Public Administration - Minnowbrook-I
- b. New Public Administration - Minnowbrook-II
- c. New Public Administration - Minnowbrook-III

Module-III: Market Theories

- a. Public Choice Approach
- b. New Public Management

Module-IV: Emerging Trends-I

- a. Public Policy and Governance
- b. Role of Public Services in the Emergence and Development of New State of Telangana

Module-V: Emerging Trends-II

- a. Globalization and Public Administration
- b. Present Status of Public Administration in the context of Globalization

Expected Outcomes

After study of the Course-1, the learner should be able to:

- Appreciate the nature, scope and changing paradigms of Public Administration;
- Understand the synthesizing nature of knowledge of public administration from public perspective;
- Grasp the administrative theories, concepts and principles to make sense of administrative practices.


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Telangana-506 009

References

- Ali Farazmand (2001) Handbook of Comparative and Development Public Administration, Merrell Dekker, New York.
- Arora, Ramesh K. (1996) Comparative Public Administration, Associated Publishing House, Agra.
- Esmon, Milton J. (1970) CAG and the Study of Public Administration in F.W. Riggs (ed) The Frontiers of Development Administration (pp. 41-71), Durham, North Carolina; Duke University Press.
- Heady F. (1996) Public Administration: A comparative perspective (5th ed.) New York: Marcel Dekker.
- Hoshiar Singh and Pardeep Sachdeva (2012) Public Administration: Theory and Practice, Pearson, Delhi.
- Montgomery, J. (1966) Approaches to development politics, administration and change, New York, McGraw Hill.
- Pai Panandikar, V.A. (1964) Development Administration: An Approach, Indian Journal of Public Administration, 10 (1), pp. 34-44.
- Raphaeli, N. (1967) Readings in comparative public administration, Boston, Massachusetts: Allyn and Bacon.
- Riggs F.W. (1956) Public Administration: A neglected factor in economic development. Annals of the American Academy of Political and Social Sciences, No. 305, Agrarian Societies in Transition, (May 1956), 70-80.
- Riggs F.W. (1970) The ecology of administration, Bloomington: Indiana University.
- Swerdlow, I. (1963) (ed). Development Administration: Concepts and Problems, Syracuse, New York: Syracuse University Press.
- Telugu Akademi (2016) BA. 1st Year Public Administration.
- W.E. Weidner, (ed) (1970), Development Administration in Asia, Durham, North Carolina; Duke University Press.
- Waldo D (1963) Comparative Public Administration: Prologue, Performance and Problems, Indian Journal of Political Science, 24 (3), pp. 177-216.
- Weidner, W.E. (1970a) (ed) Development Administration in Asia, Durham, North Carolina; Duke University Press.


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Telangana-506 009

KAKATIYA UNIVERSITY, WARANGAL

B.A., B.Sc., B.Com. & B.B.A (CBCS)

Syllabus - 2020

Telugu (Second Language)

3rd Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) ధర్మజుని వాక్యాతుర్యం - తిక్కన
- 2) విభీషణ శరణాగతి - గోన బుద్ధారెడ్డి
- 3) గుణనిధి కథ - శ్రీనాథుడు

Unit -II ఆధునిక పద్యభాగం

- 1) రైతు ప్రశస్తి - వానమామలై జగన్నాథాచార్యులు
- 2) గురుదక్షిణ - అంబటి లక్ష్మీనరసింహరాజు
- 3) గుడిసెలు కాలిపోతున్నై - డా॥ బోయి భీమన్న

Unit -III అలంకారాలు

శబ్దాలంకారాలు: వృత్త్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస,
అంత్యానుప్రాస, యమకం, ముక్తపదగ్రస్తాలంకారాలు

అర్థాలంకారాలు: ఉపమ, ఉత్పేక్ష, రూపక, స్వభావోక్తి, ఉల్లేఖ,
అర్థాంతరవ్యాస, శ్లేష, దృష్టాంతాలంకారాలు

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం


29/8/2020
Chairman
Board of Studies in Telugu
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WARANGAL-506 003 (T.S.)




Head
Department of Telugu
Kakatiya University
Warangal-506 003(T.S.)

B.A, BSc & B Com SECOND YEAR - 2019-2020 -

URDU - SECOND LANGUAGE:

"MUTALA-E-ADAB" (Part - II)

(Compiled by Department of Urdu O.U. Hyderabad)

published in August-2008 by Urdu Academy-HYA.

SEMISTER - III

PAPER - III

URDU POETRY & PROSE

UNIT: I.

MASNAVI :- Amn Nama by Jaan Nisar Akhtar.

UNIT: II.

QASIDA :- Dar Shaan-e-Hameedud Dawla
— by —
Zauq Dahelvi.

UNIT: III

1. NOVEL :- Nasook ki Saleem Se Guftagu
— by —

Deputy Nazim Ahmed (Selected from
"Taubatun Nasook")

2. INSHAIYA :- Zaqq-e-Chai Noshi - By Moulana Az
(Selected from "GHUBAR-E-KHATIR).

[Signature]
2020.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS II Year
SEMESTER – III

PAPER – III STATISTICS FOR ECONOMICS
(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module– I: Introduction to Statistics

Meaning and Basic Concepts of Statistics – Population and Sample, Frequency Distribution, Cumulative Frequency – Graphic and Diagrammatic Representation of Data –Types of Data: Primary and Secondary Data –Methods of Collecting Data: Census and Sampling Methods (Random, Non-random Sampling Methods)

Module– II: Measures of Central Tendency and Dispersion

Measures of Central Tendency: Mean, Median, Mode, Geometric Mean and Harmonic Mean – Properties of Good Average – Comparison of Different Averages –Measures of Dispersion – Absolute and Relative Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation and Variance

Module– III: Correlation and Regression

Correlation: Meaning and Types – Karl Pearson's Correlation Co-efficient – Spearman's Rank Correlation –Regression: Meaning and Uses of Regression.

Module– IV: Index Numbers

Meaning and Uses – Aspects and Difficulties in the Construction of Index Numbers - Types of Index Numbers –Methods of Index Numbers - Laspayer, Paasche and Fisher.

Module– V: Analysis of Time Series

Meaning and Uses – Components of Time Series Analysis: Secular, Seasonal, Cyclical and Irregular Variations – Methods of Measurement of Secular Trends: Graphic, Semi-Averages, Moving Averages.

Reference Books:

- Allen, RGD : Mathematical Analysis for Economists, Macmillan Press, London.
Bhardwaj RS : Mathematics for Economics and Business, Excel Books, New Delhi
Bose : Mathematics for Economics, Himalaya Publishing, New Delhi
Chiang, AC : Fundamental Methods of Mathematical Economics McGraw Hill,
New Delhi Nagar & Das: Basic Statistics
S.P. Gupta : Statistical Methods, S. Chand & Co.,
G.S. Monga : Mathematics for Economists

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - III
History of India (1526-1857 CE)
(DSC - Discipline Specific Course - Paper – III
(2019-2020)


- Module-I: Establishment of Mughal Dynasty - Sources – Shershah Sur and His Reforms - Brief Survey of Political History of Mughals – Akbar, Shah Jahan and Aurangzeb - Polity - Administration – Society – Economy – Technological Developments - Religion – Hindu-Muslim Relations – Emergence of Composite Culture – Education – Language and Literature – Art and Architecture - Disintegration of Mughal Empire.
- Module-II: Rise of Regional Powers - Marathas – Shivaji his Military Achievements, and his Administration – The Rise of Peshwas – and their role in Maratha History - The Third Battle of Panipat – The Rise of Sikhs. – Ranjit Singh – Rise of Princely States – Hyderabad – Avad - Junagarh – Mysore – Kashmir.
- Module-III: Advent of European Powers - Portuguese, Dutch, English and French, Anglo-French Rivalry - Expansion and Consolidation of British Power – Wellesley's Subsidiary Alliance – Dalhousie's Doctrine of Lapse.
- Module-IV: Three Stages of Colonialism – Mercantilism - Free Trade Policies – Finance Capital - Land Revenue Settlements – Cornwallis and Permanent Revenue Settlement; Thomas Munroe and Ryotwari; Mahalwari System – Changes in the Agrarian Economy and Condition of Peasantry – Famines.
- Module-V: Decline of Rural Cottage Industries and Urban Handicrafts - Growth of Railways, Roads, Communication – Modern Industries – Coal Mines, Textiles, Iron and Steel, etc. - Anti-Colonial Upsurge - 1857 Revolt – Nature, Causes and Results.

Recommended Books:

- A.L. Srivastava, *History of India from A.D. 1000 to 1707.*
A.R. Desai, *Social Background of Indian Nationalism.*
Bipan Chandra, *A History of Modern India.*
Harbans Mukhia, *The Mughals.*
John F. Richards, *The Mughal Empire*, CUP, New Delhi, 1995.
R.C. Majumdar (ed.), *A History and Culture of India People*, Bharatiya Vidya Bhavan Series (Relevant Vols.).
R.C. Majumdar, H.C. Raychaudhuri & K. Datta, *An Advanced History of India*, Madras, 1995.
Satish Chandra, *Medieval India*, Vol. II.
Sumit Sarkar, *Modern India (1885-1947)*, Macmillan India Ltd., Madras, 1995.
Tarachand, *A History of the Freedom Movement in India*, Four Volumes.
V.D. Mahajan, *History of Medieval India (Sultanate Period and Mughal Period).*
V.D. Mahajan, *Modern Indian History.*

Telugu:

- B. Laxminarayana Rao, *Bharatadesa Swathantra Charitra (Part-3)*, (Trans.), Telugu Academy, 2005.
Bipan Chandra, *Adhunika Bharatadesa Charitra* (Translation Sahavasi), Hyderabad Book Trust.
B.A. First & Second Year Indian History Text Books (English & Telugu Medium-CBCS) 2016-17.
J. Durga Prasad and Others, *Bharatadesa Charitra (1526-1964 A.D.)*, Telugu Academy, 2006.
V. Rama Krishna Reddy, *Bharatadesa Charitralo Mukhya Ghattalu*, Telugu Academy, 2005.


[B. S. V. MALATHI]

B.A Political Science
III rd Semester
Paper - III
Indian Political Thought

- Unit-I State and Society in Ancient India
- Manu – Features of Manusmriti, Origins of Varna, Varna Dharma
 - Buddha – Dhamma , Sangha , Eightfold path
 - Kautilya- Saptanga Theory , Mandala Theory , Statecraft
- Unit-II Medieval Political Thought
- Basava- Anubhava Mantapa , Gender Equality
 - Ziauddin Barani- Theory of Kingship (Ideal Sulthan) , Ideal Polity
- Unit- III RenaissanceThought
- Raja Ram Mohan Roy - Colonial Encounters , Brahma Samaj
 - Jyothi Rao Phule- Gulam Giri , Satya Shodhak Samaj , Education
- Unit-IV Reformist Thought
- M. K. Gandhi – Satyagraha , Trusteeship , Problem of Political Obligation
 - Dr. B. R. Ambedkar- Who are Shudras ? , Annihilation of Caste
- Unit-V Socialist Thought
- M.N. Roy- Radical Humanism
 - Jawaharlal Nehru- Democratic Socialism
 - R.M. Lohia – Concept of Four Pillars of State(Chaukhamba Model)



Prof. G. Veeranna,

CHAIRMAN

Board of Studies in Political Science
KAKATIYA UNIVERSITY
WARANGAL-506 009 (T.S.)

BA II Year

Semester III : Indian Administration

The Objectives of the Course are:

1. To understand the historical evolution and socio-economic, political, cultural and global context of Indian Administration;
2. To identify the transformative role of Indian Administration;
3. To make out the multi-dimensionality of problems and processes of Indian Administration;
4. To understand the form and substance of Indian Administration; and
5. To appreciate the emerging issues in Indian Administration in the context of changing role of state, market and civil society.

DSC 303 : Union Administration

Unit- I: Historical Background

- a. Evolution of Indian Administration
- b. Indian Administration after Independence: Continuity and Change
- c. Indian Constitutional Moorings and Administration.

Unit- II: Union Administration: Structure and Processes

- a. Political Executive at Central Level
 - i) President
 - ii) Prime Minister
 - iii) Council of Ministers
- b. Central Secretariat and other Offices

Unit-III: Centre-State Relations

- a. Centre-State Administrative Relations
- b. Central Personnel Agencies-All India Services

Unit-IV: Constitutional and Other National Bodies

- a. Union Public Service Commission
- b. (i) Election Commission; (ii) Comptroller and Auditor General of India (C&AG)
- c. NITI Aayog

Unit-V: Public Enterprises in India

- a. Forms of Public Enterprises - Department, Corporation, Company
- b. Performance and Disinvestment

References:

- Bidyut Chakravarty, Prakash Chand (2019), Indian Administration: Evolution and Practise, Sage Publications
- Krishna K.Tummala (1996), Public Administration in India, Allied Publishers Limited.
- Kuldeep Mathur (2019), Recasting Public Administration in India: Reform, Rhetoric, and Neoliberalism, Oxford University Press
- M.Sharma (2004), Indian Administration, Anmol Publishers.
- Meredith Townsend (2019), The Annals of Indian Administration, Volume-3, Creative Media Partners.
- Parmar, A., A Study of Kautilya's Arthashastra, Delhi, Atma Ram & Sons, 1987
- Radha Krishna Sapru (2019), Indian Administration: Foundations of Governance, Sage Publications.
- Ramesh K Arora, Rajni Goyal (2018), Indian Public Administration: Institutions and Issues, New Age International Publishers.
- S.R.Maheswari (2004), Indian Administration, Orient Longman Publishers Limited.
- Siuli Sarkar (2018), Public Administration in India (Second Edition), PHI Learning Private Limited.
- Vaman Govind Kale (2010), Indian Administration, Kessinger Publications.
- P.D. Sharma and B.M. Sharma (2009) Indian Administration: Retrospect and Prospect, Rawat Publications.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

Unit-I

Basic Concepts: Database Management System, File based system, Advantages of DBMS over file based system, Database Approach, Logical DBMS Architecture, Three level architecture of DBMS or logical DBMS architecture, Need for three level architecture, Physical DBMS Architecture, Database Administrator (DBA) Functions & Role, Data files indices and Data Dictionary, Types of Database.

Relational and ER Models: Data Models, Relational Model, Domains, Tuple and Relation, Super keys, Candidate keys, Primary keys and foreign key for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violations, Relational Operations, Entity Relationship (ER) Model, Entities, Attributes, Relationships, More about Entities and Relationships, Defining Relationship for College Database, E-R Diagram, Conversion of E-R Diagram to Relational Database.

Unit-II

Database Integrity And Normalization: Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalization, Rules of Data Normalization, The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Attribute Preservation, Lossless, join Decomposition Dependency Preservation.

File Organization: Physical Database Design Issues, Storage of Database on Hard Disks, File Organization and Its Types, Heap files (Unordered files), Sequential File Organization – Indexed (Indexed Sequential) File Organization, Hashed File Organization, Types of Indexes, Index and Tree Structure.

Unit-III

Structures Query Language (SQL): Meaning – SQL commands, Data Definition Language, Data Manipulation Language – Data Control Language, Transaction Control Language Queries using Order by, Where, Group by, Nested Queries. Joins – Views – Sequences, Indexes and Synonyms, Table Handling.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

Unit-IV

Transactions and Concurrency Management: Transactions, Concurrent Transactions, Locking Protocol, Serializable Schedules – Locks Two Phase Locking (2PL), Deadlock and its Prevention, Optimistic Concurrency Control.

Database Recovery and Security: Database Recovery meaning, Kinds of failures – Failure Controlling methods, Database errors, Backup & Recovery Techniques, Security & Integrity.

Text Book: Database Systems: R.Elmasri & S.B. Navathe, Pearson.

References:

1. Introduction to Database Management System: ISRD Group, McGraw Hill.
2. Database Management System: R.Ramakrishnan & J.Gehrke, McGraw Hill.
3. Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. / B.Sc. Life Science II Year Computer Applications

SEMESTER – III

RELATIONAL DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Create a database having two tables with the specified fields, to computerize a library system of a University College.

Library Books (Accession number, Title, Author, Department, Purchase Date, Price),

Issued Books (Accession number, Borrower)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Delete the record of book titled “Database System Concepts”.
- c) Change the Department of the book titled “Discrete Maths” to “CS”.
- d) List all books that belong to “CS” department.
- e) List all books that belong to “CS” department and are written by author “Navathe”.
- f) List all computer (Department=“CS”) that have been issued.
- g) List all books which have a price less than 500 or purchased between “01/01/1999” and “01/01/2004”.

2. Create a database having three tables to store the details of students of Computer Department in your college.

Personal information about Student (College roll number, Name of student, Date of birth, Address, Marks (rounded off to whole number) in percentage at 10 + 2, Phone number)

Paper Details (Paper code, Name of the Paper)

Student’s Academic and Attendance details (College roll number, Paper Code, Attendance, Marks in home examination).

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper2.
- c) List all students who live in “Warangal” and have marks greater than 60 in paper1.
- d) Find the total attendance and total marks obtained by each student.
- e) List the name of student who has got the highest marks in paper2.

3. Create the following tables and answer the queries given below:

Customer (Cust ID, email, Name, Phone, Referrer ID)

Bicycle (Bicycle ID, Date Purchased, Color, Cust ID, Model No)

Bicycle Model (Model No, Manufacturer, Style) Service

(Start Date, Bicycle ID, End Date)

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) List all the customers who have the bicycles manufactured by manufacturer "Honda".
- c) List the bicycles purchased by the customers who have been referred by Customer "C1".
- d) List the manufacturer of red colored bicycles.
- e) List the models of the bicycles given for service.

4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Employee (Person Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
- b) Alter table employee, add a column "email" of type varchar(20).
- c) Find the name of all managers who work for both Samba Bank and NCB Bank.
- d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
- f) Find the names of all employees who live in the same city as the company for which they work.
- f) Find the highest salary, lowest salary and average salary paid by each company.
- g) Find the sum of salary and number of employees in each company.
- h) Find the name of the company that pays highest salary.

5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

Parts (PNo, Pname, Colour, Weight, City)

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.
- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Hyderabad.
- j) Get part numbers for part supplied by a supplier in Warangal to a project in

Chennai.

- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

6. Write a PL/SQL Program to demonstrate Procedure.
7. Write a PL/SQL Program to demonstrate Function.
8. Write a PL/SQL program to Handle Exceptions.
9. Write a PL/SQL Program to perform a set of DML Operations.
10. Create a View using PL/SQL program.
11. Write a PL/SQL Program on Statement Level Trigger.
12. Write a PL/SQL Program on Row Level Trigger.

KAKATIYA UNIVERSITY, WARANGAL
B.A., B.Sc., B.Com. & B.B.A (CBCS)
Syllabus - 2020
Telugu (Second Language)
4th Semester

Unit -I ప్రాచీన పద్యభాగం

- 1) నారద గానమాత్యర్యం - పింగలి సూరన
- 2) వాగ్దాన భంగం - అసూరి మరింగంటి వేంకట నరసింహాచార్యులు
- 3) నారసింహ శతకం - ధర్మపురి శేషప్ప

Unit -II ఆధునిక పద్యభాగం

- 1) నరుడ నేను, నరుడ నేను - కాళోజీ
- 2) ఆత్మగీతం - దేవరకొండ బాలగంగాధర తిలక్
- 3) దేవరకొండ దుర్గం - డా॥ ముకురాల రామారెడ్డి

Unit -III వచన విభాగం

- 1) అర్థరాత్రి అరుణోదయం - దాశరథి రంగాచార్య
- 2) సి.పి బ్రౌన్ సాహిత్య సేవ - జానమద్ది హనుమచ్ఛాస్త్రి
- 3) మన గ్రామ నామాలు - డా॥ కపిలవాయి లింగమూర్తి
- 4) నివురు తొలగిన నిప్పు - పోల్కంపల్లి శాంతాదేవి
- 5) కొండమల్లెలు - ఇల్లిందల సరస్వతీదేవి

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి “సాహితీ కిన్నెర” తెలుగు వాచకం



29-8-2020
Chairman
Board of Studies in Telugu
KAKATIYA UNIVERSITY
WARANGAL(A.P.)


Head
Department of Telugu
Kakatiya University
Warangal-506 09(T.S.).

B.A, B.Sc & B.Com SECOND YEAR.

URDU SECOND LANGUAGE

"MUTALA-E-ADAB" (Part - II)

(Compiled by Urdu Department - Osmania University - Hyderabad)
published in August 2008 by Urdu Academy - Hyderabad.

SEMESTER - IV

PAPER - IV

POETRY & PROSE

UNIT: I

MARSIA: "GARM KA SAMAN" by Meen Anees.

UNIT: II:

1. RUBAIYAT: a) ANEES - Pурсan koi kab Jawher - e -
Zaati ka hai.

ANEES - Duniya bhi jab Sataye - e -
Fani Dekhi.

b) HALI - Duniya - e - Demi ko Naqsh - e
Fani Samjha.

HALI - Yaro Nahi waqt Alam ka yeh.

c) AMJAD - Koshish hai apni tamam
Satayash ke liye.

AMJAD - Kam Zarf Ager Daulat - o -
Zar pata hai.

2. QITAAT: a) AKBAR ILAHRADI - Chod Literature
ko Apni History Bhoal Ja.

b) ALLAM IQBAL - Andaz - e - Bayan

Ger - che - Bahut Shookh nahi
hai.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS II Year
SEMESTER – IV

PAPER – IV INDIAN ECONOMY
(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module I: Structure of the Indian economy:

Indian Economy at the time of Independence - Changes in the Composition of National Income and Employment - Natural Resource base - Land, Water, Forest, Mineral and Metal Resources - Population: Size, Growth and Composition and their implications for Indian economy.

Module II: Indian Agriculture:

Importance of Agriculture - Trends in Agricultural Production and Productivity. Land Reforms - Green Revolution - Agricultural Finance - Agricultural Marketing - Agricultural Price Policy - Food Security in India.

Module III: Indian Industry:

Importance of Industrialization - Trends in Industrial Production - Industrial Policy Resolutions - 1948, 1956, 1991 - Role of Public and Private Sectors - Formal and Informal Sectors in Industry.

Module IV: NIIT AAYOG:

Evolution of Planning Commission – Failures and Demise of planning commission - Genesis of NITI Aayog: structure and composition of NIIT Aayog, Functions and objectives of NIIT Aayog, Differences between NIIT Aayog and planning commission - NIIT Aayog role in strategic planning and development.

Module-V Service Sector and Economic Reforms:

Concept, Components, Trends and Role of Service Sector - Infrastructural Development-Transport, Banking, Insurance, and Information Technology - Economic Reforms-Liberalization, Privatization, and Globalization- A critical evaluation.

References:

- | | |
|----------------------|---|
| 1. SK Misra and Puri | : Indian Economy, Himalaya Publishing House. |
| 2. Ishwar C Dhigra | : The Indian Economy: Environment and Policy,
SC Chand & Sons, New Delhi |
| 3. KPM Sundaram | : Indian Economy |
| 4. PK Dhar | : Growing Dimensions of Indian
Economy, Kalayani Publisher. |

B.A Political Science
IV th Semester
Paper - IV
Constitution and Politics of India

- Unit- I Constitutional Development in India
- Brief overview of Nationalist Movement
 - Evolution of Indian Constitution -1909 Act ,1919 Act ,1935Act.
 - Philosophical Foundations of the Indian Constitution – Liberal, Gandhian, Socialist
- Unit- II : Institutional Framework
- Union Government – Executive; Legislature; Judiciary
 - State Government - Executive; Legislature; Judiciary
- Unit- III Federal Politics
- Union- State Relations : Legislative, Administrative, Financial
 - Recent trends in Union - State Relations
- Unit- IV : Electoral Politics in India
- Political Parties a) National : INC, BJP, CPM, BSP
 - b) Regional : DMK, Akali Dal, TDP, TRS
 - c) Recent Trends in Party System
 - Election Commission & Electoral Reforms
- Unit- V : Issues in Indian Politics
- Debates on Secularism – Majority Communalism, Minority Communalism
 - Caste in Politics and Politicization of caste
 - Gender in Indian Politics
 - Issues of Minorities – Sachar Committee



Prof. G. Veeranna
CHAIRMAN
Board of Studies in Political Science
KAKATIYA UNIVERSITY
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TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - IV
History of India (1858-1964 CE)
(DSC - Discipline Specific Course-401) - Paper - IV
(2019-2020)

- Module-I: Queen's Proclamation – Beginning of Colonial Rule – Introduction of Western Education – Role of Christian Missionaries – Press, Communication and Emergence of Middle Classes - Lytton and Rippon: Impact of their Policies.
- Module-II: Socio-Religions Reform Movements – Brahma Samaj - Arya Samaj - Theosophical Society - Ramakrishna Mission - Aligarh Movement; Anti-Caste Movements - Jyotibha Phule - Narayana Guru - Periyar Ramaswamy Naicker and Dr. B.R. Ambedkar.
- Module-III: Factors for the Rise of Nationalism – Formation of Indian National Congress – Three Phases of Freedom Struggle: Moderate Phase, Extremist Phase and Gandhian Era - Non-Cooperation, Civil Disobedience and Quit India Movement; Indian National Army and Subhash Chandra Bose.
- Module-IV: Revolutionary Movement: Gadhar Party – Bhagath Singh – Chandra Sekhar Azad and Others; Left-Wing Movement – Rise of Socialist and Communist Parties - Peasant and Workers Movements.
- Module-V: Emergence of Communal Politics and Mohd. Ali Jinnah – Prelude to Partition of India - Sardar Vallabhai Patel and Integration of Princely States into Indian Union – Republic of India – Jawaharlal Nehru and His Policies.

Recommended Books:

- A.R. Desai, *Social Background of Indian Nationalism*, Popular Prakashan Pvt. Ltd., Mumbai, 2002.
- Bipan Chandra (et.al.), *India's Struggle for Independence*, Penguin Books, Kolkata, 2001.
- Bipan Chandra, *A History of Modern India*.
- Kenneth Jones, *Social and Religious Reform Movements in India*.
- R.C. Majumdar (ed.), *A History and Culture of India People*, Bharatiya Vidya Bhavan Series (Relevant Vols.).
- R.C. Majumdar, H.C. Raychaudhuri & K. Datta, *An Advanced History of India*, Macmillan, Madras, 1995.
- S. Gopal, *Jawaharlal Nehru – A Biography*.
- Sumit Sarkar, *Modern India (1885-1947)*, Macmillan India Ltd., Madras, 1995.
- Tarachand, *A History of the Freedom Movement in India*, Four Volumes.
- V.D. Mahajan, *Modern Indian History*.

Telugu:

- B. Vijaya Bharati, *Mahatma Jyothirao Phule* (Translation), Hyderabad Book Trust, 2004.
- Bhoopati Laxminarayana Rao, *Bharatadesa Swathantra Charitra* (Part – 3), (Translation), Telugu Academy, 2005.
- Bipan Chandra, *Adhunik Bharatadesa Charitra* (Translation Sahavasi), Hyderabad Book Trust.
- J. Durga Prasad and Others, *Bharatadesa Charitra (upto 1526-1964 A.D.)*, Telugu Academy, 2006.
- V. Rama Krishna Reddy, *Bharatadesa Charitralo Mukhya Ghattalu*, Telugu Academy, 2005.

[B.SUMALATHA]

Semester-IV: DSC 403: State Administration

Unit-I: State Administration: Structure and Processes

- a. Administrative History of Telangana
- b. Political Executive at State Level, Governor & Chief Minister

Unit-II: State Administrative Mechanisms

- a. State Secretariat & Directorates
- b. Local Governance & District Administration in Telangana

Unit- III: Emerging Issues

- a. Administrative Reforms: Need and Importance
- b. 2nd Administrative Reforms Commission – Features and Recommendations

Unit-IV: Technology and Integrity in Government

- a. e-Government
- b. Values and Ethics in Administration

Unit-V: Control over Administration

- a. Redressal of Citizen Grievances: Transparency, Accountability and Right to Information Act
- b. Administrative Accountability: Legislative and Judicial Control

Expected Outcomes

After study of the course, the learner should be able to:

- discern the connects and disconnects between structure, purpose and process and results in Indian Administration;
- Understand the Indian Administration role as the main instrument of State to achieve its developmental goals;
- Appreciate the varying historical, socio-economic, political and other conditioning factors that gave Indian Administration its distinct nature to the learner

References:

- Bidyut Chakravarty, Prakash Chand (2019), Indian Administration: Evolution and Practise, Sage Publications
- Krishna K.Tummala (1996), Public Administration in India, Allied Publishers Limited.
- Kuldeep Mathur (2019), Recasting Public Administration in India: Reform, Rhetoric, and Neoliberalism, Oxford University Press
- M.Sharma (2004), Indian Administration, Anmol Publishers.
- Meredith Townsend (2019), The Annals of Indian Administration, Volume-3, Creative Media Partners.
- Parmar, A., A Study of Kautilya's Arthashastra, Delhi, Atma Ram & Sons, 1987
- Radha Krishna Sapru (2019), Indian Administration: Foundations of Governance, Sage Publications.
- Ramesh K Arora, Rajni Goyal (2018), Indian Public Administration: Institutions and Issues, New Age International Publishers.
- S.R.Maheswari (2004), Indian Administration, Orient Longman Publishers Limited.
- Siuli Sarkar (2018), Public Administration in India (Second Edition), PHI Learning Private Limited.
- Vaman Govind Kale (2010), Indian Administration, Kessinger Publications.

DEPARTMENT OF PUBLIC ADMINISTRATION & HRM, KU, WGL.
B.A PUBLIC ADMINISTRATION
III YEAR
SEMESTER-V
OPTIONAL - A

RURAL LOCAL GOVERNANCE

Block-I: Introduction

- Unit: i.** Democratic Decentralization and Local Organizations
ii. Evolution of Rural Governance Institutions-Balwanth Roy Mehtha,Ashok Mehtha Committees
iii. Constitutional Status of Rural Local Government- with Special Reference to 73rd CAA

Block-II: Local Organizations for Rural Development

- Unit:II:i.** Panchayati Raj: Patterns, Functions and Performance
ii. Finances of Panchayati Raj Institutions --- State Finance Commission
iii. State Control over Rural Local Governments

Block-III: Decentralisation and Local Governance

- Unit:III:i.** Rural Development: Strategies, Programs and Issues
ii. Co-operatives: Structure, Functions and Performance
iii. Basic Services and Welfare Measures in Rural Areas

SUGGESTED READINGS:

- 1.S.R Maheshwari "Indian Administration" Orient Black Swan Publishers, New Delhi
- 2.Avasthi &Maheshwari "Public Administration", Laxminarain Agarwal Educational Publishers, Agra
- 3.M.Laxmikanth "Public Administration" Tata Mc Graw Hills Publishers, New Delhi
- 4.S.R Maheshwari "Local Government in India" Orient Longman Publishers, New Delhi
- 5.Sthanika Prabhutvalu,Telugu Academy Publication, Hyderabad
- 6.Prof RamReddy " Patterns of Panchayatiraj in India", Mac Milan India
- 7.NIRD,Rural Development in India, some facets, NIRD Publications

DEPARTMENT OF PUBLIC ADMINISTRATION & HRM, KU, WGL.
B.A PUBLIC ADMINISTRATION
III YEAR
SEMESTER-V

HUMAN RESOURCE MANAGEMENT

Block-I: Nature of Human Resource Management

- Unit:I** i. Meaning and Significance of Human Resource Management
ii. Human Resource Planning,
iii. Concept and Principles of Office Management
iv. Job Analysis, Job Description, Recruitment and Promotion
v. Compensation Management

Block- II: Human Resource Development

- Unit:II:**i. Performance and Competency Mapping System
ii. Employee Capacity Building Strategies-Training
iii. Total Quality Management and Productivity Management

Block- III: Emerging Trends

- Unit:III:**i. Reddressal of Employee Grievances
ii. Right Sizing, Outsourcing and Consultancies
iii. Interpersonal Skills

SUGGESTED READINGS:

1. Aswathappa K.(2002) "Human Resource and Personnel Management", Tata Mc Graw Hill Publishers, New Delhi
2. Seema Sanghi, Human Resource Management, Mc Millan, Delhi, 2011.
3. Subba Rao P., Essentials of Human Resource Management and Industrial Relations, Himalaya Publishing, Mumbai.
4. Dr.Rao, P.L., Comprehensive HRM, Excel Pub. New Delhi.
5. Venkatratnam C.S. and Srivastava, V.K., Personnel Management and HRM, Tata McGraw Hill Co.Ltd., New Delhi.

DEPARTMENT OF PUBLIC ADMINISTRATION & HRM, KU, WGL.
B.A PUBLIC ADMINISTRATION
III YEAR
SEMESTER – VI

FINANCIAL AND MATERIAL MANAGEMENT

Block- I: Financial Management

Unit:I i. Meaning, Scope and Importance of Financial Management

ii. Budget: Concept, Principles, Preparation, Enactment and Execution

Block- II: Major Actors in Budgetary Process in India

Unit:II:i .Organization and Functioning of Finance Ministry

ii. Centre – State Financial Relations and the Role of Finance Commission

iii. Parliamentary Financial Committees: PAC, EC and CPU

Block- III: Materials Management

Unit:III:i. Meaning and Concept of Materials Management

ii. Procurement, Storage and Distribution

iii. Inventory Control and Management

iv. Issues of Quality Control

SUGGESTED READINGS:

- 1.S.L Goel, “Financial Administration and Management” Sterling publications, New Delhi
- 2.Chandra Prasanna “Financial Management: Theory and Practice” Tata Mc Graw Hill Publishers, New Delhi
- 3.M.Laxmikanth “Public Administration” Tata Mc Graw Hills Publishers, New Delhi
- 4.Nair, “Purchasing and Material Management” Vikas Publishing House, New Delhi.
5. Gopal Krishnan “Handbook of Materials Management” Prentice Hall of India Pvt. Ltd., New Delhi.
6. Gopalakrishnan, P. & Sundarshan, M “Materials Management: An Integrated Approach” Prentice Hall of India Pvt. Ltd., New Delhi.

7. Vanarula Nirvahana, Telugu Academy publication, Hyderabad

**DEPARTMENT OF PUBLIC ADMINISTRATION & HRM, KU, WGL.
B.A PUBLIC ADMINISTRATION
III YEAR
SEMESTER-VI
OPTIONAL - A**

URBAN LOCAL GOVERNANCE

Block-I: Local Organizations for Urban Development

Unit:I i. Evolution of Urban Local Bodies- Pattern, Functions and Performance

- ii. Constitutional Status of Urban Local Governments with Special Reference to 74th CAA
- iii. Urban Development: Strategies, Programs and Issues
- iv. Finance of Urban Local Governments

Block-II: Local Organizations- Services and Welfare

Unit:II:i. Basic Services and Welfare Measures in Urban Areas

- ii. Urban Development Authorities and Parastatals
- iii. Sustainable Development and Future of Local Governance-

Block-III: Agencies and Programs for Urban Sector

Unit:III:i. Development Planning, District Planning Committee

- ii. Special Agencies for Rural and Urban Development
- iii. Voluntary Agencies for Rural and Urban Development
- iv. Elimination of Poverty Initiatives in Rural and Urban Areas

SUGGESTED READINGS:

1. S.R Maheshwari "Indian Administration" Orient Black Swan Publishers, New Delhi
2. Avasthi & Maheshwari "Public Administration", Laxminarain Agarwal Educational Publishers, Agra
3. M.Laxmikanth "Public Administration" Tata Mc Graw Hills Publishers, New Delhi
4. S.R Maheshwari "Local Government in India" Orient Longman Publishers, New Delhi
5. Sthanika Prabhutvalu, Telugu Academy Publication, Hyderabad