Department of English
Palamuru University

Course Structure under the Reorganized CBCS
(with effect from AY 2019-20)

Subject: English (First Language)

BA/BSc/BCom and other UG Courses

Course Objectives

The 20-credit, six-semester course seeks to enhance the English language skills of undergraduate students by

- Strengthening their grammar and vocabulary
- Improving their reading and writing skills
- Enhancing their listeningand speaking skills
- Imparting to them important life skills and human values
- Encouraging them to think creatively and critically
- Exposing them to a variety of content-rich texts
- Expanding their emotional intelligence
- Developing gender sensitivity among them.

Course Outcomes

On successful completion of the 20-credit, six-semester course, an undergraduate student will be able to

- Read, understand, interpret a variety of written texts
- Undertake guided and extended writing using appropriate vocabulary and correct grammar
- Listen with comprehension and speak with confidence in both formal and informal contexts with reasonable fluency and acceptable pronunciation
- Become employable with requisite professional skills, ethics and values.

Credits, Syllabus, and Instructional Hours

Semester	**Number of Credits**	**Number of Units**	**Instruction (Clock hours per week)**
I	4	4	4
II	4	4	4
III	3	3	3
IV	3	3	3
V	3	3	3
VI	3	3	3
Total	**20**	**20**	**20**

Department of English
Palamuru University
Reorganized CBCS
(With effect from AY 2019-20)

Subject: English (First Language)

Semesters I & II

Course Code:
Instruction: 4 clock hours per week
Credits: 4
Continuous Assessment: 20 Marks
University Examination: 80 Marks
Duration of University Examination: 3 Hours

Course Structure
Four equal units per semester integrating English language learning with ethics, values, and skill development.

The syllabus will include, but is not limited to, the following components:

Units	Components
I	**Reading and Vocabulary** Passages for language enrichment and personality development (including comprehension, interpretation, creative critical thinking, and empathy)
II	
III	**Writing and Grammar** (including Spelling and Punctuation) Guided writing, Sequencing, Paragraph, Descriptive writing, Dialogue writing, Note taking, Note making, Letter writing; Parts of speech, Tenses, Articles
IV	
V	**Listening and Speaking** (including Conversation and Pronunciation) Self-introduction, Situation and Function-based conversations; English Speech Sounds (Vowels and Consonants)
VI	
VII	**Soft Skills and Values** Inculcating self-confidence, and effecting desirable attitudinal and behavioural changes.
VIII	

Semesters III-VI

Course Code:
Credits: 3 per semester
Instruction: 3 clock hours per week
Continuous Assessment: 20 Marks
University Examination: 80 Marks
Duration of University Examination: 3 Hours

Course Structure
Three equal units per semester integrating English language learning with ethics, values, and skill development.

Two units (one each in Sem V and VI) will be designed to inculcate gender sensitivity. Appropriate course material will be prepared.

The syllabus will include, but is not limited to, the following components:

Unit	Components
I	**Reading**: Fictional and Non-Fictional Prose, Poetry, and Drama for Comprehension, Interpretation, Literary Appreciation, Societal Awareness, Gender Sensitivity, Ecological Awareness, Constitutional Values. **Writing**: Process writing, Script writing, Personal Diary/journal writing, Essay Writing (different kinds), Report Writing (different kinds), CV Writing, Review/Article Writing. **Grammar**: Prepositions, Voice, Connectives, Reported Speech, Conditionals, Common Errors, Concord, Determiners, Degrees of comparison, Relative clauses, Framing questions, Transformation of sentences. **Vocabulary**:Synonyms, Antonyms, Anagrams, Acronyms, Rhyming words, Picture vocabulary, Indianisms, British-American English, Phrasal Verbs, Idioms, Technical Vocabulary, Commonly Confused Words.
II	
III	
IV	
V	
VI	
VII	
VIII	
IX	
X	
XI	
XII	

In addition, the proposed syllabus of Semesters III-VI will impart, as in Semesters I and II, either directly or through the use of authentic materials, **communication skills** (formal and informal conversation skills, debating skills, interview skills etc), **study skills** (reference skills, library skills etc), **social skills** (politeness, patience, participation, cooperation, sharing etc), **soft skills** (such as negotiation, team work, decision making, beating the odds, dealing with failure etc), and **values** (such as honesty, empathy, fortitude, selflessness etc).

Testing Pattern in the Reorganized CBCS
(With effect from AY 2019-20)

Subject: English (First Language)

BA/BSc/BCom and other UG Courses

Semesters I& II

I Internal Assessment: 20 marks

II End-Semester Exam: 80 marks

- Section I: 6 short answer Qs to be set. 4 to be answered.
  4 x 5 marks each = 20 marks
- Section II: 4 long answer Qs with internal choice to be set.
  4 x 15 marks each = 60 marks

Note: Questions should cover all units. In Section I, Q 1 to be based on Unit I, Q 2 on Unit II and so on. In Section II, Q 7 A & B to be based on Unit I, Q 8 A & B to be based onUnit II and so on.

Department of English
Palamuru University

Semesters I and II

Prescribed Text Book for Semesters I and II: English Made Easy. Editors: E. Suresh Kumar, Sumita Roy and A. Karunaker. Orient Blackswan, 2016.

Semester I

Lesson 1

SHORT FICTION: "The Curb in the Sky" by James Thurber—PRONUNCIATION: Consonant sounds—GRAMMAR: Noun—VOCABULARY: Word roots, prefixes and suffixes—SPELLING: Commonly misspelt words—PUNCTUATION: Capitalisation— CONVERSATION: Introducing yourself in a formal situation—READING PASSAGE: Chindula Yelamma—WRITING: Expansion of a sentence into a paragraph—SOFT SKILLS: Motivation and goal setting—VALUE ORIENTATION: Well begun is half done

Lesson 2

PROSE: "Happy People" by William Ralph Inge—PRONUNCIATION: Vowels: monophthongs—GRAMMAR: Pronoun—VOCABULARY: Word roots, prefixes, suffixes—SPELLING: Forming antonyms using un- and dis—PUNCTUATION: Capitalisation— CONVERSATION: Starting and sustaining a conversation—READING PASSAGE: The Million March—WRITING: Sequencing—SOFT SKILLS: Self-confidence—VALUE ORIENTATION: Doubt is the beginning of wisdom

Lesson 3

POETRY: "A Psalm of Life" by Henry Wadsworth Longfellow—PRONUNCIATION: Vowels: diphthongs—GRAMMAR: Auxiliary verbs—VOCABULARY: Homonyms, homographs, homophones—SPELLING: Words ending in -tion and -sion— PUNCTUATION: Full stop and comma—CONVERSATION: Describing your college and course of study—READING PASSAGE: Bathukamma—WRITING: Descriptive writing—SOFT SKILLS: Non-verbal communication and body language—VALUE ORIENTATION: Actions speak louder than words

Lesson 4

DRAMA: "The Dear Departed" (an extract) by Stanley Houghton—PRONUNCIATION: Letters with varied pronunciations—GRAMMAR: Main verbs and tenses—VOCABULARY: Collocations—SPELLING: Words ending in -tion and –ment—PUNCTUATION: Question mark and exclamation mark—CONVERSATION: Leaving a voicemail, making an appointment over phone—READING PASSAGE: Husain Sagar—WRITING: Dialogue writing—SOFT SKILLS: Interpersonal skills—VALUE ORIENTATION: Faith can move mountains.

Semester II

Lesson 5

SHORT FICTION: “A Visit of Charity” by Eudora Welty—PRONUNCIATION: Plosive—GRAMMAR: Non-finite verbs—VOCABULARY: Simile and metaphor—
SPELLING: Use of ie and ei—PUNCTUATION: Semicolon—
CONVERSATION:
Asking for information— READING PASSAGE: Hyderabad—WRITING: Note making—SOFT SKILLS: Time management—VALUE ORIENTATION: Time and tide wait for no one

Lesson 6

PROSE: “Benares” by Aldous Huxley—PRONUNCIATION: Fricative—
GRAMMAR:
Adjective—VOCABULARY: Oxymoron and hyperbole—SPELLING: Words ending in -able or -ible— PUNCTUATION: Colon and em-dash—
CONVERSATION:
Requests—READING PASSAGE: Burrakatha—WRITING: Informal letters—
SOFT SKILLS: Leadership—VALUE ORIENTATION: The pen is mightier than the sword

Lesson 7

POETRY: ‘Stanzas Written in Dejection, Near Naples’ by Percy Bysshe Shelley—
PRONUNCIATION: Affricate and nasal—GRAMMAR: Article—
VOCABULARY:
Portmanteau words and loan words—SPELLING: Words ending in -al, -ance, -ence, -
ic, -ity, and -ive—PUNCTUATION: Hyphen— CONVERSATION: Conducting a meeting—READING PASSAGE: ‘Flower boat’ by Sunkara Ramesh—WRITING: Formal letters—SOFT SKILLS: Stress management—VALUE ORIENTATION: Practice makes perfect

Lesson 8

DRAMA: Shakespeare Retold: Julius Caesar (extract)— PRONUNCIATION: Approximant— GRAMMAR: Adverb—VOCABULARY: Palindromes—
SPELLING:
Derived forms of words—PUNCTUATION: Inverted comma—
CONVERSATION:
Interview skills—READING PASSAGE: The handicrafts of Telangana—
WRITING:
Formal letters—SOFT SKILLS: Etiquette and grooming—VALUE ORIENTATION:
Necessity is the mother of invention.

Department of English
Palamuru University

Reorganized CBCS Curriculum with effect from AY 2019-20

English (First Language)

Question Paper Pattern

Time: 3 Hours **Max Marks: 80**

Semester I

Note: All questions in Section A and B are to be based on the lessons and exercises included in the prescribed textbook.

Section A
(4 x 5 marks = 20 marks)

6 questions to be set. Any 4 to be answered.

- Q 1-4 to be based on the following components of Units I-IV
    - Pronunciation, Grammar, Vocabulary, Spelling, Punctuation
- Q 5 to be based on the following component of Units I-IV
    - Writing
- Q 6 to be based on the following components of Units I-IV
    - Soft Skills, Value Orientation

Section B
(4 x 15 marks = 60 marks)

Qs 7-10 will have internal choice. Students can answer either A or B.

- Q 7 A & B are to be based on the following component of Unit I
    - Short fiction
- Q 8 A & B are to be based on the following component of Unit II
    - Prose
- Q 9 A & B are to be based on the following component of Unit III
    - Poetry
- Q 10 A & B are to be based on the following component of Unit IV
    - Drama

తీర్మానాలు

తేది 14 జూన్ 2019 న తెలంగాణ రాష్ట్రంలోని అన్ని విశ్వవిద్యాలయాల పరిధిలోని డిగ్రీ కళాశాలలలో తెలుగు ద్వితీయ భాషగా చదివే విద్యార్థుల కోసం కామన్ కోర్ సిలబస్ ను రూపొందించడానికి తెలంగాణ రాష్ట్ర ఉన్నత విద్యా మండలి, మాసబ్ ట్యాంక్, హైదరాబాద్ నందు వివిధ విశ్వవిద్యాలయాలలోని తెలుగు శాఖ విభాగాధిపతులు మరియు పాఠ్య ప్రణాళికా సంఘ చైర్ పర్సన్స్ సమావేశమైనారు. తెలంగాణ రాష్ట్ర ఉన్నత విద్యా మండలి ఆదేశాల ప్రకారం C.B.C.S పాఠ్య ప్రణాళిక నమూనా ఆధారంగా డిగ్రీ కోర్సులోని తెలుగు ద్వితీయ భాషకు మొత్తం 6 సెమిస్టర్లకు గాను 20 క్రెడిట్లను పొందుపరుస్తూ పాఠ్య ప్రణాళికలను రూపొందించడానికి తీర్మానించనైనది. పై తీర్మానం ప్రకారం ఈ సమావేశంలో ఒకటవ సెమిస్టర్ కు 4 క్రెడిట్లను మరియు రెండవ సెమిస్టర్ కు 4 క్రెడిట్లను పొందుపరుస్తూ ఒకటవ మరియు రెండవ సెమిస్టర్ల పాఠ్య ప్రణాళికలను రూపొందించి ఈ క్రింది విధంగా ఆమోదించనైనది.

C.B.C.S Pattern Syllabus from 2019-20 onwards
B.A., B.Sc., B.Com & B.B.A 1st Semester
IInd Language- Telugu

Unit –I ప్రాచీన కవిత్వం

1) శకుంతలోపాఖ్యానం– నన్నయ

2) గొడగూచి కథ – పాల్కురికి సోమనాథుడు

3) సంవరణుడి తపస్సు– అద్దంకి గంగాధరుడు

Unit–II ఆధునిక కవిత్వం

1) కాసులు – గురజాడ అప్పారావు

2) రాజు – కవి – డా. గుఱ్ఱం జాషువా

3) గంగిరెద్దు – డా. పల్లా దుర్గయ్య

4) జయభేరి – శ్రీ శ్రీ

Unit–III వచన విభాగం

రుద్రమదేవి (నవల) – ఒద్దిరాజు సోదరులు

Unit –IV భాషా భాగాలు- వ్యాకరణం

పర్యాయ పదాలు, నానార్థాలు, సంధులు, సమాసాలు, తెలుగు వాక్యం

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C.B.C.S Pattern Syllabus for 2019-20 onwards
B.A., B.Sc., B.Com & B.B.A 2nd Semester
IInd Language- Telugu

Unit–I ప్రాచీన కవిత్వం

1) గజేంద్ర మోక్షం – పోతన

2) హనుమత్ సందేశం– మొల్ల

3) సుభాషితాలు – ఏనుగు లక్ష్మణ కవి

Unit–II ఆధునిక కవిత్వం

1) స్నేహలత లేఖ – రాయప్రోలు సుబ్బారావు

2) అంతర్నాదం – దాశరథి కృష్ణమాచార్యులు

3) ప్రపంచపదులు – డా.సి. నారాయణ రెడ్డి

4) అల్విదా– కౌముది

Unit –III వచన విభాగం

1) యుగాంతం– నెల్లూరి కేశవ స్వామి

2) ఎంకన్న – ఆచార్య పాకాల యశోదారెడ్డి

3) మామిడిపండు – సురవరం ప్రతాప రెడ్డి

4) మా ఊరుపోయింది – దేవులపల్లి వేంకట కృష్ణశాస్త్రి

Unit –IV ఛందస్సు

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

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2) ఈ ఒకటవ మరియు రెండవ సెమిస్టర్ల పాఠ్యాంశాలను **సాహితీ మంజీర** పేరుతో తెలుగు అకాడమీ ముద్రించాలని తీర్మానించడమైనది. ఈ పాఠ్య గ్రంథానికి సంపాదక మండలిగా ఈ సమావేశంలో పాల్గొన్న వివిధ విశ్వవిద్యాలయాలలోని తెలుగు శాఖ విభాగాధిపతులు మరియు పాఠ్య ప్రణాళికా సంఘ చైర్ పర్సన్స్ వ్యవహరిస్తారని సమావేశం తీర్మానించింది.

3) మూడు, నాలుగు, ఐదు, ఆరు సెమిస్టర్ల పాఠ్య ప్రణాళికను రూపొందించడానికి 2019 జూలై ఒకటవ వారంలో సమావేశం కావాలని తీర్మానించడమైనది.

ఈ సమావేశానికి హాజరైన వివిధ విశ్వవిద్యాలయాలలోని తెలుగు శాఖ విభాగాధిపతులు మరియు పాఠ్య ప్రణాళికా సంఘ చైర్ పర్సన్స్

క్రమ సంఖ్య	పేరు	విశ్వవిద్యాలయం.	సంతకం
1)			14/6/19
2)		BOS	14/6/19
3)			
4)			
5)			14/6/19
6)		HEAD	
7)			
8)			
9)			
10)		HOD	14/06/19
11)			14.6.19
12)	Dr K. Lavanya	Bos, TSD, Telangana University, Nzb	14/6/19

Question paper model for all semesters

Part A : 6 లఘు ప్రశ్నలకు 4 చేయాలి. = 4X5 = 20

Part B : 7. 8. 9. 10 వ్యాసరూపప్రశ్నలు Internal Choice 4 x 15 = 60

Exam 80+

Internal Assessment 20 = 100 Marks

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B.A., B.SC., B.COM & B.B.A (C.B.C.S)1ST SEMESTER

TELUGU (11nd LANGUAGE)

SCHEME OF THE QUESTIONPAPER

TIME :3 HRS MARKS :80

అ భాగం(సంగ్రహసమాధానాలు)

ఏవేని **నాలుగు** ప్రశ్నలకు క్లుప్తంగా సమాధానాలు రాయండి. **4x5=20**

1. ప్రాచీనపద్యభాగంనుండి ఒకసందర్భం
2. ఆధునికపద్యభాగంనుండి ఒకసందర్భం
3. నానార్థాలు (5) రాయాలి. (చాయస్ లేదు)
4. పర్యాయపదాలు (5) రాయాలి. (చాయస్ లేదు)
4. నవలనుండి చిన్నప్రశ్న ఒకటి రాయాలి .
3. కవిపరిచయం (ప్రాచీన, ఆధునికపద్యభాగంనుండి)

ఆ భాగం(వ్యాసరూపసమాధానాలు)

అన్ని ప్రశ్నలకు **వివరంగా** సమాధానాలు రాయండి. **15x4=60**

7. ప్రాచీన పద్యభాగం నుండి రెండు పద్యాలు ఉంటాయి (ఒకదానికి సందర్భం, కవిపరిచయం, ప్రతిపదార్థతాత్పర్యాలు, వ్యాకరణాంశాలు వివరించాలి)

8. ప్రాచీన/ ఆధునిక పద్యభాగం నుండి రెండుప్రశ్నలు ఉంటాయి. (ఒకదానికి సమాధానం రాయాలి.)

9. నవల నుండి రెండుప్రశ్నలు ఉంటాయి. (ఒకదానికి సమాధానం రాయాలి.)

10. తెలుగు వాక్యనిర్మాణరీతులను సోదాహరణంగా తెల్పండి. లేదా

మూడుసంధులను / మూడు సమాసాలను లక్ష్యలక్షణ సమన్వితంగా వివరించాలి

HOD Palamuru University

HOD, Nizam college, OU

HOD Telugu G.D.C(W) Nalgonda T.G.U.

P.U.

14/6/19

BOS. K.U.

Scanned by CamScanner

TELUGU (11nd LANGUAGE)

SCHEME OF THE QUESTIONPAPER

TIME :3 HRS MARKS :80

అ భాగం (సంగ్రహసమాధానాలు)

ఏవేని **నాలుగు** ప్రశ్నలకు క్లుప్తంగా సమాధానాలు రాయండి. **4x5=20**

1. ప్రాచీనపద్యభాగంనుండి ఒకసందర్భం
2. ఆధునికపద్యభాగంనుండి ఒకసందర్భం
3. పాఠ్యభాగంలోని కవి/రచయిత పరిచయం
4. ~~ప్రాచీన~~/ఆధునిక ~~పాఠ్యాంశాలనుండి విషయపరమైనప్రశ్న~~ కవిలా ఇండికను ఇచ్చి విశ్లేషించమని అడగాలి.
5. వచనవిభాగానికి సంబంధించి ఒక ప్రశ్న
6. పద్యపాదాన్ని ఇచ్చి గణవిభజన చేసి యతిస్థానాన్ని ఛందస్సును గుర్తించుట

ఆ భాగం (వ్యాసరూపసమాధానాలు)

అన్ని ప్రశ్నలకు వివరంగా సమాధానాలు రాయండి. **15x4=60**

7. ప్రాచీన పద్యభాగం నుండి రెండు పద్యాలు ఉంటాయి (ఒకదానికి సందర్భం, కవిపరిచయం, ప్రతిపదార్థతాత్పర్యాలు, వ్యాకరణాంశాలు వివరించాలి)
8. ప్రాచీన/ ఆధునిక పద్యభాగాల నుండి రెండు ప్రశ్నలుంటాయి. (ఒకదానికి సమాధానం రాయాలి.)
9. వచనవిభాగం నుండి రెండుప్రశ్నలు ఉంటాయి. (ఒకదానికి సమాధానం రాయాలి.)
10. మూడు ఛందస్సులను లక్ష్యలక్షణ సమన్వితంగా వివరించాలి **లేదా**

    మూడు పద్యపాదాలను ఇచ్చి గణవిభజన చేసి యతిస్థానాన్ని ఛందస్సును గుర్తించమని అడగాలి.

① Chairman B.O.S. O.U Hyd

HOD, TSD, TU

14/6/19

② HOD, Telugu G.D.C (W) Nalgonda M.G.U.

③ HOD, BO Kaminagar

P.U.

HOD P.U.

④ V. HOD of Telugu KUC.

(A. Jyothi) BOS, K.U.

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Botany

B.Sc. Syllabus (CBCS)

(w.e.f. 2016)

Faculty of Science

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

Palamuru University, Mahabubnagar - 509 001

Scheme of Insruction for B.Sc. I Year (I & II Semester) Botany under CBCS

FIRST YEAR SEMESTER-I				
Code	***Course Title***	***Course Type***	***HPW***	***Crdeits***
BS 104	Optional I	DSC I-A	4 T 2 P = 6	4 + 1 = 5
Paper-I Microbial Diversity of Lower Plants				
SEMESTER-II				
Code	***Course Title***	***Course Type***	***HPW***	***Crdeits***
BS 201	**Environmental Studies**	**AECC-2**	**2**	**2**
BS204	Optional-I	DSC-1B	4 T + 2P = 6	4 + 1 = 5
Paper-II Bryophytes Pteridophytes, Gymnosperms and Palaeobotany				
SECOND YEAR SEMESTER-III				
Code	***Course Title***	***Course Type***	***HPW***	***Crdeits***
BS304	Optional-I	DSC-IC	4 T + 2 P = 6	4 + 1 = 5
Paper-III Taxonomy of Angiosperms and Medicinal Botany				

SEMESTER-IV				
Code	***Course Title***	***Course Type***	***HPW***	***Crdeits***
BS404	Optional - I	DSC-ID	4 T + 2P = 6	4 + 1 = 5
Plant Anatomy, Embryology and Palynology				
THIRD YEAR SEMESTER-V				
Code	***Course Title***	***Course Type***	***HPW***	***Crdeits***
BS 503	Optional-I	DSC - IE	3 T + 2P = 5	3 + 1 = 4
Paper-V: Cell Biology and Genetics				
BS 506	Optional I A/B	DSE-I#	3T + 2P = 5	3 + 1 = 4
Elective-I Ecology and Biodiversity / Elective II: Horticulture				
SEMESTER-VI				
Code	***Course Title***	***Course Type***	***HPW***	***Crdeits***
BS 603	Optional-I	DSC - 1F	3 T + 2P = 5	3 + 1 = 4
Paper-VIII : Plant Physiology				
BS 606	Optional A/B/	DSE - IF	3 T + 2P = 5	3 + 1 = 4
Elective III Tissue Culture and Biotechnology / Elective-IV: Seed Technology				

AECC: Ability Enhancement Compulsory Course: DSC: Discipline Specific Course: DSE : Discipline Specific Elective

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 Archaebacteria, 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)Mastigimycotina- *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)

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.

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.

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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 tumgro.
   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)

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. 5**M**

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**

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 *Marchantia, Anthoceros* and *Polytrichum.* (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 *Rhynia, Lycopodium, Equisetum* and *Marsilea.* (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 *Pinus* and *Gnetum* . (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)

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.

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.

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)

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**

B.Sc (CBCS) BOTANY- II YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany

DSC-1C (4 hrs./week) Theory syllabus

Credits-4
(60 hours)

UNIT - I

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 & Prantle. An introduction to Angiosperm Phylogeny Group (APG). (7h)
2.. Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy, Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy. (4 h)
3.. Nomenclature and Taxonomic resources: An introduction to ICBN, Vienna code - a brief account. Herbarium: Concept, techniques and applications. (4 h)

UNIT-II

4.. Systematic study and economic importance of plants belonging to the following families: Polypetalae : Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae
5. Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae
6. Monochalmydeae: Amaranthaceae, Euphorbiaceae, Monocotyledons: Orchidaceae and Poaceae. (15h)

UNIT - III

7.. Ethnomedicine: Scope, interdisciplinary nature, distinction of Ethnomedicine from Folklore medicine. (3h)
8. Outlines of Ayurveda, Sidda, Unani and Homeopathic systems of traditional medicine. Role of AYUSH, NMPB, CIMAP and CDRI. (5 h)
9.. Plants in primary health care: Common medicinal plants – Tippateega (*Tinospora cordifolia*), tulasi (*Ocimum sanctum*), pippallu (*Piper longum*), Karakaya (*Terminalia chebula*), Kalabanda (*Aloe vera*), Turmeric (*Curcuma longa*). Evaluation of crude drugs. (7h)

UNIT-IV

10. Traditional medicine vs Modern medicine: Study of selected plant examples used in traditional medicine as resource (active principles, structure, usage and pharmacological action of modern medicine: Aswagandha (*Withania somnifera*), Sarpagandha (*Rauwolfia serpentina***)**, Nela usiri *(Phyllanthus amarus),* Amla (*Phyllanthus emblica*) and Brahmi (*Bacopa monnieri*). (8h)
11.Pharmacognosy: Introduction and scope. Adulteration of plant crude drugs and methods of identification - some examples. Indian Pharmacopoeia. (4h)
12. Plant crude drugs: Types, methods of collection, processing and storage practices. (3h)

References:

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.
Rastogi, R. R. and B. N. Mehrotra. 1993. Compendium of Indian Medicinal Plants. Vol. I & Vol. II. CSIR, Publication and Information Directorate, New Delhi.
Sivarajan, V. V. and I. Balasubramaniyan. 1994. Ayurvedic Drugs and their Plant Sources. Oxford and IBH, New Delhi.
Stace, C. A. 1989. Plant Taxonomy and Biostatistics (2nd Ed.). Edward Arnold, London.
Singh, G. 1999. Plant Systematics: Theory and Practice. Oxford and IBH, New Delhi.

Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

Davis, P. H. and V. H. Heywood. 1963. Principles of Angiosperm Taxonomy. Oliver and Boyd, London.
Heywood, V. H. 1965 . Plant Taxonomy. ELBS , London.
Heywood, V. H. and D. M. Moore (Eds). 1984. Current Concepts in Plant Taxonomy. Academic Press, London.
Jain, S. K. and V. Mudgal. 1999. A Handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehradun.
Jeffrey, C. 1982. An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge. London.
Joshi, S. G. 2000. Medicinal Plants. Oxford and IBH, New Delhi.
Kokate, C. and Gokeale- Pharmocognacy- Nirali Prakashan, NewDelhi.
Lad, V. 1984. Ayurveda – The Science of Self-healing. Motilal Banarasidass, New Delhi.
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.

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 vira*

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 organicleptic 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.

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

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**

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 - *Achyranthes, Boerhaavia, Bignonia, Dracaena;* Root– *Beta vulgaris* (5h)
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*). (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)

References:

Bhattacharya et. al. 2007. A textbook of Palynology, Central, New Delhi.

Bhojwani, S. S. and S. P. Bhatnagar. 2000. The Embryology of Angiosperms (4th Ed.), Vikas Publishing House, Delhi.

M.R.Saxena- A textbook of Palynology.

Vashista- A textbook of Anatomy.

P.K.K.Nair- A textbook of Palynology.

Esau, K. 1971. Anatomy of Seed Plants. John Wiley and Son, USA.

Johri, B. M. 1984. Embryology of Angiosperms. Springer-Verleg, Berlin.

Kapil, R. P. 1986. Pollination Biology. Inter India Publishers, New Delhi.

Maheswari, P. 1971. An Introduction to Embryology of Angiosperms. McGraw Hill Book Co., London.

Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.

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.

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)

B.SC (CBCS) BOTANY- II YEAR
Semester-IV- Paper IV
Plant Anatomy, Embryology and Palynology

Practical Model Paper

Time: $2\frac{1}{2}$ 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**

Chemistry

B.Sc. Syllabus (CBCS)

(w.e.f. 2016 - 2017)

Faculty of Science

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

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 – Preapartion – 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^+).

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

***Alkane*s**– 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 1,2 dihalides, 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 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, 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 X_2, HX, H_2O (tautomerism), Oxidation (formation of enediol, 1,2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation)

S1-O-3:Alicyclic Hydrocarbons 3 h

Nomenclature, preapartion by Freunds 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 ofcyclopentane, cyclohexane.

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 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 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 in to Smectic and Nematic, differences between liquid crystal and solid / liquid. Application of liquid crystals as LCD devices.

Unit – IV (GeneralChemistry) 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 - H_2, N_2, O_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-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, substraction, division and multiplication (with respect to determinate errors).

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. 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 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.
8. Qualitative analysis by Welcher and Hahn.
9. Textbook of Inorganic Chemistry by R Gopalan
10. College Practical chemistry by V K Ahluwalia, Sunitha Dhingra 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 byLewis Glasstone.

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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. Analytical chemistry by G. L. David Krupadanam, D. Vijaya Prasad, K. Varaprasada Rao, K.L.N. Reddy and C. Sudhakar

Laboratory Course **45h (3 h / week)**

Paper IQualitative Analysis - I

I. Preparations:

1.Tetrammine copper (II) sulphate,
2.Potash alum $KAl(SO_4)_2.\ 12H_2O$,
3. Bis (dimethylglyoximato) nickel(II)

II. Analysis of two anions (one simple and one interfering)

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 $FeSO_4$, $KMnO_4$, $K_2Cr_2O_7$), HNO_3 (reaction with H_2S, Cu), HNO_4 (reaction with KBr, Aniline), $H_2N_2O_2$ (reaction with $KMnO_4$). Redox properties of oxyacids of Potasium: 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 $KMnO_4$, $K_2Cr_2O_7$), H_2SO_4 (reaction with Zn, Fe, Cu), $H_2S_2O_3$ (reaction with Cu, Au), H_2SO_5 (reaction with KI, $FeSO_4$), $H_2S_2O_8$ (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. Clatherate compounds and Anomalous behavior of He (II)

S2-I-3Chemistry 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 traids. 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).

Preapartions: 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.

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-H_2O and C_2H_5OH - H_2O 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 andsteam 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't hoff factor, degree of dissociation and assocoation 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).

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 rein forced 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).

References

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1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
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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 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. College Practical chemistry by V K Ahluwalia, Sunitha Dhingra and Adarsh Gulati

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+}, $As^{3+/5+}$, $Sb^{3+/5+}$, $Sn^{2+/4+}$
Al^{3+}, Cr^{3+}, Fe^{3+}
Zn^{2+}, Ni^{2+}, Co^{2+}, Mn^{2+}
Ca^{2+}, Sr^{2+}, Ba^{2+}
Mg^{2+}, NH_4^+

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 (σh, σv, σd) 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 ammono acids and ammono 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

Preaparation: 1°, 2° and 3° alchols using Griganard 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: Preapartion: (i) from diazonium salts of anilines, (ii) from benzene sulphonic acids and (iii) Cumene hydroperoxide method.

Properties: Acidic nature, formation of phenoxide and reaction with R-X, electrophilic substitution nitration, halogenation and sulphonation. Riemer Tiemann reaction, Gattermann-Koch reaction, Azo-coupling reaction, Schotton-Boumann raction, Houben-Hoesch condensation, $FeCl_3$ reaction.

S3-O-2: Ethers and epoxides 2 hrs

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.

Praparation 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 - hemi acetal and acetal formation. Base catalysed reactions with mechanism- Aldol, Cannizaro reaction, Perkin reaction, Benzoin condensation, haloform reaction, Knoevengeal condensation. Oxidation reactions – $KMnO_4$ oxidation and auto oxidation, reduction – catalytic hydrogenation, Clemmenson's reduction, Wolf- kishner reduction, Meerwein Pondoff Verly reduction, reduction with LAH, $NaBH_4$. Analysis – 2,4 –DNP test, Tollen's test, Fehlings test, Scihff'stest, 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 Electricalstability of colloids) Protective action. Hardy–Schultz law, Gold number. Liquids in liquids(emulsions): Types of emulsions, preparation and emusifier. 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 laminar. 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**.**

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 disymmetric 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 disymmetric 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 3rd edn.
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.
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
8. College Practical chemistry by V K Ahluwalia, Sunitha Dhingra and Adarsh Gulati

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 Bruice Yuranis Powla.
6. Text book of organic chemistry by C N pillai

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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 Sachin kumar Ghosh

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

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-I 7 h

Simple inorganic molecules and coordination complexes. Nomenclature – IUPAC rules, 1. 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 $[Ni(NH_3)_4]^{2+}$, $[NiCl_4]^{2-}$ and $[Ni(CO)_4]$ **(**b) square planar complexes $[Ni(CN)_4]^{2-}$, $[Cu(NH_3)_4]^{2+}$, $[PtCl_4]^{2-}$ (c) octahedral complexes $[Fe(CN)_6]^{4-}$, $[Fe(CN)_6]^{-3}$, $[FeF_6]^{4-}$, $[Co(NH_3)_6]^{3+}$, $[CoF_6]^{3-}$. Limitations of VBT).2. Coordination number, coordination geometries of metal ions, types of ligands. 3. Isomerism in coordination compounds, stereo isomerism –(a)geometrical isomerism in (i) square planar metal complexes of the type$[MA_2B_2]$, $[MA_2BC]$, $[M(AB)_2]$, [MABCD]. (ii) Octahedral metal complexes of the type $[MA_4B_2]$, $[M(AA)_2B_2]$, $[MA_3B_3]$ using suitable examples, (b) Optical isomerism in (i). tetrahedral complexes [MABCD], (ii). Octahedral complexes $[M(AA)_2B_2]$, $[M(AA)_3]$ using suitable examples. Structural isomerism: ionization, linkage, coordination ligand isomerism using suitable examples.

S4-I-2:Organometallic Chemistry 4h

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

S4-I-3: Metal carbonyls and related compounds 4h

18 valence electron rule, classification of metal carbonyls: $Ni(CO)_4$, $Fe(CO)_5$, $Fe_2(CO)_9$, $Fe_3(CO)_{12}$ and $Cr(CO)_6$, Preparation and properties of Ni(CO)4.

UNIT - II (Organic chemistry) 15 h (1 hr/week)

S4-O-1: Carboxylic acids and derivatives 6h

Nomenclature, classification and methods of preparation a) Hydrolysis of Nitriles, amides and esters. b) Carbonation of Grignard reagents. Special methods of preparation of Aromatic Acids. Oxidation of the side chain of Arenes. Hydrolysis of benzotrichlorides. Kolbe reaction. Physical properties- hydrogen bonding, dimeric association, acidity – strength of acids with the examples of trimethyl acetic acid and trichloro acetic acid, Relative differences in the acidity of Aromatic, aliphatic acids& phenols. 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 – Reactions of acid halides, Acid anhydrides, acid amides and esters (mechanism of ester hydrolysis by base and acid).

S4-O-2: Synthesis based on Carbanions 3h

Acidity of α-Hydrogens of withdrawing groups, structure of carbanion. Preparation of Aceto acetic ester (ethylacetoester) by Claisen condensation and synthetic application of Aceto acetic 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-3Nitro 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 Kholrausch's law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations. Debye-Huckel-Onsagar'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 (calamel 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.

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 stereoslective reactions: substrate, product stereoselective reactions, enantio and diastereo selective reactions. Stereospecific reaction – definition – example – dehalogenation of 1,2-dibromides induced by iodide ion. Enantoselective reactions – definition – example –Reduction of Ethylacetoacetate by Yeast. Diastereoselective reaction-definition-example:Acid catalysed dehydration of 1-phenylproponal and Grignard addition to 2-phenyl propanal. Definition and explanation of enantiomeric excess and diastereomeric excess.

References:

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2. 1996.
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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 byLewis Glasstone.
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

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

B.Sc III yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER V
Paper-V
Chemistry - V

Unit-I (Inorganic Chemistry) 11 h

S5-I-1: Coordination compounds –II 9 h

Crystal field theory (CFT)- Postulates of CFT, splitting patterns of d-orbitals in octahedral, tetrahedral, square planer with suitable examples. Crystalfield 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 – colour of transtion metal aqua complexes– d-d transitions.Detection of complex formation - basic principles of various methods- change in chemical properties, solubility, colour, pH, conductivity, magnetic susceptibility.

Thermodynamic and kinetic stability of transition of metal complexes . Stability of metal complexes –stepwise and overall stability constant andf 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: 2 h

Definition of clusters. Structures of boranes and carboranes- Wade's rules,closo, nido arachno Boranes and carboranes.

Unit-II (Organic Chemistry) 11 h

S5-O-1: Amines, Cyanides and Isocyanides 7 h

Amines:

Nomenclature, classification into 1^0, 2^0, 3^0Amines and Quarternary ammonium compounds. Preparative methods – 1. Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromamide reaction (mechanism). Reduction of Amides and Schmidt reaction. Physical properties and basic character – Comparative basic strength of Ammonia, methyl amine, dimethyl amine, trimethyl amine and aniline- comparative basic strength of aniline, N-methylaniline 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 separation. 5. Reaction with Nitrous acid of 1^0, 2^0, 3^0 (Aliphatic and aromatic amines).

Electophilic substitutions of Aromatic amines – Bromination and Nitration, oxidation of aryl and 3^0 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, NO_2, 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 4 h

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 pyrrol, electrophillic 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 – chichibabin reaction.

Unit-III(Physical Chemistry)

S5-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 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, $2O_3$ ---→ $3O_2$, $C_2H_4 + H_2$ ------.> C_2H_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 h

S5-G-2: Molecular spectroscopy 8 h

Introduction to electromagnetic radiation, interaction of electromagnetic rations 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:σ-σ^*, n-σ^*, n-π^*, π-π^* with suitable examples.Selection rules,Terminology of chromophore, auxochrome, bathochromic and hypsochromic shifts. Absorption of characteristicsof chromophones: diene, enone and aromatic chromophores. Representation of UV-visible spectra.

S5-G-3: Photochemistry 4 h
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 :

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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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6. Physical Chemistry through problems by S.K. Dogra.
7. Text Book of Physical Chemistry by R.P. Verma.
8. Elements of Physical Chemistry byLewis 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,Sharmaand Pattania.
4. Photochemistry by Gurdeep Raj, Goel publishing house, 5th edition

Laboratory Course:

Paper V(Organic Chemistry) (CHE 551) 45 h (3h/w)

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 β- naphthyl methyl ether.

Condensation: Preparation of benzilidine aniline and Benzaldehyde and aniline.

Diazotisation: Azocoupling of β-Naphthol.

2. Thin layer Chromatography

Determination of Rf values and identification of organic compounds: preparation and separation of 2,4-dinitrophenyl hydrazones of acetione and 2-butanone using toluene and light petroleum(40:60)
Separation of ortho & para nitro aniline mixtures

3. Microwave assisted synthesis of organic compounds – DEMO (demonstration only)

B.Sc. III yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER V
Paper-VI
Chemistry - VI

Unit-I (Inorganic Chemistry) 11 h

S5-I-1:Inorganic reaction mechanisms 4h

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.

S5-I-2:Bioinorganic chemistry 5h

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 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).

S5-I-3:Hard and soft acids bases (HSAB) 2h

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 h

S5-O-1:Carbohydrates 6 h

Introduction: Classification and nomenclature – classification into mono, oligo and polysacchrides, into pentoses, hexoses *etc*., 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, cyanohydrin 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).

S5-O-2Amino acids and proteins5 h

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 Leucene) 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 h

S5-P-1:Thermodynamics -I 11h

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 Cp-Cv = 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^{γ} = 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. Kirchoff'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 **12 h**

S5-G-1: Proton Magnetic Resonance Spectroscopy 4h

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. ^{1}H NMR spectrum of – ethyl bromide, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate and acetophenone.

S5-G-2: Mass Spectrometry 4 h

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.

S5-G-3: Thermodynamics- II 4 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 ΔG as criteria for spontaneity. Derivation of equation $\Delta G = \Delta H - T\Delta S$. 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.
3. Reaction mechanisms, K.Veera Reddy.

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 Bruice 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,Sharmaand 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 byLewis Glasstone.
9. Thermodynamics by Rajaram

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
3. Principles of physical chemistry by Prutton and Marron.
4. Text Book of Physical Chemistry by Soni and Dharmahara..
5. Text Book of Physical Chemistry by Puri,Sharmaand Pattania.
6. Thermodynamics by Rajaram

Paper VI (Physical Chemistry) (CHE 552) 45hrs (3 h / w)

1. Distribution law

i. 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.

ii. Determination of distribution coefficient of acetic acid between n-butanol and water.

2. Electrochemistry

i. Determination of cell constant of conductivity cell.

ii. Determination of dissociation constant (K_a) of acetic acid by conductivity measurements.

iii. Determination of solubility and solubility product of $BaSO_4$

2. Colorimetry

i. Verification of Beer's - Lamberts law for KMnO4 and determine the concentration of given solution.

4. Adsorption

i. Adsorption of acetic acid on animal charcoal, verification of Freundlich isotherm.

5. Physical constants

i. Surface tension and viscosity of liquids

Computer Science

Syllabus for **B.Sc.**

(As per UGC CBCS w.e.f 2016-17)

Department of Computer Science

Palamuru University

Mahabubnagar

Telangana

Contents

Course Template *1*

Syllabus *2*

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With Effect from the Academic Year 2016-2017

Syllabus for Computer Science

Proposed scheme for **B.Sc.** Programme under **Choice Based Credit System**

Code	Course Title	Course Type	HpW	Credits
	SEMESTER – I			
BS106	Programming in C	DSC–3A	4T+2P=6	4 + 1 =5
	SEMESTER – II			
BS206	Programming in C++	DSC–3B	4T+2P=6	4 + 1 =5
	SEMESTER – III			
BS301	A: SciLab – 1 B: Boolean Algebra	SEC–1	2T	2
BS306	Data Structures	DSC–3C	4T+2P=6	4 + 1 =5
	SEMESTER – IV			
BS401	C: SciLab – 2 D: Digital Logic	SEC–2	2T	2
BS406	Database Management Systems	DSC–3D	4T+2P=6	4 + 1 =5
	SEMESTER – V			
BS501	Information Technologies –1	GE–1	2	2
BS502	E: Python – 1 F: Computer Organization	SEC–3	2	2
BS505	Programming in Java	DSC–3E	3T+2P=5	3 + 1 =4
BS506	Elective–A: Operating Systems Elective–B: Software Engineering	DSE–1E DSE–2E	3T+2P=5	3 + 1 =4
	SEMESTER – VI			
BS601	Information Technologies –2	GE–2	2T	2
BS602	G: Python – 2 H: Information Security	SEC–4	2T	2
BS605	Computer Networks	DSC–3F	3T+2P=5	3 + 1 =4
BS606	Elective–A: PHP with MySQL Elective–B: Web Technologies	DSE–1F DSE–2F	3T+2P=5	3 + 1 =4
		Total Number of Credits		**48**

DSC–3A Programming in C BS106

Theory	4 Hours/Week	4 credits
Practical	2 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, Score 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

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*

C Lab BS106

Practical 2 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.

DSC–3B Programming in C++ BS206

Theory	4 Hours/Week	4 credits
Practical	2 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*
Bjarne Stroustrup, *The C++ Programming Language*
Sourav Sahay, *Object Oriented Programming with C++*

C++ Lab BS206

Practical 2 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)
9. Write a program to implement the following concepts using class and object
   - Function overloading
   - 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.
    - Virtual functions
    - Pure virtual functions
13. Write a program to implement the virtual concepts for following concepts
    - Constructor (not applied)
    - 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
    - Without template class and object
    - With template class and object

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.

SEC–1 **[A]**

SciLab – 1

BS301

Theory 2 Hours/Week 2 credits

Unit – I

Introduction to Scilab – what is scilab, downloading & installing scilab, a quick taste of scilab.
The Scilab Environment – manipulating the command line, working directory, comments, variables in memory, recording sessions, the scilab menu bar, demos.
Scalars & Vectors – introduction, initializing vectors in scilab, mathematical operations on vectors, relational operations on vectors, logical operations on vectors, built-in logical functions.

Unit – II

Scalars & Vectors – elementary mathematical functions, mathematical functions on scalars, complex numbers, trigonometric functions, inverse trigonometric functions, hyperbolic functions.
Matrices – introduction, arithmetic operators for matrices, basic matrix processing.
Polynomials – introduction, creating polynomials, basic polynomial commands, finding roots of polynomial, polynomial arithmetic, miscellaneous polynomial handling.

Text

Er. Hema Ramachandran, Dr. Achuthsankar S. Nair, *Computer SCILAB–A Free Software to MATLAB*

References

Digite, *Introduction to Scilab*
Digite, *Optimization in Scilab*
Scilab Enterprises, *Scilab for Very Beginners*
Digite, *Introduction to Discrete Probabilities with Scilab*

Note: Student friendly video lecturers pertaining to this course are available at **http://spoken-tutorial.org/**
Teachers are advised to teach this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

SEC–1 **[B]**

Boolean Algebra

BS301

Theory 2 Hours/Week 2 credits

Unit – I

Introduction Number Systems and Conversion: Digital Systems and Switching Circuits, Number Systems and Conversion, Binary Arithmetic, Representation of Negative Numbers, Binary Codes.
Boolean Algebra: Basic Operations, Boolean Expressions and Truth Tables, Basic Theorems, Commutative, Associative, Distributive, and DeMorgan's Laws, Simplification Theorems, Multiplying Out and Factoring, Complementing Boolean Expressions.

Unit – II

Boolean Algebra: Multiplying Out and Factoring Expressions, Exclusive-OR and Equivalence Operations, The Consensus Theorem, Algebraic Simplification of Switching Expressions, Proving Validity of an Equation, Programmed Exercises.
Applications of Boolean Algebra Minterm and Maxterm Expansions: Conversion of English Sentences to Boolean Equations: Combinational Logic Design Using a Truth Table, Minterm and Maxterm Expansions, General Minterm and Maxterm Expansions, Examples of Truth Table Construction, Design of Binary Adders and Subtracters.

Text Charles H. Roth, Jr. and Larry L. Kinney, *Fundamentals of Logic Design (7e)*

References

M. Morris Mano, Michael D. Ciletti, *Digital Design (4e)*
A. Saha and N. Manna, *Digital Principles and Logic Design*
M. Rafiquzzaman, *Fundamentals of Digital Logic and Microcontrollers (6e)*
Elliott Mendelson, *Theory and Problems of Boolean Algebra and Switching Circuit*
M. Morris Mano, Charles R. Kime, Tom Martin, *Logic and Computer Design Fundamentals*

DSC–3C Data Structures BS306

Theory	4 Hours/Week	4 credits
Practical	2 Hours/Week	1 credit

Unit – I

Fundamental Concepts: Introduction to Data Structures, Types of Data Structures, Introduction to Algorithm, Pseudo-code, Flow Chart, Analysis of Algorithms.
Linear Data Structure Using Arrays: 1-D Arrays, 2-D Arrays, N-D Arrays, Memory Representation and Address Calculation of 1-D, 2-D, N-D Arrays, Concept of Ordered List, String Manipulation, Pros and Cons of Arrays.
Stacks: Concept, Primitive Operations, Abstract Data Type, Representation Stacks Using Arrays, Prefix, Infix, Postfix Notations for Arithmetic Expression, Applications of Stacks– Converting Infix Expression to Postfix Expression, Evaluating the Postfix Expression, Checking Well-formed (Nested) Parenthesis, Processing of Function Calls, Reversing a String.

Unit – II

Recursion: Introduction, Recurrence, Use of Stack in Recursion, Variants of Recursion, Execution of Recursive Calls, Recursive Functions, Iteration versus Recursion.
Queues: Concept, Primitive Operations, Abstract Data Type, Representation Queues Using Arrays, Circular Queue, Double-Ended Queue, Applications of Queues.
Linked Lists: Introduction, Concept, Terminology, Primitive Operations-creating, inserting, deleting, traversing, Representation of Linked Lists, Linked List Abstract Data Type, Linked List Variants - Singly Linked List, Doubly Linked List, Linear and Circular Linked List, Representation Stacks and Queues Using Linked Singly Lists, Application of Linked List–Garbage Collection.

Unit – III

Trees: Introduction, Representation of a General Tree, Binary Tree Introduction, Binary Tree Abstract Data Type, Implementation of Binary Trees, Binary Tree Traversals – Preorder, Inorder, Postorder Traversals, Applications of Binary Trees Briefly.
Graphs: Introduction, Graph Abstract Data Type, Representation of Graphs, Graph Traversal – Depth-First Search, Breadth-First Search, Spanning Tree – Prim's Algorithm, Kruskal's Algorithm.
Hashing: Introduction, Hash Functions, Collision Resolution Strategies.

Unit – IV

Searching and Sorting: Sequential (Linear) Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort, and Comparison of Sorting Techniques.
Heaps: Concept, Implementation, Abstract Data Type, Heap Sort.

Text

Varsha H. Patil, *Data Structures Using C++*

References

Nell Dale, *C++ Plus Data Structures*
Seymor Lipschutz, *Data Structures (Revised 1e)*
Adam Drozdek, *Data Structures and Algorithms in C++*
Mark Allen Weiss, *Data structures and Algorithm Analysis in C++ (4e)*
D.S. Malik, C*++ Programming: Program Design Including Data Structures (6e)*
Michael Main, Walter Savitch, *Data Structures and Other Objects Using C++ (4e)*
Michael T. Goodrich, R. Tamassia, David M. Mount, *Data Structures and Algorithms in C++*
Yonghui Wu, Jiande Wang, *Data Structure Practice for Collegiate Programming Contests and Education*

Data Structures Lab BS306

Practical 2 Hours/Week 1 credit

1. Write programs to implement the following using an array: a) Stack ADT b) Queue ADT.
2. Write a program to convert the given infix expression to postfix expression using stack.
3. Write a program to evaluate a postfix expression using stack.
4. Write a program to ensure the parentheses are nested correctly in an arithmetic expression.
5. Write a program to find following using Recursion
   a) Factorial of +ve Integer b) n^{th} term of the Fibonacci Sequence c) GCD of two +ve integers
6. Write a program to create a single linked list and write functions to implement the following operations.
   a) Insert an element at a specified position
   b) Delete a specified element in the list
   c) Search for an element and find its position in the list
   d) Sort the elements in the list ascending order
7. Write a program to create a double linked list and write functions to implement the following operations.
   a) Insert an element at a specified position
   b) Delete a specified element in the list
   c) Search for an element and find its position in the list
   d) Sort the elements in the list ascending order
8. Write a program to create singular circular linked lists and function to implement the following operations.
   a) Insert an element at a specified position
   b) Delete a specified element in the list
   c) Search for an element and find its position in the list
9. Write programs to implement the following using a single linked list:
   a) Stack ADT b) Queue ADT.
10. Write a program to implement Binary search technique using Iterative method and Recursive methods.
11. Write a program for sorting the given list numbers in ascending order using the following technique: Bubble sort and Selection sort
12. Write a program for sorting the given list numbers in ascending order using the following technique: Insertion sort and Quick sort
13. Write a program for sorting the given list numbers in ascending order using the following technique: Merge sort and Heap sort
14. Write a program to traverse a binary tree in following way.
    a) Pre-order b) In-order c) Post-order
15. Write a program to the implementation graph traversals – BFS and DFS.
16. Write a program to find the minimum spanning tree for a weighted graph using
    a) Prim's Algorithm b) Kruskal's Algorithm.

Note : Write the Pseudo Code for the above programs.

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

SEC–2 [A] | **SciLab – 2** | **BS401**

Theory 2 Hours/Week 2 credits

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, scripts, the concept of functions, user defined functions, special function commands.

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, printing a message in a message box, dialog box for entering a matrix.

Unit – II

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

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.

Statistics – introduction, basic statistical functions, applying statistical functions on matrices, distributions, frequency of values of a matrix or vector, centre, weighted centre, central moment, correlation, covariance, variance matrix, percentiles, frequencies, cumulative sum, difference of two independent samples, fisher test.

Text

Er. Hema Ramachandran, Dr. Achuthsankar S. Nair, *Computer SCILAB–A Free Software to MATLAB*

References

Digite, *Introduction to Scilab*

Digite, *Optimization in Scilab*

Scilab Enterprises, *Scilab for Very Beginners*

Digite, *Introduction to Discrete Probabilities with Scilab*

Note: Student friendly video lecturers pertaining to this course are available at **http://spoken-tutorial.org/**

Teachers are advised to teach this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

SEC–2 [B] | **Digital Logic** | **BS401**

Theory 2 Hours/Week 2 credits

Unit – I

Karnaugh Maps: Minimum Forms of Switching Functions, Two- and Three-Variable Karnaugh Maps, Four-Variable Karnaugh Maps, Determination of Minimum Expressions Using Essential Prime Implicants, Other Uses of Karnaugh Maps, Other Forms of Karnaugh Maps, Programmed Exercises.

Multi-Level Gate Circuits NAND and NOR Gates: Multi-Level Gate Circuits, NAND and NOR Gates, Design of Two-Level NAND- and NOR-Gate Circuits, Design of Multi-Level NAND- and NOR-Gate Circuits, Circuit Conversion Using Alternative Gate Symbols, Design of Two-Level, Multiple-Output Circuits, Multiple-Output NAND- and NOR-Gate Circuits.

Unit – II

Combinational Circuit Design and Simulation Using Gates: Design of Circuits with Limited Gate Fan-In, Gate Delays and Timing Diagrams, Hazards in Combinational Logic, Simulation and Testing of Logic Circuits.

Multiplexers, Decoders: Multiplexers, Three-State Buffers, Decoders and Encoders, Read-Only Memories.

Text Charles H. Roth, Jr. and Larry L. Kinney, *Fundamentals of Logic Design (7e)*

References

M. Morris Mano, Michael D. Ciletti, *Digital Design (4e)*
A. Saha and N. Manna, *Digital Principles and Logic Design*
M. Rafiquzzaman, *Fundamentals of Digital Logic and Microcontrollers (6e)*
Elliott Mendelson, *Theory and Problems of Boolean Algebra and Switching Circuit*
M. Morris Mano, Charles R. Kime, Tom Martin, *Logic and Computer Design Fundamentals*

DSC–3D Database Management Systems BS406

Theory	4 Hours/Week	4 credits
Practical	2 Hours/Week	1 credit

Unit – I

Introduction to Databases: Introduction, Traditional File-Based Systems, Database Approach, Roles in the Database Environment, Advantages and Disadvantages of DBMSs, The Three-Level ANSI-SPARC Architecture, Database Languages, Data Models, Functions of a DBMS, Components of a DBMS.

Relational Model: Introduction, Terminology, Integrity Constraints, Views.

The Relational Algebra: Unary Operations, Set Operations, Join Operations, Division Operation, Aggregation and Grouping Operations.

Unit – II

SQL: Introduction, Data Manipulation–Simple Queries, Sorting Results, Using the SQL Aggregate Functions, Grouping Results, Sub-queries, ANY and ALL, Multi-table Queries, EXISTS and NOT EXIST, Combining Result Tables, Database Updates.

SQL: The ISO SQL Data Types, Integrity Enhancement Feature–Domain Constraints, Entity Integrity, Referential Integrity, General Constraints, Data Definition–Creating a Database, Creating a Table, Changing a Table Definition, Removing a Table, Creating an Index, Removing an Index, Views–Creating a View, Removing a View, View Resolution, Restrictions on Views, View Updatability, WITH CHECK OPTION, Advantages and Disadvantages of Views, View Materialization, Transactions, Discretionary Access Control–Granting Privileges to Other Users, Revoking Privileges from Users.

Advanced SQL: The SQL Programming Language–Declarations, Assignments, Control Statements, Exceptions, Cursors, Subprograms, Stored Procedures, Functions, and Packages, Triggers, Recursion.

Unit – III

Entity–Relationship Modeling: Entity Types, Relationship Types, Attributes, Keys, Strong and Weak Entity Types, Attributes on Relationships, Structural Constraints, Problems with ER Models–Fan Traps, Chasm Traps.

Enhanced Entity–Relationship Modeling: Specialization/Generalization, Aggregation, Composition.

Functional–Dependencies: Anomalies, Partial Functional Dependency, Transitive Functional Dependency, Multi Valued Dependency, Join Dependency.

Normalization: The Purpose of Normalization, How Normalization Supports Database Design, Data Redundancy and Update Anomalies, Functional Dependencies in brief, The Process of Normalization,1NF, 2NF, 3NF, BCNF. The Database Design Methodology for Relational Databases (Appendix–D).

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

Thomas M. Connolly, Carolyn E. Begg, *Database Systems–A Practical Approach to Design, Implementation, and Management (6e)*

References

Sharon Allen, Evan Terry, *Beginning Relational Data Modeling*

Jeffrey A. Hoffer, V. Ramesh, Heikki Topi, *Modern Database Management*

Raghu Ramakrishnan, Johannes Gehrke, *Database Management Systems*

Ramez Elmasri, Shamkant B. Navathe, *Fundamentals of Database Systems*

Abraham Silberschatz, Henry F. Korth, S. Sudarshan, *Database System Concepts*

C Coronel, S Morris, Peter Rob, *Database Systems: Design, Implementation, and Management*

Database Management Systems Lab BS406

Practical 2 Hours/Week 1 credit

Consider the relational schema for part of the **DreamHome** case study is:

Branch (branchNo, street, city, postcode)
Staff (staffNo, fName, IName, position, sex, DOB, salary, branchNo)
PropertyForRent (propertyNo, street, city, postcode, type, rooms, rent, ownerNo, staffNo, branchNo)
Client (clientNo, fName, IName, telNo, prefType, maxRent, eMail)
PrivateOwner (ownerNo, fName, IName, address, telNo, eMail, password)
Viewing (clientNo, propertyNo, viewDate, comment)
Registration (clientNo, branchNo, staffNo, dateJoined)

1. Create a database with name "DreamHome" and now create all the tables listed above with constraints.
2. Insert a new row into the table supplying data for all columns.
3. Modify data in the database using UPDATE
4. Delete data from the database using DELETE
5. Changing a table definition using ALTER
6. Removing a table using DROP
7. Removing rows in table using TRUNCATE
8. Create an index and removing an index
9. Practice other standard SQL commands for creating, modifying, displaying data of tables.
10. List full details of all staff.
11. List all staff with a salary greater than £10000.
12. List the property numbers of all properties that have been viewed.
13. Produce a list of salaries for all staff, showing only the staffNo, fName, IName, and salary details.
14. List all cities where there is either a branch office or a property for rent.
15. List all cities where there is a branch office but no properties for rent.
16. List all cities where there is both a branch office and at least one property for rent.
17. List the names and comments of all clients who have viewed a property for rent.
18. Produce a status report on property viewings.
19. List complete details of all staff who work at the branch in Glasgow.
20. List the addresses of all branch offices in London or Glasgow
21. List all staff with a salary between £20,000 and £30,000.
22. Identify all clients who have viewed all properties with three rooms.
23. How many properties cost more than £350 per month to rent?
24. How many different properties were viewed in May 2013?
25. Find the total number of Managers and the sum of their salaries.
26. Find the minimum, maximum, and average staff salary.
27. Find the number of staff working in each branch and the sum of their salaries.
28. List all managers and supervisors.
29. Find all owners with the string 'Glasgow' in their address.
30. List the details of all viewings on property PG4 where a comment has not been supplied.
31. Produce a list of salaries for all staff, arranged in descending order of salary.
32. Produce an abbreviated list of properties arranged in order of property type.
33. Find the number of staff working in each branch and the sum of their salaries.
34. For each branch office with more than one member of staff, find the number of staff working in each branch and the sum of their salaries.
35. List the staff who work in the branch at '163 Main St'.
36. List all staff whose salary is greater than the average salary, and show by how much their salary is greater than the average.
37. List the properties that are handled by staff who work in the branch at '163 Main St'.
38. Find all staff whose salary is larger than the salary of at least one member of staff at branch B003.
39. Find all staff whose salary is larger than the salary of every member of staff at branch B003
40. List the names of all clients who have viewed a property, along with any comments supplied.
41. For each branch office, list the staff numbers and names of staff who manage properties and the properties that they manage.
42. For each branch, list the staff numbers and names of staff who manage properties, including the city in which the branch is located and the properties that the staff manage.

43. Find the number of properties handled by each staff member, along with the branch number of the member of staff.
44. List all branch offices and any properties that are in the same city.
45. List all properties and any branch offices that are in the same city.
46. List the branch offices and properties that are in the same city along with any unmatched branches or properties.
47. Find all staff who work in a London branch office.
48. Construct a list of all cities where there is either a branch office or a property.
49. Construct a list of all cities where there is both a branch office and a property.
50. Create a view so that the manager at branch B003 can see the details only for staff who work in his or her branch office.
51. Create a view of the staff details at branch B003 that excludes salary information, so that only managers can access the salary details for staff who work at their branch.
52. Create a view of staff who manage properties for rent, which includes the branch number they work at, their staff number, and the number of properties they manage.
53. Removing a view using DROP VIEW
54. Give the user with authorization identifier Manager all privileges on the Staff table.
55. Give users Personnel and Director the privileges SELECT and UPDATE on column salary of the Staff table.
56. Revoke the privilege SELECT on the Branch table from all users.
57. Revoke all privileges you have given to Director on the Staff table.
58. Demonstrate exceptions in PL/SQL
59. Demonstrate cursors in PL/SQL
60. Write PL/SQL queries to create procedures.
61. Write PL/SQL queries to create functions.
62. Write PL/SQL queries to create package.
63. Write PL/SQL queries to create triggers.
64. Write PL/SQL queries using recursion.

Consider the relational schema for part of the **Hotel** case study is:

Hotel (hotelNo, hotelName, city)
Room (roomNo, hotelNo, type, price)
Booking (hotelNo, guestNo, dateFrom, dateTo, roomNo)
Guest (guestNo, guestName, guestAddress)

65. Create a database with name "Hotel" and now create all the tables listed above with constraints.
66. Insert a new row into the table supplying data for all columns.
67. Modify data in the database using UPDATE
68. Delete data from the database using DELETE
69. Changing a table definition using ALTER
70. Removing a table using DROP
71. Removing rows in table using TRUNCATE
72. Practice other standard SQL commands for creating, modifying, displaying data of tables.
73. List full details of all hotels.
74. List full details of all hotels in London.
75. List the names and addresses of all guests living in London, alphabetically ordered by name.
76. List all double or family rooms with a price below £40.00 per night, in ascending order of price.
77. List the bookings for which no dateTo has been specified.
78. How many hotels are there?
79. What is the average price of a room?
80. What is the total revenue per night from all double rooms?
81. How many different guests have made bookings for August?
82. List the price and type of all rooms at the Grosvenor Hotel.
83. List all guests currently staying at the Grosvenor Hotel.
84. List the details of all rooms at the Grosvenor Hotel, including the name of the guest staying in the room.
85. What is the total income from bookings for the Grosvenor Hotel today?
86. List the rooms that are currently unoccupied at the Grosvenor Hotel.
87. What is the lost income from unoccupied rooms at the Grosvenor Hotel?
88. List the number of rooms in each hotel.
89. List the number of rooms in each hotel in London.
90. What is the average number of bookings for each hotel in August?
91. What is the most commonly booked room type for each hotel in London?
92. What is the lost income from unoccupied rooms at each hotel today?
93. Insert rows into each of these tables.

94. Update the price of all rooms by 5%.
95. Demonstrate that queries written using the UNION operator and same can be rewritten using the OR.
96. Apply the syntax for inserting data into a table.
97. Create a view containing the cheapest hotels in the world.
98. Create the Hotel table using the integrity enhancement features of SQL.
99. Create a database trigger for the following situations:
    (a) The price of all double rooms must be greater than £100.
    (b) The price of double rooms must be greater than the price of the highest single room.
    (c) A booking cannot be for a hotel room that is already booked for any of the specified dates.
    (d) A guest cannot make two bookings with overlapping dates.
    (e) Maintain an audit table with the names and addresses of all guests who make bookings for hotels in London (do not store duplicate guest details).

Given relation schemas are

Sailors(sid : integer, sname : string, rating : integer, age : real)
Boats(bid : integer, bname : string, color : string)
Reserves(sid : integer , bid : integer, day : date)

100. Find the names and ages of all sailors.
101. Find all sailors with a rating above 7.
102. Find the names of sailors who have reserved boat 103.
103. Find the sids of sailors who have reserved a red boat.
104. Find the names of sailors who have reserved a red boat.
105. Find the colors of boats reserved by Lubber.
106. Find the names of sailors who have reserved at least one boat.
107. Find the names of sailors who have reserved at least two boats.
108. Compute increments for the ratings of persons who have sailed two different boats on the same day.
109. Find the ages of sailors whose name begins and ends with B and has at least three characters.
110. Find the names of sailors who have reserved a red or a green boat.
111. Find the names of sailors who have reserved a red and a green boat.
112. Find the sids of all sailors who have reserved red boats but not green boats.
113. Find all sids of sailors who have a rating of 10 or have reserved boat 104.
114. Find the names of sailors who have not reserved a red boat.
115. Find sailors whose rating is better than some sailor called Horatio.
116. Find sailors whose rating is better than every sailor called Horatio.
117. Find the names of sailors who have reserved all boats.
118. Find the names of sailors who have reserved at least two boats.
119. Find the names of sailors who have reserved all boats called Interlake.
120. Find sailors who have reserved all red boats.
121. Find the sailor name, boat id, and reservation date for each reservation.
122. Find the sids of sailors with age over 20 who have not reserved a red boat.
123. Find the average age of all sailors.
124. Find the average age of sailors with a rating of 10.
125. Find the name and age of the oldest sailor.
126. Count the number of different sailor names.
127. Find the names of sailors who are older than the oldest sailor with a rating of 10.
128. Find the sailors with the highest rating.
129. Find the age of the youngest sailor for each rating level.
130. Find age of the youngest sailor who is eligible to vote for each rating level with at least 2 such sailors.
131. Find the average age of sailors for each rating level that has at least two sailors.
132. For each red boat, find the number of reservations for this boat.
133. Find the average age of sailors who are of voting age (i.e., at least 18 years old) for each rating level that has at least two sailors.
134. Delete the records of sailors who have rating 8 (deleting some rows in a table).
135. Loading data which is present in the text into the table.

Note : Recommended to use open source database software like MySQl, MongoDB, PostgreSQL, etc...
In practical examination, students have to

- Create database
- Create tables with their integrity constraints.
- Insert the data into tables and then execute the queries.
- Answer any **six** queries from **ten** queries given by the examiner.

GE–1 Information Technologies – 1 BS501

Theory 2 Hours/Week 2 credits

Unit – I

Introduction to Computers: What is a Computer? Characteristics of Computers, Generations of Computers, Classification of Computers, Basic Computer Organization, Applications of Computers.
Input and Output Devices: Input Devices, Output Devices, Soft Copy Devices, Hard Copy Devices.
Computer Memory and Processors: introduction, Memory Hierarchy, Processor Registers, Cache Memory, Primary Memory, Secondary Storage Devices, Hard Disks, Optical Drives, USB Flash Drives, Memory Cards.

Unit – II

Computer Software: Introduction, Classification of Computer Software, System Software, Applications Software, Firmware, Middleware, Acquiring Computer Software.
Operating Systems: Introduction, Evolution of OS, Process Management, Memory Management, File Management, Device Management, Security Management, Command Interpreter, Windows, Linux.

Text Reema Thareja, *Fundamentals of Computers*

References

P. K. sinha, *Computer Fundamentals*
Anita Goel, *Computer Fundamentals*
V. Rajaraman, *Fundamentals of Computers*
E. Balagurusamy, *Fundamentals of Computers*
J. Glenn Brookshear, Dennis Brylow, *Computer Science An Overview*

Note: Student friendly video lecturers pertaining to this course are available at **http://spoken-tutorial.org/**
Teachers are advised to teach this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

SEC–3 [A] **Python – 1** **BS502**

Theory 2 Hours/Week 2 credits

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.

Text R. Nageswara Rao, *Corer Python Programming,* Dreamtech Press

References

Mark Lutz, *Learning Python*
Tony Gaddis, *Starting Out With Python*
Kenneth A. Lambert, *Fundamentals of Python*
James Payne, *Beginning Python using Python 2.6 and Python 3*
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 this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

SEC–3 [B] **Computer Organization** **BS502**

Theory 2 Hours/Week 2 credits

Unit – I

Latches and Flip-Flops: Introduction, Set-Reset Latch, Gated Latches, Edge-Triggered D Flip-Flop, S-R Flip-Flop, J-K Flip-Flop, T Flip-Flop, Flip-Flops with Additional Inputs, Asynchronous Sequential Circuits.
Registers and Counters: Registers and Register Transfers, Shift Registers, Design of Binary Counters, Counter Design Using D Flip-Flops, Counter Design Using S-R and J-K Flip-Flops, Derivation of Flip-Flop Input Equations.

Unit – II

Sequential Circuit Design: Design Example—Code Converter, Design of Iterative Circuits, Design of Sequential Circuits Using ROMs and PLAs, Simulation and Testing of Sequential Circuits, Computer-Aided Design.
Circuits for Arithmetic Operations: Serial Adder with Accumulator, Design of a Binary Multiplier, Design of a Binary Divider.

Text Charles H. Roth, Jr. and Larry L. Kinney, *Fundamentals of Logic Design (7e)*

References

M. Morris Mano, Michael D. Ciletti, *Digital Design (4e)*
A. Saha and N. Manna, *Digital Principles and Logic Design*
M. Rafiquzzaman, *Fundamentals of Digital Logic and Microcontrollers (6e)*
Elliott Mendelson, *Theory and Problems of Boolean Algebra and Switching Circuit*
M. Morris Mano, Charles R. Kime, Tom Martin, *Logic and Computer Design Fundamentals*

DSC–3E Programming in Java BS505

Theory	3 Hours/Week	3 credits
Practical	2 Hours/Week	1 credit

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, Constructors–Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects, Class Variables & Methods-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 Keywords, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

Unit – II

Packages–Creating and Using Packages, Access Protection, Wrapper Classes, String Class, StringBuffer Class.
Exception: Introduction, Types, Exception Handling Techniques, User-Defined Exception.
Multithreading: Introduction, Main Thread, Creation of New Threads – By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority, Synchronization.
Input/Output: Introduction, java.io Package, File Class, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

Unit – III

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 JDBS Application.

Text

Sachin Malhotra, Saurabh Choudhary, *Programming in Java (2e)*

References

Bruce Eckel, *Thinking in Java (4e)*
Herbert Schildt, *Java: The Complete Reference (9e)*
Y. Daniel Liang, *Introduction to Java Programming (10e)*
Paul Deitel, Harvey Deitel, *Java: How To Program (10e)*
Cay S. Horsttnann, *Core Java Volume I – Fundamentals (10e)*
C. Thomas Wu, *An introduction to object-oriented programming with Java (5e)*
Tony Gaddis, *Starting Out with Java From Control Structures Through Objects (6e)*
Jeanne Boyarsky, Scott Selikoff, *OCA: Oracle Certified Associate Java SE 8 Programmer–I Study Guide*

Java Lab BS505

Practical 2 Hours/Week 1 credit

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 that implement the following a) default constructor b) parameterized constructor c) constructor overloading
3	a) Write a java program to find the smallest of given list 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 classes or nested classes. 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 and create swing based 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.

Note :

Write the program using simple text editors (not IDE), compile and run from command prompt.

Encourage students to develop small java applications using IDE, like giving as assignment.

Write a small java application using some features of java.

DSE–1E Operating Systems BS506

Theory	3 Hours/Week	3 credits
Practical	2 Hours/Week	1 credit

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.
Process Synchronization: Critical-Section Problem, Peterson's Solution, Synchronization, Semaphores, Monitors.

Unit – II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.
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.
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 Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, *Operating System Concepts (9e)*

References

Naresh Chauhan, *Principles of Operating Systems*
Thomas W. Doeppner, *Operating Systems in Depth*
Andrew S. Tanenbaum, *Modern Operating Systems*
William Stallings, *Operating Systems – Internals and Design Principles*
Dhananjay M. Dhandhere, *Operating Systems – A Concept Based Approach*

Operating Systems Lab BS506

Practical 2 Hours/Week 1 credit

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 computers 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 that simulate the following 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 strategies.

Note : Recommended to use Open Source Software like Fedora, Ubuntu, CentOS, etc...

DSE–2E Software Engineering BS506

Theory	3 Hours/Week	3 credits
Practical	2 Hours/Week	1 credit

Unit – I

Software Engineering – Introduction, Program Versus Software, Software Engineering, Software Development Process and its Stages, Generic Software Development Process Models, Code of Ethics and Professional Practice, Software Development and Maintenance Cost Breakup.

Requirement Engineering Processes – Requirement Engineering Process, Feasibility Study, Cost and Benefit Analysis, Requirement Specification, Characteristics of a Good Requirement and Validation Techniques, Requirements Management Planning, Process of Requirement Change Management.

Software Requirement Specifications – Introduction, Stakeholder Analysis, Software Requirements Document, IEEE Standard of Software Requirement Specifications, Organizing Functional Requirements, Traceability and Validation of Specifications.

Unit – II

Architectural Styles – Introduction, Architecture Styles, Object Oriented Architecture, Inter-organizational Communication, Cloud Computing Architecture Style, Core, Configurable and Customizable Architecture, Design Models, Architectural Design Principles.

Object Oriented System Analysis – Introduction, Object Oriented Design, Object Oriented Design Models, Object Oriented Analysis, Data Modeling, Comparison Between Top Down Structured and Object Oriented Analysis, Description of Logical and Static Modeling, Identification of Class Relationships.

Object Oriented Design Using UML – Introduction, Sequence Diagram, State Machine Diagram, Timing Diagram, Describing Detailed Object Oriented Design, Decision Tree and Decision Table, Composite Structure Diagram, Generating Test Cases, Moving Towards Physical Design, Structured Methods.

Unit – III

Software Development – Introduction, Good Coding Practices, Code Reuse, Design Pattern, Generator Based Reuse, Application/Software Developed on Product Lines Approach, Component Based Software Engineering, Agile Methods.

Verification, Validation and Software Testing – Introduction, Software Verification and Validation Process, Software Testing, System Testing, Object Oriented Testing Strategy, Test Cases, Equivalence Partitioning (Black Box Testing), Art of Debugging.

Measurement and Metrics for Assessing Software Quality – Introduction, ISO 9126 Quality Standards, Quality Management Models, Ways to Build Quality in Software, Software Quality Control and Metrics, Defect Density Metrics, Chidamber and Kemerer Metric Suites for Object Oriented System, Class Coupling Metric-Coupling Between Objects, Monitoring Dynamic Quality Attributes (Visible Externally) of a Software.

Text

Rajesh Narang, *Software Engineering: Principles and Practices*

References

Ian Sommerville, *Software Engineering*
R. Mall, *Fundamentals of Software Engineering*
Pankaj Jalote, An Integrated *Approach to Software Engineering*
Frank Tsui, Orlando Karam, Barbara Bernal, *Essentials of Software Engineering*
Roger S Pressman, B R Maxim, *Software Engineering – A Practitioner's Approach*
Grady Booch, *The Unified Modeling Language User Guide*

Software Engineering Lab BS506

Practical 2 Hours/Week 1 credit

Case Studies:

1 Banking System

2 Hotel management system

3 Inventory Control System

4 Library management system

5 Railway Reservation System

Choose any two of above case studies and do the following exercises for that case studies

1 Write the complete problem statement

2 Write the software requirements specification document

3 Draw the entity relationship diagram

4 Draw the data flow diagrams

5 Draw use case diagrams

6 Draw activity diagrams for all use cases

7 Draw sequence diagrams for all use cases

8 Draw collaboration diagram

9 Assign objects in sequence diagrams to classes and make class diagram.

Note :

To draw dataflow diagrams using Microsoft Visio Software, SmartDraw, etc…

To draw UML diagrams using Rational Rose Software, StarUML, etc...

The teacher should define the boundaries for the above case study problems and make the practice of problems mentioned.

GE–2 Information Technologies – 2 BS601

Theory 2 Hours/Week 2 credits

Unit – I

Introduction to Algorithms and Programming Languages: Algorithm, Control Structures, Flowcharts, Pseudo code, Programming Languages, Generations of Programming Languages.
Database Systems: File Oriented Approach, Database Oriented Approach, Database Views, Three-Schema Architecture, Database Models, Components of DBMS, Introduction of SQL Queries.

Unit – II

Computer Networks: Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.
The Internet: Internet Services, Types of Internet Connections, Internet Security.
Emerging Computer Technologies: Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, On0demand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

Text Reema Thareja, *Fundamentals of Computers*

References

P. K. sinha, *Computer Fundamentals*
Anita Goel, *Computer Fundamentals*
V. Rajaraman, *Fundamentals of Computers*
E. Balagurusamy, *Fundamentals of Computers*
J. Glenn Brookshear, Dennis Brylow, *Computer Science An Overview*

Note: Student friendly video lecturers pertaining to this course are available at **http://spoken-tutorial.org/**
Teachers are advised to teach this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

SEC–4 [A] **Python – 2** **BS602**

Theory 2 Hours/Week 2 credits

Unit – I

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 – II

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.

Dictionaries: Operations on Dictionaries, Dictionary Methods, Using for Loop with Dictionaries, Sorting the Elements of a Dictionary using Lambdas, Converting Lists into Dictionary, Converting Strings into Dictionary, Passing Dictionaries to Functions, Ordered Dictionaries.

Text R. Nageswara Rao, *Corer Python Programming,* Dreamtech Press

References

Mark Lutz, *Learning Python*
Tony Gaddis, *Starting Out With Python*
Kenneth A. Lambert, *Fundamentals of Python*
James Payne, *Beginning Python using Python 2.6 and Python 3*
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 this courses in the computer lab itself, so that the interested students may derive some time to perform few programs their own.

SEC–4 **Information Security** **BS602**

[B]

Theory 2 Hours/Week 2 credits

Unit – I

Introduction to Information Security – Need for Information Security, Threats to Information Systems, Information Assurance, Cyber Security.

Introduction to Application Security and Counter Measures – Introduction to Application Security, Data Security Considerations, Security Technologies, Security Threats, Security Threats to E-Commerce, E-Cash and Electronic Payment System.

Unit – II

Credit/Debit/Smart Cards, Digital Signature, Cryptography and Encryption, Information Security Governance and Risk Management.

Introduction to Security Policies and Cyber Laws – Need for an Information Security Policy, Introduction to Indian Cyber Law, Objective and Scope of the IT Act, 2000, Intellectual Property Issues, Overview of Intellectual-Property- Related Legislation in India, Patent, Copyright.

Text

Dr. Surya Prakash T, Ritendra G, Praveen Kumar S, KLSI, *Introduction to information security and cyber laws (Dreamtech Publication)*

References

Anderson, Ross, *Security Engineering*

G.R.F. Snyder, T. Pardoe, *Network Security*

Mark Stamp, *Information Security: Principles and Practice*

A. Basta, W.Halton, *Computer Security: Concepts, Issues and Implementation*

Mark S. Merkow, Jim Breithaupt, *Information Security: Principles and Practice*

DSC–3F Computer Networks BS605

Theory	3 Hours/Week	3 credits
Practical	2 Hours/Week	1 credit

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.

Local Area Networks: Introduction to IEEE 802, Ethernet-CSMA/CD, Implementation, Token Ring,-Token Passing, Implementation.

Switching: Circuit Switching, Packet Switching, Message Switching.

Unit – III

Networking and Internetworking Devices: Repeaters, Bridges, Routers, Gateways, Brouters, 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

Behrouz A. Forouzan, *Data Communication and Networking (2e Update)*

References

S.S. Shinde, *Computer Networks*

William Stallings, *Data and Computer Communications*

Andrew S. Tanenbaum, David J Wetherall, *Computer Networks*

Behrouz A Forouzan, Firouz Mosharraf, *Computer Networks A Top-Down Approach*

James F. Kurose, Keith W. Ross, *Computer Networking: A Top-Down Approach Featuring the Internet*

Networks Lab BS605

Practical 2 Hours/Week 1 credit

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 language on Unix/Linux systems.

DSE–1F PHP with MySQL BS606

Theory	3 Hours/Week	3 credits
Practical	2 Hours/Week	1 credit

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.
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.

Unit – II

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.
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 – III

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

Matt Doyle, *Beginning PHP 5.3* (Wrox – Wiley Publishing)

References

Ellie Quigley, *PHP and MySQL by Example*
Joel Murach, Ray Harris, *Murach's PHP and MySQL*
Brett McLaughlin, *PHP & MySQL: The Missing Manual*
Luke Welling, Laura Thomson, *PHP and MySQL Web Development*
W. Jason Gilmore, *Beginning PHP and MySQL From Novice to Professional*
Andrew Curioso, Ronald Bradford, Patrick Galbraith, *Expert PHP and MySQL*

PHP with MySQL Lab BS606

Practical 2 Hours/Week 1 credit

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(), strops(), 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 passing arguments to functions.
9	a) Write a PHP script to demonstrate the defining and using object properties. b) Write a PHP script to demonstrate the 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 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.

DSE–2F Web Technologies BS606

Theory	3 Hours/Week	3 credits
Practical	2 Hours/Week	1 credit

Unit – I

Structuring Documents for the Web: Introducing HTML and XHTML, Basic Text Formatting, Presentational Elements, Phrase Elements, Lists, Editing Text, Core Elements and Attributes, Attribute Groups
Links and Navigation: Basic Links, Creating Links with the <a> Element, Advanced E- mail Links.
Images, Audio, and Video: Adding Images Using the <img> Element, Using Images as Links Image Maps, Choosing the Right Image Format, Adding Flash, Video and Audio to your web pages.
Tables: Introducing Tables, Grouping Section of a Table, Nested Tables, Accessing Tables
Forms: Introducing Forms, Form Controls, Sending Form Data to the Server
Frames: Introducing Frameset, <frame> Element, Creating Links Between Frames, Setting a Default Target Frame Using <base> Element, Nested Framesets, Inline or Floating Frames with <iframe>.

Unit – II

Cascading Style Sheets: Introducing CSS, Where you can Add CSS Rules.
CSS Properties: Controlling Text, Text Formatting, Text Pseudo Classes, Selectors, Lengths, Introducing the Box Model.
More Cascading Style Sheets: Links, Lists, Tables, Outlines, The :focus and :activate Pseudo classes Generated Content, Miscellaneous Properties, Additional Rules, Positioning and Layout with CSS
Page Layout: Understating the Site's Audience, Page Size, Designing Pages, Coding your Design, Developing for Mobile Devices.
Design Issues: Typography, Navigation, Tables, Forms.

Unit – III

Learning JavaScript: How to Add Script to Your Pages, the Document Object Model, Variables, Operators, Functions, Control Statements, Looping, Events, Built- In Objects,
Working with JavaScript: Practical Tips for Writing Scripts, Form Validation, Form Enhancements, JavaScript Libraries.
Putting Your site on the web: Meta tags, Testing your site, Talking the Leap to Live, Telling the World about your site, Understanding your visitors.

Text Jon Duckett, *Beginning HTML, XTML, CSS and JavaScript*

References

Chris Bates, *Web Programming*
M. Srinivasan, *Web Technology: Theory and Practice*
Achyut S. Godbole, Atul Kahate, *Web Technologies*
Kogent Learning Solutions Inc, *Web Technologies Black Book*
Ralph Moseley and M. T. Savaliya, *Developing Web Applications*
P.J. Deitel & H.M. Deitel, *Internet and World Wide Web How to program*

Web Technologies Lab BS606

Practical 2 Hours/Week 1 credit

1	a. Write a HTML program using basic text formatting tags, <hn>, <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 <b>, <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 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 a 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 using DOM
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 and validate all fields using form validation

UG (B.Sc.) Scheme of Examinations
Computer Science
(CBCS 2016-17)

Elaborations

Paper	Credits	Theory Exam		Practical Exam
		University Exam	Internal Exam	
DSC	4	80 Marks	20 Marks	25 Marks
DSE	3	60 Marks	15 Marks	25 Marks
SEC	2	40 Marks	10 Marks	No Practical Exam
GE	2	40 Marks	10 Marks	

DSC – Discipline specific core course
DSE – Discipline specific elective course
SEC – Skill enhancement course
GE – Generic elective

4 Credit Core (DSC) Paper

University Exam (Theory)

Time: 3 Hrs. **Maximum marks: 80**

Section – A (5 X 4M = 20 Marks)

Answer any five of the following eight questions. Each carries four marks.

Q1. From Unit 1
Q2. From Unit 1
Q3. From Unit 2
Q4. From Unit 2
Q5. From Unit 3
Q6. From Unit 3
Q7. From Unit 4
Q8. From Unit 4

Section – B (4 X 15M = 60 Marks)

Answer all the following four questions. Each carries FIFTEEN marks.

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2
Q11. (a) or (b) from Unit 3
Q12. (a) or (b) from Unit 4

Internal Exam (Theory)

Time: 1 Hr. **Maximum marks: 20**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 marks each.
- Average of the scores of two exams should be taken into account.
- Following is the examination pattern.
  - 10 MCQs (multiple choice questions) of half mark each,
  - 10 FIBs (Fill in the Blanks) of half mark each
  - 5 SAQs (short answered questions) of one mark each
  - Totaling 15 marks.
  - 5 marks meant for assignment.

University Exam (Practical)

Time: 2 Hrs. **Maximum marks: 25**

- The question paper is to be typeset with **four** programs with due weightage to **all the units** from the question bank provided in the syllabus.
- The candidates are to answer any **two** of them in the practical exam.
- Each question has to carry **six** marks totaling **12** marks.
- Viva – **8** marks
- Record – **5** marks

3 Credit Core (DSE) Paper

University Exam (Theory)

Time: 3 Hrs. **Maximum marks: 60**

Section – A (**5** X **3M = 15 Marks**)

Answer any five of the following eight questions. Each carries three marks.

Q1. From Unit 1
Q2. From Unit 1
Q3. From Unit 2
Q4. From Unit 2
Q5. From Unit 3
Q6. From Unit 3
Q7. From Any Unit
Q8. From Any Unit

Section – B (**3** X **15M = 45 Marks**)

Answer all the following three questions. Each carries fifteen marks.

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2
Q11. (a) or (b) from Unit 3

Internal Exam (Theory)

Time: 1 Hr. **Maximum marks: 20**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 marks each.
- Average of the scores of two exams should be taken into account.
- Following is the examination pattern.
  - 10 MCQs (multiple choice questions) of half mark each,
  - 10 FIBs (Fill in the Blanks) of half mark each
  - 5 SAQs (short answered questions) of one mark each
  - Totaling 15 marks.
  - No assignment is required.

University Exam (Practical)

Time: 2 Hrs. **Maximum marks: 25**

- The question paper is to be typeset with **four** programs with due weightage to **all the units** from the question bank provided in the syllabus.
- The candidates are to answer any **two** of them in the practical exam.
- Each question has to carry **six** marks totaling **12** marks.
- Viva – **8** marks
- Record **– 5** marks

2 Credit Core (SEC & GE) Papers

University Exam (Theory)

Time: 2 Hrs. **Maximum marks: 40**

Section – A (**2** X **5M = 10 Marks**)

Answer any two of the following four questions. Each carries five marks.

Q1. From Unit 1
Q2. From Unit 1
Q3. From Unit 2
Q4. From Unit 2

Section – B (**2** X **15M = 30 Marks**)

Answer all the following two questions. Each carries fifteen marks.

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2

Internal Exam (Theory)

Time: 1/2 Hr. **Maximum marks: 10**

- One internal exam at the end of the semester, of half an hour duration is to be conducted carrying 10 marks.
- Following is the examination pattern.
  - 10 MCQs (multiple choice questions) of one mark each,
  - No assignment is required.

MOOCs [Massive Online Open Courses] Free Resources

E-Learning:

- NPTEL :nptel.ac.in [Core Subjects Certification]
- C++ INSTITUTE :cppinstitute.org [C++ Certification]
- ORACLEEDUCATION :education.oracle.com [Java, DBMS Certification]
- BIG DATA UNIVERSITY :bigdatauniversity.com [Big Data Certification]
- COURSERA :coursera.org [Core Subjects Certification]
- CODEACADEMY :codecademy.com [Coding Certification]
- KHANACADEMY :khanacademy.org [Core Subjects Certification]
- PIXAR IN A BOX :khanacademy.org/partner-content/pixar
- VIDEOLECTURES :videolectures.net
- YOUTUBEEDU :plus.google.com/+YouTubeEDU/posts
- DISNEY RESEARCH :disneyresearch.com
- ALISON :alison.com [Core Subjects Certification]
- INTERNET ARCHIVE :archive.org

Freeware:

- SCILAB : scilab.org [MatLab Equivalent]
- GEOGEBRA :geogebra.org [Software for Class Room Teaching]

Search Engine:

- WOLFRAM ALPHA :wolframalpha.com [Computing Engine]
- CITESEER :citeseerx.ist.psu.edu [Searching Research Articles]
- DOAJ :doaj.org [Open Access to Journals]

Economics

B.A. Syllabus (CBCS)

(w.e.f. 2016 - 2018)

Faculty of Social Science

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

PALAMURU UNIVERSITY

Model

Scheme of Instruction and Examination

B.A. Economics (Regular)

Under Choice Based Credit System (CBCS) - w.e.f. 2016-2017

Year	Semester	DSC/GE/ DSE/SEC	Paper	Title	Credits	Hours
I	I	DSC*	Paper - I	Micro Economics – I	5	5
	II	DSC*	Paper - II	Macro Economics	5	5
II	III	SEC*	Paper - I	Basics of Computers-I	2	2
		DSC*	Paper - III	Micro Economics – II	5	5
	IV	SEC*	Paper - II	Basics of Computers – II	2	2
		DSC*	Paper - IV	Public Economics	5	5
III	V	SEC*	Paper - III	Basics of Quantitative Methods for Economists – I	2	2
		GE**	Paper - I	Telangana Economy	6	6
		DSC*	Paper - V	Development Economics	4	4
		DSE*	Paper - I A	Economics of Education	4	4
		DSE*	Paper - I B	Indian Economy		
		DSE*	Paper - I C	Financial Economics		
	VI	SEC*	Paper - IV	Basics of Quantitative Methods for Economists – II	2	2
		GE**	Paper - II	Economics of Environment	6	6
		DSC*	Paper - VI	International Economics	4	4
		DSE*	Paper - II A	Demography	4	4
		DSE*	Paper - II B	Economics of Insurance		
		DSE*	Paper - II C	Industrial Economics		

* DSC (Discipline Specific Course), SEC (Skill Enhancement Course) & DSE (Discipline Specific Elective) for Students of Economics.

** GE (Generic Elective) or Inter-Disciplinary Course for Students of Social Sciences other than Economics.

(**Prof.A.K.Vasudeva Chary**)

B.A. (ECONOMICS) SYLLABUS
Semester - I
MICRO ECONOMICS - I
Discipline Specific Course - Paper - I

Module I: Introduction:
Importance of Economics. Definition: Wealth, Welfare, Scarcity and Growth. Scope and Limitations. Micro and Macro Analysis. Approaches to Economic Analysis. Partial Equilibrium vs. General Equilibrium, Comparative Static and Dynamic analysis, Positive and Normative Approaches.

Module II: Theory of Consumer Behavior:
Utility Analysis: Cardinal Utility Theory, Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility, Consumer Equilibrium. Ordinal Utility Theory: Indifference Curve Analysis, Consumer's Equilibrium. Price, Income and Substitution Effects. Types of Goods: Normal, Inferior and Giffen Goods. Derivation of Individual Demand Curve and Market Demand Curve with the help of Indifference Curve. Consumer Surplus

Module III: Supply and Demand Analysis:
Law of Demand, Movements and Shifts in Demand Curve. Elasticity of Demand, Price, Income and Cross Elasticity. Degree of Elasticity. Methods of Measuring Elasticity are of Demand: Point, Arc and Outlay Methods. Law of Supply, Movement and Shifts in Supply Curves. Elasticity of Supply, Determinants of Supply. Derivation of Supply curve.

Module IV: Theory of Production:
Concept of Production. Production Functions: Linear and Non – Linear Homogeneous Production Functions. Isoquants. Scale of Production. Returns to Scale. Law of Variable Proportions and Variable Returns to Scale. Economies of Scale and Scope. Limitations of Production Function Analysis. Production Surplus.

Module V: Production Costs: Concepts and Types:
Money, Accounting, Real, Opportunity, Economic, Implicit and Explicit, Short Run, Long Run, Fixed and Variable Costs. Concepts of Total, Average and Marginal costs. Derivation of Long run Average and Marginal Cost Curves. Relationship between Average and Marginal Costs Curves in Short run and Long run.

References:

1. M L Seth : Micro Economics
2. M L Jhingoan : 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. (ECONOMICS) SYLLABUS
Semester - II
MACRO ECONOMICS
Discipline Specific Course - Paper - II

Module-I: Introduction

Meaning, Scope and Limitations of Macro Economics. National Income: Concepts, Methods of Measurement and Difficulties in Estimation of National Income and Limitations National Income as a Measure of Welfare. Social Accounting

Module-II: Theories of Output and Employment

The Classical Theory of Employment (Say's Law and Pigou's Wage cut Policy) and Criticism, Keynesian Theory: Effective Demand, Aggregate Demand and Aggregate Supply Function, Consumption Function: Factors influencing consumption function, Investment Multiplier its relevance in emerging economies. Concept of Accelerator

Module- III: Investment & Theories of Interest Rate

Capital and Investment: Types of Investment, Determinants of level of Investment, MEC Ex-Post and Ex- Ante Investment and Savings- Classical, Neo-classical. And Keynesian Theories of Interest. Liquidity Trap, Simultaneous Determination of Interest and Real Income through IS-LM Framework in a closed Economy

Module- IV: Supply of Money & Demand for Money

Definition of Money - Money Supply: Measures of Money Supply (Ml, M2, M3 & M4) - RBI approach to money supply; High powered money and money multiplier; Control of money supply. Variations in money supply in India. Theories of demand for money - Classical and Neo Classical approaches, Keynes liquidity preference approach. Derivation of LM curve.

Module -V: Inflation & Business Cycles

Definition of Inflation: Causes, consequences and control of inflation -Deflation and stagflation. Nature, Characteristics and Phases of Business Cycles. Samuelson's Business Cycle Theory. Stock market-meaning, functions; Insurance-Life insurance and General Insurance

References:

1. Ackley, G (1976) : Macro Economic theory and policy, Macmillan Publishing Co, New York.
2. Shapiro, E (1996) : Macro economic Analysis, Galgotia Publication, New Delhi
3. Keynes JM (1936) : The General Theory of Employment, Interest and money, Macmillan London
4. MC Vaish : Macro economic theory
5. HL Ahuja : Macro economic theory policy

B.A. (ECONOMICS) SYLLABUS
Semester - III
BASICS OF COMPUTERS -I
Skill Enhancement Course - Paper – I

Module-I: Introduction of Computers

Definition - Evolution of Computer - Computer Generations - Micro Computers - Structure of Computer - Uses of Computer - Basic Components of Computer - Central processing Unit (CPU) - Input Output Devices - Scanner - Printer- Video display - Storage medias - Floppy Disk Drive - Hard Disk Drive - Compact Disk (CD) - Digital Video Disk(DVD)

Module-II: Microsoft Operating Systems

Operating System – Window Operating System - Salient Features - Merits of Windows Operating System - Accessories - System tools - Scan Disk - Word Pad - Note Pad - Paint - Imagination - Windows Explorer - Ms- Word: Creating, Opening and saving files - editing and formatting text - spell and grammar check - auto correct - creation of tables and volumes.

References

1. Sinha, P.K. : Computer Fundamentals, BPB Publications, New Delhi.
2. Raja Raman.V. : Fundamentals of Computers, PHI, New Delhi.
3. Kerns : Essentials of Microsoft Windows, Word and Excel, PHI.
4. Alexis Leon &Mathews Leon : Introduction to Computers with Ms-Office, TMH.
5. Asthana & Braj Bhushan : Statistics for Social Sciences (with SPSS applications), PHI.

B.A. (ECONOMICS) SYLLABUS
Semester - III
MICRO ECONOMICS - II
Discipline Specific Course - Paper - III

Module I: Types of Revenue and Objectives of Firm

Behavior of the Firm. Concept of Revenue: Total Revenue (TR), Average Revenue (AR) and Marginal Revenue (MR). Relationship between AR and MR and the Elasticity of Market Demand. Traditional Objectives of the Firm: Profit Maximization. Modern Objectives of the Firm: Output/Sales/Market Share Maximization.

Module II: Perfect Competition and Monopoly

Classification of Market. Perfect Competition, Short Run and Long Run Analysis. Equilibrium of the Firm and Industry. Monopoly Features, Equilibrium. Discriminatory Pricing. Differences between Perfect Competition and Monopoly.

Module III: Monopolistic Competition and Oligopoly Markets

Monopolistic Competition. Product Differentiation, Selling Costs. Oligopoly: Homogeneous and Heterogeneous Oligopoly, Price Rigidity in Oligopoly. Kinky Demand Curve.

Module IV: Pricing Strategies

Pricing Practices: Cost Plus Pricing, Marginal Cost Pricing, Rate of Return Pricing, Product Life Pricing, Price Skimming, Penetration Pricing, Markup Pricing. State Intervention and Administered Prices.

Module V: Distribution and Factor Pricing

Functional and Personal Distribution. Marginal Productivity Theory of Distribution. Ricardo Theory of Rent and Quasi Rent. Theories of Wages. Theories of Profit. Risk and Uncertainty. Concept of Interest.

References:

1. M L Seth : Micro Economics
2. M L Jhingoan: : 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. (ECONOMICS) SYLLABUS
Semester - IV
BASICS OF COMPUTERS -II
Skill Enhancement Course - Paper – II

Module-I: Data Processing Techniques using MS Excel

Concept of Data - Record and File - Types of Data - Data Entry - File handling and Operations like opening, appending and cascading - closing and attribute controls - Data Storage and Retrieval -Data operations - Preparation and Formatting of Text, Tables and Graphs - MS-Access: Creating, opening. MS-Power Point: Concept of presentation - creating, opening and saving the slide shows - animation - viewer's presentation.

Module- II: Internet Applications

Definition and uses of Internet - Salient features -Different types of web sites - Creation of Electronic Mail address - Sending and getting e-mails - Features of Inbox - Attaching Images or Documents to E-mail - Downloading e-mail - Attachments of Documents from the Internet

References

1. Sinha, P.K. : Computer Fundamentals, BPB Publications, New Delhi.
2. Raja Raman.V. : Fundamentals of Computers, PHI, New Delhi.
3. Kerns : Essentials of Microsoft Windows, Word and Excel, PHI.
4. Alexis Leon &Mathews Leon : Introduction to Computers with Ms-Office, TMH.
5. Asthana & Braj Bhushan : Statistics for Social Sciences (with SPSS applications), PHI.

B.A. (ECONOMICS) SYLLABUS
Semester - IV
PUBLIC ECONOMICS
Discipline Specific Course - Paper - IV

Module - I: Introduction

Meaning and importance of Public finance - Evolution of public finance. Multiple theory of public household-Public and Private goods-Markets mechanism in public and private goods. State as an agent of planning and development

Module- II: Public Expenditure

Theories of public expenditure- Wagner' s law of increasing state activities – Peacock Wisemans hypothesis- Principle of Maximum Social advantage –Growth and pattern of public expenditure, Effects of public expenditure-Cost benefit analysis.

Module- III: Taxation & Public Debt

Approaches to taxation- Benefit approach, Ability to pay approach and Neutrality approach-Elasticity and buoyancy of taxation-incidence and shifting of taxation-Types and classification of taxes and VAT, Approaches to public debt.

Module- IV: Fiscal Policy & Federal Finance

Definition of fiscal policy and its objectives; Fiscal Policies for redistribution of income and wealth and stabilization – fiscal policies in a developing country, federal financial structure and its main features – Direct taxes-Income tax-Corporate tax. Indirect tax structure- Union excise duties, customs duties, sales tax –VAT, Centre-State financial Relations.

Module- V: Budget

Budget – Classification of budgets –Economic, Functional, organizational, classification of budgets- performance programming and zero based budgets- surplus, balanced and deficit budgets- Concepts of budget deficit and their implications – State and Central budgets. Fiscal crisis and Fiscal sector reforms in India; Reports on Finance Commissions in India.

References

1. Atkinson, A Band J.E Siglitz (1980) :Lecturers on Public Economics, Tata McGraw Hill, New York.
2. Auerbach, A J and M. Feldson (Eds.) (1985) :Handbook of Public Economics, Vol. 1, North Holland, Amsterdam.
3. Buchanan, J M (1970) :The Public Finances, Richard D Irwin, Homewood.
4. Goode, R (1986) : Government Finance in Developing Countries, Tata McGraw Hill, New Delhi.

5. Houghton, J M (1970) : The Public Finance: Selected Readings, Penguin, Harmondsworth.
6. Jha, R (1998): Modern Public Economics, Routledge, London.
7. Menutt, P (1996) :The Economics of Public Choice, Edward Elgar, U.K.
8. Musgrave, R A and P.B. Musgrave (1976) : Public Finance in Theory and Practice, McGraw Hill, Kogakusha, Tokyo.
9. S K Singh Public Economics
10. Om prakash Public Economics
11. M L Jhingan Public Economics
12. H L Bhatia Public Economics

B.A. (ECONOMICS) SYLLABUS
Semester - V
BASICS OF QUANTITATIVE METHODS FOR ECONOMISTS - I
Skill Enhancement Course - Paper - III

Module- I: Basic Concepts

Need for Quantitative Methods in Economics. Basic Concepts: Constant, Variables. Functions: Linear, Non-Linear functions. Equations and their functions. Linear, Quadratic. Concept of Derivative, Rules of Differentiation. MR, MC, MPC, Price and Income Elasticity's.

Module- II: Determinants and Matrices

Determinants and their Basic Properties. Matrices and Types: Rectangular Matrix, Square Matrix, Row Matrix, and Column Matrix. Operations: Matrix Addition, Subtraction and Multiplication. Inverse of a Matrix and their application.

References:

1. Aggarwal, DR : Quantitative methods, Vrinda Publications, Delhi
2. Allen RGD : Mathematical analysis for Economists, Macmillan press, London.
3. Bhardwaj RS : Mathematics for Economics and Business, Excel books, New Delhi
4. Bose : Mathematics for Economics, Himalaya Publishers, New Delhi
5. Chiang, AC : Fundamental methods of mathematical Economics Mc Graw Hill, New Delhi
6. Nagar AL Das : Basic Statistics

B.A. (ECONOMICS) SYLLABUS
Semester - V
TELANGANA ECONOMY
Generic Elective (or) Inter-Disciplinary Course - Paper – I

Module- I: State and District Domestic Product

Growth and Sectoral Composition-Per capita Income of Telangana States and its Districts

Module- II: Trends in Population Growth:

Occupational structure work participation – Population policies, Unemployment and its magnitude and direction

Module- III: The Structure of Agriculture and Allied Sectors

Trends in productivity of food and non-food crops. Profile of Irrigation policies and institutional support to Agricultural Marketing, Sources of Agricultural finance

Module- IV: The Structure of Industrial Development

Commodity specific growth rates in industrial sector- Infrastructure development –Industrial policies and programs in support of industrial growth

Module- V: The structure of Tertiary Sector

Service specific growth rates, Policies and Programs initiated to promote growth of services in Telangana State

Basic Reading List:

1. Rao S Kishan and Rahul A Shastry (2009): Andhra Pradesh Economy – Dynamics of Transformation with a focus on Regional Disparities, National Academy of Development,
2. Hanumantha Rao and S.Mahender Dev (2003); Andhra Pradesh Development – Economic Reform and Challenges Ahead, Centre for Economic and Social Studies, Hyderabad.
3. Kankalatha Mukund (1990); "Andhra Pradesh Economy in Transition; Centre for Economic and Social Studies, Hyderabad and Book Links Corporation, Hyderabad.
4. Mahendra Dev, S.C.Ravi and M.Venkatanarayana (2009); Human Development in Andhra Pradesh: Experiences, Issues and Challenges; Centre for Economic and Social Studies (CESS), Hyderabad.
5. Rao, R.S., V. Hanumantha Rao and N. Venugopal (2006); Fifty years of Andhra Pradesh 1956-2006; Centre for Documentation, Research and Communication [CDRC], Hyderabad.
6. P.Sundaraya, Telangana People's Struggle and Its Lessons, Calcutta, CPI-M, 1972
7. Ravi Narayan Reddy, Heroic Telangana: Reminiscences and Experiences, New Delhi, CPI, 1973
8. Gautam Pingle 2014: The Fall and Rise of Telangana, Orient Black Swam

B.A. (ECONOMICS) SYLLABUS
Semester - V
DEVELOPMENT ECONOMICS
Discipline Specific Course - Paper - V

Module- I: Economic Development and Growth

Concepts of Economic Growth and Development. Measurement of Economic Development: Per Capita Income, Basic Needs, Physical Quality of Life Index, Human Development Index and Gender Empowerment Measure. Role of State and Market in Economic Development

Module- II: Factors in Economic Development

Factors effecting Economic Development-Characteristics of developing Countries- Population and Economic Development- Theories of Demographic Transition. Human Resource Development and Economic Development

Module- III: Theories of Economic Development

Theories of Adam Smith, David Ricardo, Karl Marx and Schumpeter

Module- IV: Theories of Under Development

Lewis, Rodan, Libenstien, Nurkse's Balanced Growth Strategy, Hirsch man's Un-balanced Growth Strategy, Myrdal model.

References:

1. Mier, Gerald, M : Leading issues in Economic Development, OUP, Delhi
2. Todaro, Micheal P : Economic Development in the third world, Orient Longman, Hyderabad
3. Ghatak Subrata : Introduction to Development Economics
4. Sukumoy chakravarthy : Development Planning- Indian Experience, OUP, Delhi
5. Misra & Puri : Economic Development and Planning, theory and practice

B.A. (ECONOMICS) SYLLABUS
Semester - V
ECONOMICS OF EDUCATION
Discipline Specific Elective - Paper – I A

Module 1 Introduction to Economics of Education:

Definition and scope of Economics of Education. Education as Consumption and Investment goods; Human capital: the concept; Components of Human capital-Human Capital vs. Physical Capital.

Module 2 Costs of Education:

Cost of Education – Expenditure on Education, Private Costs and Social Costs; Direct and Indirect / opportunity costs.

Module 3: Benefits of Education:

Direct and Indirect Benefits; Private and Social Benefits; Problems in the Measurement of Costs and Benefits. Cost-Benefit Analysis in Education

Module 4: Educational Planning:

Contribution of Education to economic growth; Approaches to educational planning. Economics of Educational Planning in Developing Countries with special reference to India.

Basic Reading List:

1. Blaug, Mark (1972) : Introduction to Economics of Education. Penguin, London.
2. Becker, G.S. (1974) : Human Capital. 2nd Edn., NBER, New York
3. Berman, P and M.E.Khan (1989) : Paying for India's Health Care. Sage Publications New Delhi.
4. Cohn, E and T.Gaske (1989): Economics of Education, Pergamon Press, London.
5. Klarman, H.E. (1965) : Economics of Health, Columbia University Press, New York.
6. Panchamukhi, P.R. (1980): Economics of Health: A Trend Report, ICSSR Survey, Allied, New Delhi.
7. Tilak. J.E.G. (1989) : Economics of Inequality in Education, Sage, New Delhi.
8. World Bank (1983): The World Development Report: Investing in Health. Oxford University Press, New York.
9. Education for Development
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B.A. (ECONOMICS) SYLLABUS
Semester - V
INDIAN ECONOMY
Discipline Specific Elective - Paper – I B

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 and Role of Agriculture. Trends in Agricultural Production and Productivity. Land Reforms. Greeen Revolution. Agricultural Finance. Agricultural Marketing. Agricultural Price Policy. Food Security in India.

Module III: Indian Industry and Services:

Role and Importance of Industrialization. Trends in Industrial Production and Services. Industrial Policy Resolutions: 1948, 1956, 1977, 1991 The Role of Public and Private Sectors. Formal and Informal Sectors in Industry and Services

Module IV: Planning in India:

Five-Year Plans: Objectives, Strategies, Resource Allocation, Targets and Achievements. Evaluation of Performance of The Indian Economy under Planning. New Economic Reforms and their Implications. Globalization in India.

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 RC Dutt and
3. KPM Sundaram : Indian Economy

B.A. (ECONOMICS) SYLLABUS
Semester - V
FINANCIAL ECONOMICS
Discipline Specific Elective - Paper – I C

Module -I: The Financial System and its significance for Economic Development – The Structure of the Financial System in India- Organized and Un-organized Financial System. All India development financial institutions, Investment Institutions, Specialized financial institutions and State level financial institutions.

Module–II: Commercial Banking. Banking structure in India-Context, Need and Objectives – financial sector reforms -Narasimham Committee Report – Financial Sector Reforms with reference to Stock Markets.

Module – III: Money Market: Organized sector of the Money Market and their sub-markets-Call money market, Treasury bill market, The Repo Market, Commercial Paper market and Money market mutual funds and their instruments. - Money market reforms in India.

Module – IV: Capital Market: Structure of Capital market- Primary and Secondary markets-New issues and Secondary Issues Markets, Securities-Private and Guilt Edged Securities.

Basic Reading List:

1. Bhole, L.M. (1999), Financial Institutions and Markets, Tata McGraw Hill Company Ltd., New Delhi.
2. Bhole, L.M. (2000), Indian Financial System, Chugh Publications, Allahabad.
3. Edminster, R.O. (1986), Financial Institutions, Markets and Management, McGraw Hill, New York.
4. Goldsmith, R.W. (1969), Financial Structure and Development, Yale, London.
5. Hanson, J.A. and S.Kathuria (Eds.) (1999), India: A Financial Sector for the Twenty-first Century, Oxford University Press, New Delhi.
6. Harker, P.T.and S.A.Zenios (2000) (Ed.), Performance of Financial Institutions, Cambridge University Press, Cambridge.
7. Johnson, H.J. (1996) Financial Institutions and Markets, Tata McGraw Hill, New Delhi.
8. Khan, M.Y. (1996) Indian Financial System, Tata Mc Graw Hill, New Delhi.
9. Machiraju, M.R. (1999) Indian Financial Systems, Vikas Publishing House, New Delhi.
10. Ohlson, J.A. (1987), The Theory of Financial Markets and Institutions, North Holland, Amsterdam.
11. Prasad, K.N. (2001) Development of India's Financial System, Sarup & Sons, New Delhi.
12. Robinson, R.I. and Wightman (1981), Financial Markets, McGraw Hill, London.

B.A. (ECONOMICS) SYLLABUS
Semester - VI
BASICS OF QUANTITATIVE METHODS FOR ECONOMISTS - II
Skill Enhancement Course - Paper - IV

Module- I: Measures of Central Tendency:

Statistics, Definition, Uses and Limitations. Types of Data: Primary and Secondary, Methods of Collecting Data: Census and Sampling Methods. Measures of Central Tendency: Mean Median and Mode. Measures of Dispersion: Range, Quartile Deviation and Standard Deviation.

Module- II: Correlation and Regression:

Correlation: Meaning, Types. Karl Pearson's Correlation Co-efficient, Spearmen's Rank Correlation. Regression: Meaning, Uses of Regression Analysis.

References:

1. Aggarwal, DR : Quantitative methods, Vrinda Publications, Delhi
2. Allen RGD : Mathematical analysis for Economists, Macmillan press, London.
3. Bhardwaj RS : Mathematics for Economics and Business, Excel books, New Delhi
4. Bose : Mathematics for Economics, Himalaya Publishers, New Delhi
5. Chiang, AC : Fundamental methods of mathematical Economics Mc Graw Hill, New Delhi
6. Nagar AL Das : Basic Statistics

B.A. (ECONOMICS) SYLLABUS
Semester - VI
ECONOMICS OF ENVIRONMENT
Generic Elective (or) Inter-Disciplinary Course - Paper – II

Module-I: Meaning & definition of Environment Economics

Meaning and definition of Environmental Economics. Theory of Market Failure. Theories of Environmental Economics: Boulding's Spaceship Earth. Hardin's Tragedy of the Commons, Club of Rome Model.

Module-II: Theories of Natural Resource Management

Material Balance and Entropy Law. Hostelling's Theory of Exhaustible Resources. Dasgupta and Heal, Optimal Depletion of Renewable Resources. Carrying Capacity of the Environment. Definition and Concept of Sustainable Development. Week vs. Strong Sustainability Criteria.

Module-III: Theory and Policy of Pollution Control

Optimal Level of Pollution. Polluter Pays Principle – Pigovian Taxes and Subsidies. Pollution Permits. Charge and Standards approach. Coase Theorem. Role of Govt. in Environmental Regulation – Command and Control regime. WTO and Environmental impacts.

Module-IV: Measurement of Environmental Degradation

Environmental Costs and Benefits: Under and Non-user Benefits. Direct and Indirect Valuation Methods: Contingent Valuation Method and Willingness to pay. Green National Income and Genuine Savings. Environmental Impact Assessment and Report. Environmental Audit.

Module-V: Environment Problems of India

State of India's Environment – Air, Water and Soil Pollution, Natural Resource Depletion, Deforestation, Industrial and Agricultural Pollution, Urbanization, Vehicular Pollution. Functions of Ministry of Environment and Forest and Pollution Control Boards.

Basic Reading List

1. Baumol, W.J. and W.E.Oates(1988), *The Theory of Environmental Policy* (2nd Edition) CUP, Cambridge.
2. Bhattacharya, R.N. ed. (2001): *Environmental Economics, An Indian Perspective*, Oxford University Press, New Delhi.
3. Hanley, N.J.F.Shogren and White (1997*) Environmental Economics in Theory and Practice*. Macmillan.

4. Jarret H. ed. *Environmental Quality in a Growing Economy*, John Hopkins Press, Baltimore.
5. Kalpagram, (1998): *Environmental Economics*, Sterling Press.
6. Kolstrad, C.D. (1999): *Environmental Economics*, Oxford University Press, New Delhi.
7. Mehta, S, S. Mundle, and U.Sankar (1995): *Controlling Pollution: Incentives and Regulation*, Sage, New Delhi.
8. Murthy, M.N., A. James and S.Misra (1999): *The Economics of Water Pollution in India*. Oxford University Press, New Delhi.
9. Pearce, D.W and R. Turner (1991): *Economics of Natural Resource Use and Environment*. John Hopkins Press, Baltimore.
10. Rao, O.K. (2000): *Sustainable Development, Economics and Policy*, Blackwell Publishers, UK.
11. Sankar, U Ed (2001): *Environmental Economics*, Oxford University Press, New Delhi.
12. Saxena, H.M. (2000): *Environmental Management*. Rawat Publishers, New Delhi.
13. Sengupta, R.P. (2000): *Ecology and Economics: An Approach to Sustainable Development* Oxford University Press, New Delhi.
14. *State of India's Environment*. The Hindu Annual Publications.
15. Tietenberg, T, ed. (1997): *Economics of Global Warming*, Edward Elgar, UK.

B.A. (ECONOMICS) SYLLABUS
Semester - VI
INTERNATIONAL ECONOMICS
Discipline Specific Course - Paper – VI

Module - I: Theories of International Trade:

Theories of absolute advantage, comparative advantage and opportunity costs; Theorem of factor price equalization; - Heckscher - Ohlin theory of trade.

Module - II: Trade and Growth

Gains from Trade.-Trade as an Engine of Economic Growth. Concepts of Terms of Trade-Factors affecting Terms of Trade- Singer-Prebish secular deterioration of Terms of Trade

Module- III: Barriers to Trade

Tariffs, Quotas and Subsidies and their effects. The optimum tariff.

Module- IV: Balance of Payments

Concepts and Components of BOP, Equilibrium and disequilibria in Balance of payments, Types of Disequilibria. Remedial measures to control disequilibrium. Devaluation. Direction and Composition of Foreign trade, Export and Import Policies of India.

References

1. Soderston B (1990) : International Economics, Macmillan Press Ltd. London
2. Kindle Berger C P (1973) : International economics RD Irwin Concepts wood
3.Vaish MC and Sudhama Singh (2000): International Economics, Himalaya Publishing House, New Delhi
4. Salvatore, D L (1997) : International Economics, Prentice Hall NJ
5. Mithani DM (2000) : International Economics, Himalaya, Mumbai
6. Desai : International Economics, Himalaya, New Delhi.

B.A. (ECONOMICS) SYLLABUS
Semester - VI
DEMOGRAPHY
Discipline Specific Elective - Paper – II A

Module –I: Meaning and Scope of Demography

Components of population-growth and their interdependence- Theories of population– Malthus and Optimum theory of Population - Theory of demographic transition – Population and Development.

Module-II: Population trends in the twentieth century

Population Explosion – International aspects of population growth and spatial distribution- Determinants of age and sex -structure- Aging of population – social economic implications.

Module-III: Fertility

Trends in fertility rates in developed and less developed countries- Factors affecting fertility – Nuptiality – concept and analysis of marital status- single mean age at marriage – synthetic cohort methods - Mortality rates in more and less developed countries- Life table – construction and uses- concepts of stable population- Methods of population projection.

Module-IV: Migration

Streams of migration - Factors affecting migration – Urbanization – trends in developed and developing countries – study of census in India- Trends in the rate of growth of Indian Population – Evolution of population policy – Population control to Family Welfare- Family Planning strategies in India- New Population policy in India.

Reading List:

1. S.N.Agarwal : India's population problem – Tata Mc Graw –Hill Co. Bombay.
2. Ahisha Bose : India's Basic Demographic statistics-B.R Publishing corporation, New-Delhi.
3. P.K. Chowbey : Population policy in India – Kanishka Publications, New Delhi.
4. S.C Gulati : Fertility in India an Econometric study of a metropolis-Sage, New Delhi.
5. K.Srinivsan : Basic Demographic techniques and applications.-Sage, New Delhi
6. D.J. Bogue : Principles of Demography-John Wiley, New York.
8.C.M. Chiang : Life tables and Mortality Analysis.-WHO, Geneva.
8. CEHI, : Dharma Kumar (ed) Vol.2
9. Praveen Visaria, Population studies.
10. Dharma Kumar, Land and caste in south India.

B.A. (ECONOMICS) SYLLABUS
Semester - VI
ECONOMICS OF INSURANCE
Discipline Specific Elective - Paper – II B

Module-I: Introduction:
Meaning and Types of Insurance: Life Insurance and importance of its policies. General Insurance- Types of Non-Life Insurance and Marketing of general insurance. – Features of Health insurance, fire insurance. Investments in Insurance - tax advantaged and non-tax advantaged Insurance.

Module-II: Essentials of Individual Retirement Planning
Analysis of retirement; Income needs; Retirement planning strategies; Investing for retirement, pension plans; Basic principles of pension plans; Pension plans in India. Life insurance for estate liquidity.

Module-III: Role of Risk-Management and Insurance
Insurance Institutions as Financial Intermediaries; Insurance institutions as investment institutions; Insurance institutions in Indian capital market.

Module-IV: Regulation of Insurance
Purpose of Government Intervention in Markets; Insurance regulation in India; Insurance regulation & Development Authority; Set up and management of insurance companies.

Basic Reading List

1. Black. K. Jr. and H.D. Skipper Jr.(2000), Life & Health Insurance, Prentice Hall, Upper Saddle River, New Jerssey.
2. Dionne, G. and S.E. Harrington (eds.) (1997), Foundations of Insurance Economics, Kluwer academic Publishers, Boston.
3. Pteffer, I. And D.R. Klock (1974), Perspectives on Insurance, Prentice Hall Inc., Engle word Cliffs.
4. Williams Jr., C.A. M.L. Smith and P.C.Young (1995), Risk Management and Insurance, McGraw Hill, New York.
5. Skipper Jr., H.D. (ed.) (1998), International Risk & Insurance: An Environmental Managerial Approach, Irwin McGraw Hill, Boston.
6. Government of India (1998), Old Age and Income Security (OASIS) Report (Dave Committee Report), New Delhi.
7. Insurance Regulation and Development Authority (2001), IRDA Regulations, New Delhi.
8. Meier. K.J. (1998), The Political Economy of Regulation: The Case of Insurance, The State University of New York Press, Albany, N.Y.

B.A. (ECONOMICS) SYLLABUS
Semester - VI
INDUSTRIAL ECONOMICS
Discipline Specific Elective - Paper – II C

Module –I: Meaning and classification of Industries.

Use-based, Resource Based and ASI Two and Three Digit classification. Industrial Location theories: Weber, Sargent Florence, and Losch - factors affecting industrial location.

Module II: Market Structure and Market Performance:

Types of Markets based on Place, Time and Competition. Concepts & Organization of a firm. Market Structure; Sellers Concentration; Product Differentiation; Entry Conditions; Economics of Scale.

Module III: Industrial Pattern under Five Year Plan;

Industrial economic concentration and remedial measures. Industrial Policy 1991: Role of Public and Private Sector, LPG Program. Recent Trends in Industrial growth.

Module –IV: Industrial Finance:

Industrial Finance: Owned, External and other Components of Funds; Role, Nature, Volume and types of Institutional Finance – State Level Financial Institutions
and Commercial Banks.

Basic Reading List:

1. Ahuliwalia, I.J. (1985) Industrial Growth in India, Oxford University Press, New Delhi.
2. Barthwal, R.R. (1985), Industrial Economics, Wiley Eastern Ltd., New Delhi.
3. Chernuliam, F. (1994), Industrial Economics: Indian Perspective (3RD Edition), Himalaya Publishing House, Mumbai.
4. Desai, B. (1999), Industrial Economy in India (3rd Edition,) Himalaya Publishing House, Mumbai.
5. Divine, P.J. and R.M. Jones Et. Al (1976), An Introduction to Industrial Economics, George Allen and Unwin Ltd., London.
6. Hay, D. and D.J.Morris (1979), Industrial Economics: theory and evidence, Oxford University Press, New Delhi.
7. Kuchhal, S.C. (1980), Industrial Economy of India (5th Edition), Chaitanya Publishing House, Allahabad.
8. Sing, A and A.N.Sadhu (1988), Industrial Economics, Himalaya Publishing House, Mumbai.

English

B.A./ B.Com./ B.Sc. I - IV Semester Syllabus (CBCS)

(w.e.f. 2016 - 2017)

Faculty of Arts

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

Palamuru University

CBCS General English Syllabus (with effect from 2016-17)

Total Credits = 20
(5 credits per semester for first four semesters)
Total hours of instruction = 5 per week

Prescribed General English Text Book for I Year (Sem-I & Sem-II) for B.A/B.Sc/B.Com
Title: *English Made Easy* published by Orient Blackswan
Editors: Prof. E. Suresh Kumar, Prof. Sumita Roy and Prof. A. Karunaker

Semester I **5 Credits**

Unit I SHORT FICTION: "The Curb in the Sky" by James Thurber—PRONUNCIATION: consonant sounds— GRAMMAR: noun—VOCABULARY: roots, prefix and suffix—SPELLING: wrong spellings—PUNCTUATION: capitalization— CONVERSATION: introducing oneself in formal /social contexts—READING: biography of Chindula Yelamma, a Telangana Artisan— WRITING: guided writing & expansion —SOFT SKILLS: motivation and goal setting— VALUES: "Well begun is half done"

Unit II PROSE: "Happy People" by W.R. Inge— PRONUNCIATION: vowels-monophthongs— GRAMMAR: pronoun—VOCABULARY: roots, prefix & suffix— SPELLING: 'un' and 'dis' for antonyms— PUNCTUATION: capitalization— CONVERSATION: starting & controlling a conversation—READING: Million March—An Initiative for Statehood— WRITING: sequencing— SOFT SKILLS: self confidence— VALUES: "Doubt is the beginning of wisdom"

Unit III POETRY: "A Psalm of Life" by Henry Wadsworth Longfellow— PRONUNCIATION: vowels-diphthongs—GRAMMAR: auxiliary verbs— VOCABULARY: homonyms, homographs, homophones— SPELLING: words ending 'tion' or 'sion'— PUNCTUATION: full stop and comma— CONVERSATION: describing your college and course of study— READING: Batukamma: Telangana's Cultural Identity— WRITING: paragraph, descriptive writing— SOFT SKILLS: non-verbal communication/body language— VALUES: "Actions speak louder than words"

Unit IV DRAMA: "The Dear Departed" (an extract) by Stanley Houghton— PRONUNCIATION: varied pronunciations of the same letter— GRAMMAR: main verbs and tenses— VOCABULARY: collocation— SPELLING: words ending 'tion' or 'ment'— PUNCTUATION: question and exclamation marks— CONVERSATION: leaving a message on the answering machine, making an appointment on telephone— READING: Husain Sagar Lake: A Well known Tourist Attraction— WRITING: dialogue writing— SOFT SKILLS: interpersonal skills— VALUES: "Faith will move mountains"

Unit V Language & Soft Skills Lab: Pronunciation, Conversation, Reading, Soft Skills and Values

Department of English
Palamuru University

CBCS General English Syllabus (with effect from 2016-17)

Semester II **5 Credits** **5 hours of instruction per week**

Prescribed Text Book for Semesters I & II: *English Made Easy* published by Orient Blackswan. Editors: Prof. E. Suresh Kumar, Prof. Sumita Roy and Prof. A. Karunaker

Unit I SHORT FICTION: "A Visit of Charity" by Eudora Welty —GRAMMAR: Non-finite verbs— VOCABULARY: Simile and metaphor— SPELLING: Use of 'ie' and 'ei'— PUNCTUATION: Semicolon—WRITING: Note taking and note making

Unit II PROSE: "Benaras" by Aldous Huxley —GRAMMAR: Adjective— VOCABULARY: Oxymoron and hyperbole— SPELLING: Use of 'able' and 'ible'— PUNCTUATION: Colon and long dash— WRITING: Informal letter

Unit III POETRY: "The Sun is Warm" by P.B Shelley—GRAMMAR: Articles— VOCABULARY: Portmanteau words, loan words— SPELLING: Use of '-ic', '-ive', '-ity', '-al' '-ance', '-ence'— PUNCTUATION: Hyphen and long dash— WRITING: Formal letter

Unit IV DRAMA: An extract of Act II, Sc 3 from *Julius Caeser* by Shakespeare— GRAMMAR: Adverb— VOCABULARY: Palindromes— SPELLING: Changes of spelling from noun-verb-adjective-adverb— PUNCTUATION: Inverted commas—WRITING: Business letter

Unit V **Language & Soft Skills Lab**: (Pronunciation, Conversation, Reading, Soft Skills and Values)

PRONUNCIATION: Plosives—Fricatives—Affricates and nasals—Lateral, frictionless continuants, semi vowels

CONVERSATION: Asking for advice/information—Making/accepting/ refusing a request— Conducting a meeting/seeking opinion of team members— Appearing for a job interview/conducting a job interview

READING: Hyderabad city: the heart of Telangana—Burrakatha—Cultural identity of Telangana—Handicrafts of Telangana

SOFT SKILLS: Time management—Leadership—Stress management— Etiquette and grooming

VALUES: "Time and tide wait for no one"— "The pen is mightier than the sword" — "Practice makes one perfect"— "Necessity is the mother of invention"

Department of English
Palamuru University

CBCS General English Syllabus

Semester III
(2017-18)

Prescribed Textbook for Semesters III & IV: *English in Use*. Eds. T Vijay Kumar, K Durga Bhavani, YL Srinivas. Published by Macmillan.

Semester III **5 Credits** **5 hrs of instruction per week**

Unit I	1) Poem: Charlotte Brontë "Life" 2) Short Story: Rabindranath Tagore "A Wrong Man in Workers' Paradise" 3) Vocabulary: Synonyms, Antonyms 4) Grammar: Prepositions (including Prepositional Phrases)
Unit II	1) Poem: Kamala Das "Punishment in Kindergarten" 2) Essay: RK Narayan "Toasted English" 3) Vocabulary: British/American English Common Words 4) Grammar: Voice
Unit III	1) Poem: Langston Hughes "As I Grew Older" 2) Speech: BR Ambedkar "Grammar of Anarchy" (Excerpt) 3) Vocabulary: Phrasal Verbs 4) Grammar: Concord
Unit IV	Writing-I (Essay Writing) 1) Discursive Essay 2) Argumentative Essay 3) Vocabulary: Idioms 4) Grammar: Connectives
Unit V	Writing-II (Report Writing) 1) Business Reports 2) Media Reports 3) Vocabulary: Technical Vocabulary (Business, Media) 4) Grammar: Reported Speech (Including Reporting Verbs)

History

B.A. (I - IV Semesters) Syllabus (CBCS)

(w.e.f. 2016 - 2017)

Faculty of Social Science

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

PALAMURU UNIVERSITY

Model

Scheme of Instruction and Examination

B.A. History (Regular)

Under Choice Based Credit System (CBCS) - w.e.f. 2016-2017

Year	Semester	DSC/GE/ DSE/SEC	Paper	Title	Credits	Hours
I	I	DSC*	Paper - I	History of India (From Earliest Times to c.700 CE)	5	5
	II	DSC*	Paper - II	History of India (c.700 -1526 CE)	5	5
II	III	SEC*	Paper - I	Historical and Cultural Tourism in India	2	2
		DSC*	Paper - III	History of India (1526-1857 CE)	5	5
	IV	SEC*	Paper - II	Archives and Museums	2	2
		DSC*	Paper - IV	History of India (1858-1964 CE)	5	5
III	V	SEC*	Paper - III	Understanding Heritage	2	2
		GE**	Paper - I	Indian National Movement (1857-1947 CE)	5+1	6
		DSC*	Paper - V	World History (1453-1815 CE)	4	4
		DSE*	Paper - I A	History of Telangana (From Earliest Times to 1724 CE)	4	4
		DSE*	Paper - I B	Islamic History and Culture (From Earliest Times to the Fall of Ummayads)		
		DSE*	Paper - I C	History of USA (1776-1991 CE)		
	VI	SEC*	Paper - IV	Introduction to Archaeology	2	2
		GE**	Paper - II	History of Telangana Movement and State Formation (1948-2014 CE)	5+1	6
		DSC*	Paper - VI	World History (1815-1950 CE)	4	4
		DSE*	Paper - II A	History of Telangana (1724-2014 CE)	4	4
		DSE*	Paper - II B	Islamic History and Culture (Rise of Abbasids to Crusades)		
		DSE*	Paper - II C	Introduction to Indian Art and Architecture		

* DSC (Discipline Specific Course), SEC (Skill Enhancement Course) & DSE (Discipline Specific Elective) for Students of History.

** GE (Generic Elective) or Inter-Disciplinary Course for Students of Social Sciences other than History (5 Credits + 1 Tutorial).

10.05.2016.

Palamuru University, Mahabubnagar - 509 001

B.A. (HISTORY) SYLLABUS

Semester - I

History of India (From Earliest Times to c.700 CE)

Discipline Specific Course - Paper - I

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*.

Palamuru University, Mahabubnagar - 509 001
B.A. (HISTORY) SYLLABUS
Semester - II
History of India (From Earliest Times to c.700 CE)
Discipline Specific Course - Paper - II

Module-I: 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 and Economy - Art and Architecture - Growth of Education and Literature - Religious Conditions.

Module-III: Bhakti and Sufi Movements and their 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 – Brief History.

Module-V: Vijayanagara – Polity – Administration - Society and Economy – Religion – Art and Architecture – Language and Literature – 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.

PALAMURU UNIVERSITY
B.A. (HISTORY) SYLLABUS
Semester - III
Historical and Cultural Tourism in India
Skill Enhancement Course - Paper - I

The main objective of this course is to make student understand the relevance of Tourism as history and its relationship with culture. This course not only deals with the various aspects of tourism industry but also deals with the impact of tourism. This course also brings out the growing trends in tourism and the demand it is generating in the present times.

Module-I: Tourism – Concept and Meaning – Nature – Scope - Tourism as an Industry - Socio-Economic Impact of Tourism - History of Tourism Development in India - Promotional Strategies of Tourism - Tools of Publicity, Role of Films, Television, Press, Poster-display, Brochures, Role of Guides - Historical Tourism - Monuments, Religious and Secular - Historical Sites - Historical Events - Impact of Tourism Development on Protection and Conservation of Historical Monuments and Sites and Vice-Versa - Socio-Cultural Tourism: Fairs and Festivals of India - Performing Arts (Dance, Drama and Music) - Museums, Art - Galleries, Yoga and Health Centers - Indian Cuisine.

Module-II: Eco-Tourism - Beaches, Hill-Resorts, Surf-Riding, Ballooning, Rafting, Gliding - Wild-life Sanctuaries - National Parks, Safaris, Mountaineering –Trekking – Skiing - Sports Tourism - Tourism in Telangana – Tourist Places - Tourism Handicrafts: Textiles – Metal Work, Stone and Wood Carvings, Furniture, Jewellery, Toys, Musical Instruments – Terracotta - Display and Sale of Handicrafts - Shops at Heritage Centers – Organizing Exhibitions – Duty Free Shops.

Recommended Books:

Dallen, J. Timothy, *Cultural Heritage and Tourism: An Introduction (Aspects of Tourism Texts)*, Channel View Publications, 2011.
INTACH, *Heritage and Development: Recent Perspectives*, Aryan Books International, 2012.
K.R. Gupta, *Concise Encyclopedia of India: (Places of Historical and Tourist Interest)*, 2010.
Melanie, K. Smith, *Issues in Cultural Tourism Studies*, Psychology Press, 2003.
P.N. Girija Prasad, *Eco-Tourism and Its Development*, Adhyayan Publishers, 2012.
S.P. Gupta & Lal Krishna (eds.), *Cultural Tourism in India: Museums, Monuments and Arts*, 2003.
V.K. Singh, *Historical and Cultural Tourism in India*, Aadi Publications, 2008.
Vaibhav Chauhan, *Heritage Tourism: Territory Unexplored*.
Vanaja Uday, *Cultural Tourism and Performing Arts of Andhra Pradesh: Prospects and Perspectives*, Research India Press, 2012.
A.K. Bhatia, *Tourism Development – Principles & Practices*, Sterling Publishers, 2016.
Sampad Kumar, Swain & Jitendra Mohan Mishra, *Principles and Practices in Tourism*, OUP, 2011.
Indira, *Tourism in Andhra Pradesh: Growth and Developments, 1956-2007*, Research India Press, New Delhi, 2014.
D. Satyanarayana, *Kotha Paryataka Sthalalu* (Telugu).

PALAMURU UNIVERSITY

B.A. (HISTORY) SYLLABUS
Semester - III
History of India (1526-1857 CE)
Discipline Specific Course - Paper - III

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 and His Administration – Peshwas - Sikhs.

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*, Macmillan, 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.
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.

PALAMURU UNIVERSITY

B.A. (HISTORY) SYLLABUS

Semester - IV

Archives and Museums

Skill Enhancement Course - Paper - II

This course introduces students to the institutions that house and maintain documentary, visual and material remains of the past. Students will be encouraged to undertake collection, documentation and exhibition of such materials in their localities and colleges. Visit to National Archives and National Museum are an integral part of the course.

Module-I: Definition of Archives – Scope – Types of Archives – Development of Archives – National and State Archives in India - Archives – Understanding the Traditions of Preservation – Collection - Purchase –Documentation: Accessioning – Indexing – Cataloguing – Digital Documentation and De-accessioning - Chemical Preservation and Restoration.

Module-II: Definition of Museum - Introduction – Scope - Types of Museums - Significance of Museums - Museums in India - Museums – Collection – Field Exploration – Excavation – Purchase – Gift and Exchanges – Treasure Trove – Documentation - Indexing – Museum Presentation and Exhibition – Outreach Activities of Museums and Archives.

Recommended Books:

Saloni Mathur, *India by Design: Colonial History and Cultural Display*, University of California, 2007.

Sengupta, S., *Experiencing History through Archives*, Munshiram Manoharlal, Delhi, 2004.

Guha Thakurta, Tapati, *Monuments, Objects, Histories: Institution of Art in Colonial and Post-Colonial India*, New York, 2004.

Kathpalia, Y.P., *Conservation and Restoration of Archive Materials*, UNESCO, 1973.

Choudhary, R.D., *Museums of India and Their Maladies*, Agam Kala, Calcutta, 1988.

Nair, S.M., *Bio-Deterioration of Museum Materials*, Agam Kala Prakashan, 2011.

Agrawal, O.P., *Essentials of Conservation and Museology*, Sundeep Prakashan, New Delhi, 2007.

PALAMURU UNIVERSITY

B.A. (HISTORY) SYLLABUS

Semester - IV

History of India (1858-1964 CE)

Discipline Specific Course - Paper - IV

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 Indian 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, *Adhunika 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.

PALAMURU UNIVERSITY
MODEL QUESTION PAPER FOR
B.A. HISTORY (CBCS) EXAMINATION w.e.f. ~~2016-2017~~
(For All Semesters)
(5 Credit Course)

Time: 2 Hours Max. Marks : 80

Section – A **(4 x 5 = 20 Marks)**
(Short Answer Type)

I. Answer any five of the following Questions:

1.
2.
3.
4.
5.
6.
7.
8.

Section – B **(5 x 12 = 60 Marks)**
(Essay Answer Type)

II. Answer all the Questions:

9 (a)

or

(b)

10 (a)

or

(b)

11 (a)

or

(b)

12 (a)

or

(b)

13 (a)

or

(b)

***

PALAMURU UNIVERSITY
MODEL QUESTION PAPER FOR
B.A. HISTORY (CBCS) EXAMINATION w.e.f. ~~2016-2017~~
(For All Semesters)
(4 Credit Course)

Time: 2 Hours Max. Marks : 80

Section – A **(4 x 5 = 20 Marks)**
(Short Answer Type)

I. Answer any five of the following Questions:

1.
2.
3.
4.
5.
6.
7.
8.

Section – B **(4 x 15 = 60 Marks)**
(Essay Answer Type)

II. Answer all the Questions:

9 (a)

or

(b)

10 (a)

or

(b)

11 (a)

or

(b)

12 (a)

or

(b)

***

PALAMURU UNIVERSITY
MODEL QUESTION PAPER FOR
B.A. HISTORY (CBCS) w.e.f. ~~2016-2017~~
Internal Assessment Test
(For All Semesters)

Time: 30 Minutes Max. Marks : 10

I. Map-Pointing and Assignment. (5 Marks)

(a) Assignment Topic should be from the Syllabus.

(b) One aspect from each Module (Total 5).

II. Reporting on Local History. (5 Marks)

Visit, prepare a brief report on any aspect of local history.

***

PALAMURU UNIVERSITY

SCHEME OF INSTRUCTION AND SYLLABUS

B.Sc. MATHS

UNDER CBCS SCHEME

(FROM THE ACADEMIC YEAR 2017-18)

Telangana State Council of Higher Education

Government of Telangana

Mathematics Course Structure

(B.Sc. Common Core Syllabus for All Universities in Telangana with effect from 2016-17)

Contents

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2.4 **Theory of Equations** . . . 17
2.5 **Real Analysis** . . . 18
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2.7 **Number Theory** . . . 25
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2.9 **Probability and Statistics** . . . 31
2.10 **Mathematical Modeling** . . . 32
2.11 **Lattice Theory** . . . 33
2.12 **Linear Algebra** . . . 34
2.12.1 **Practicals Question Bank** . . . 35
2.13 **Solid Geometry** . . . 38
2.13.1 **Practicals Question Bank** . . . 39
2.14 **Integral Calculus** . . . 43
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2.15 **Switching Circuits** . . . 47
2.16 **Graph Theory** . . . 48
2.17 **Elements of Number Theory** . . . 49
2.18 **Numerical Analysis** . . . 50
2.18.1 **Practicals Question Bank** . . . 51
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A Appendix-I **66**

B Appendix-II **68**

1 B.Sc. Course Structure Template

B.Sc. Course Structure Template

B.Sc. PROGRAMME

FIRST YEAR SEMESTER-I				
Code	Course Title	Course Type	HPW	Credits
BS101	Communication	AECC-1	2	2
BS102	English	CC-1A	5	5
BS103	Second Language	CC –2A	5	5
BS104	Optional - I **Differential Calculus**	DSC-1A	4 T + 2P = 6	4+1=5
BS105	Optional - II	DSC-2A	4 T + 2P = 6	4+1=5
BS106	Optional – III	DSC-3A	4 T + 2P = 6	4+1=5
			30	27
SEMESTER-II				
BS201	Environmental Studies	AECC-2	2	2
BS202	English	CC-1B	5	5
BS203	Second Language	CC –2B	5	5
BS204	Optional - I **Differential Equations**	DSC-1B	4 T + 2P = 6	4+1=5
BS205	Optional - II	DSC-2B	4 T + 2P = 6	4+1=5
BS206	Optional – III	DSC-3B	4 T + 2P = 6	4+1=5
			30	27

B.Sc. PROGRAMME

SECOND YEAR SEMESTER-III				
BS301	A/B **Logic& Sets/Theory of Equations**	SEC-1	2	2
BS302	English	CC-1C	5	5
BS303	Second Language	CC-2C	5	5
BS304	Optional - I **Real Analysis**	DSC-1C	4 T + 2P = 6	4+1=5
BS305	Optional - II	DSC-2C	4 T + 2P = 6	4+1=5
BS306	Optional – III	DSC-3C	4 T + 2P = 6	4+1=5
			30	27
SEMESTER-IV				
BS401	C/D **Transportation & Game Theory/ Number Theory**	SEC-2	2	2
BS402	English	CC -1D	5	5
BS403	Second Language	CC-2D	5	5
BS404	Optional - I **Algebra**	DSC-1D	4 T + 2P = 6	4+1=5
BS405	Optional - II	DSC-2D	4 T + 2P = 6	4+1=5
BS406	Optional – III	DSC-3D	4 T + 2P = 6	4+1=5
			30	27

B.Sc. Course Structure Template

B.Sc. PROGRAMME

THIRD YEAR SEMESTER-V				
Code	Course Title	Course Type	HPW	Credits
BS501	E/F Probability and Statistics/Mathematical Modelling	SEC-3	2	2
BS502	Lattice Theory	GE-1	2 T	2
BS503	Optional - I Linear Algebra	DSC-1E	3 T + 2P = 5	3+1=4
BS504	Optional –II	DSC-2E	3 T + 2P = 5	3+1=4
BS505	Optional –III	DSC-3E	3 T + 2P = 5	3+1=4
BS506	Optional –I A/B/C Slid Geometry/ Integral Calculus	DSE- 1E	3 T + 2P = 5	3+1=4
BS507	Optional – II A/B/C	DSE-2E	3 T + 2P = 5	3+1=4
BS508	Optional – III A/B/C	DSE-3E	3 T + 2P = 5	3+1=4
			34	28
SEMESTER-VI				
BS601	G/H Boolean Algebra/Graph Theory	SEC-4	2	2
BS602	Elements of Number Theory	GE-2	2 T	2
BS603	Optional - I Numerical Analysis	DSC-1F	3 T + 2P = 5	3+1=4
BS604	Optional –II	DSC-2F	3 T + 2P = 5	3+1=4
BS605	Optional –III	DSC-3F	3 T + 2P = 5	3+1=4
BS606	Optional –I A/B/C Complex Analysis/ Vector Calculus	DSE- 1F	3 T + 2P = 5	3+1=4
BS607	Optional – II A/B/C	DSE-2F	3 T + 2P = 5	3+1=4
BS608	Optional – III A/B/C	DSE-3F	3 T + 2P = 5	3+1=4
			34	28
	TOTAL Credits			164

B.Sc. PROGRAMME

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	AECC	2	2	4
2	SEC	4	2	8
3	CC Language DSC DSC	8 12 6	5 5 4	40 60 24
4	DSE	6	4	24
5	GE	2	2	4
	TOTAL	**40**		**164**
	Optionals Total	24		108

2 Syllabus: Theory and Practicals

2.1 Differential Calculus

DSC-1A **BS:104**

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 some basic notions in differential calculus.
Outcome: By the time students completes the course they realize wide ranging applications of the subject.

Unit- I

Successive differentiation- Expansions of Functions- Mean value theorems

Unit- II

Indeterminate forms - Curvature and Evolutes

Unit- III

Partial differentiation - Homogeneous functions- Total derivative.

Unit- IV

Maxima and Minima of functions of two variables – Lagrange's Method of multipliers –Asymptotes-Envelopes.

Text:

- Shanti Narayan and Mittal,*Differential Calculus*

References:

- William Anthony Granville, Percey 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 nth 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
$$\frac{d^n y}{dx^n} = \frac{1}{2}n(n-1)\frac{d^2y}{dx^2} - n(n-2)\frac{dy}{dx} + \frac{1}{2}(n-1)(n-2)y.$$

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) $x - \frac{x^2}{2} < \log(1+x) < x - \frac{x^2}{2(1+x)}$.

   (ii) $x - \frac{x^2}{2} + \frac{x^3}{3(1+x)} < \log(1+x) < x - \frac{x^2}{2} + \frac{x^3}{3}$.

8. Prove that
$$e^{ax} \sin bx = bx + abx^2 + \frac{3a^2b - b^3}{3!}x^3 + ... + \frac{(a^2+b^2)^{\frac{1}{2}n}}{n!}x^n \sin(n \tan^{-1} \frac{b}{a}) + ...$$

9. Show that
$$\cos^2 x = 1 - x^2 + \frac{1}{3}x^4 - \frac{2}{45}x^6 .....$$

10. Show that

$$e^{m\tan^{-1}x} = 1 + mx + \frac{m^2}{2!}x^2 + \frac{m(m^2-2)}{3!}x^3 + \frac{m^2(m^2-8)}{4!}x^4 + ...$$

Unit-II

11. Find the radius of curvature at any point on the curves

    (i) $y = c\cosh(\frac{x}{c})$. (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 $4(\frac{a^2}{b} - \frac{b^2}{a})$.

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) $\lim_{x\to 0}\frac{xe^x - \log(1+x)}{x^2}$

    (ii) $\lim_{x\to 0}\frac{x\cos x - \log(1+x)}{x^2}$

    (iii) $\lim_{x\to 0}\frac{e^x\sin x - x - x^2}{x^2 + x\log(1-x)}$

    (iv) $\lim_{x\to 0}\{\frac{1}{x} - \frac{1}{x^2}\log(1+x)\}$

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) $x\log(\tan x), (x \to 0)$ ***(ii)*** $x\tan(\pi/2 - x), (x \to 0)$

(iii) $(a - x)\tan(\pi x/2a), (x \to 0)$

20. Determine the limits of the following functions:

(i) $\frac{e^x - e^{-x} - x}{x^2 \sin x}, (x \to 0)$ ***(ii)*** $\frac{\log x}{x^3}, (x \to \infty)$

(iii) $\frac{1 + x\cos x - \cosh x - \log(1+x)}{\tan x - x}, (x \to 0)$ ***(iv)*** $\frac{\log(1+x)\log(1-x) - \log(1-x^2)}{x^4}, (x \to 0)$

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

$$\frac{\partial^2 z}{\partial x \partial y} = \frac{\partial^2 z}{\partial y \partial x} \quad and \quad \frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial y^2} = \left(\frac{\partial^2 z}{\partial x \partial y}\right)^2$$

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

$$\frac{\partial f}{\partial y}.\frac{\partial \varphi}{\partial z}.\frac{dz}{dx} = \frac{\partial f}{\partial x}.\frac{\partial \varphi}{\partial y}.$$

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

$$\frac{d^2 y}{dx^2}.\frac{d^2 x}{dy^2} = \frac{4a^6}{xy(xy - 2a^2)^3}.$$

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) $y^3 - x^3 + y^2 + x^2 + y - x + 1 = 0$.

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. $y\prime = \sin(x+y) + \cos(x+y)$
2. $xdy - ydx = a(x^2+y^2)dy$
3. $x^2ydx - (x^3+y^3)dy = 0$
4. $(y+z)dx + (x+z)dy + (x+y)dz = 0$
5. $y\sin 2xdx - (1+y^2+\cos^2 x)dy = 0$
6. $y + px = p^2x^4$
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 $axyp^2 + (x^2 - ay^2 - b)p - xy = 0$

Unit-II

Solve the following differential equations:

11. $D^2y + (a+b)Dy + aby = 0$
12. $D^3y - D^2y - Dy - 2y = 0$
13. $D^3y + Dy = x^2 + 2x$
14. $y\prime\prime + 3y\prime + 2y = 2(e^{-2x} + x^2)$
15. $y^{(5)} + 2y\prime\prime\prime + y\prime = 2x + \sin x + \cos x$
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. $y\prime\prime + 3y\prime + 2y = 12e^x$
19. $y\prime\prime - y = \cos x$
20. $4y\prime\prime - 5y\prime = x^2e^x$

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. $r + s - 6t = \cos(2x + y)$

2.3 Logic and Sets

SEC-1A **BS:301**

Credits: 2
Theory : 2 hours/week

Objective: Students learn some concepts in set theory and logic.
Outcome: After the completion of the course students appreciate its importance in the development of computer science.

Unit- I

Basic Connectives and truth tables - Logical equivalence : Laws of Logic - Logical Implication : Rules Inference : The Use of Quantifiers - Quantifiers, Definitions, and proofs of Theorems.

Unit- II

Sets and Subsets - Set Operations and the Laws of Set Theory - Counting and Venn Diagrams - A First Word on Probability - The axioms of Probability - Conditional Probability: Independence - Discrete Random variables .

Text:

- Ralph P Grimaldi,*Discrete and Combinatorial Mathematics* (5e)

References:

- P R Halmos, *Naïve Set Theory*
- E Kamke , *Theory of Sets*

2.4 Theory of Equations

SEC-1B **BS:301**

Credits: 2
Theory: 2 hours /week

Objective: Students learn the relation between roots and coefficients of a polynomial equation, ,Descartes's rule of signs in finding the number of positive and negative roots if any of a polynomial equation bsides some other concepts.
Outcome: By using the concepts learnt the students are expected to solve some of the polynomial equations.

Unit- I

Graphic representation of a polynomial-Maxima and minima values of polynomials-Theorems relating to the real roots of equations-Existence of a root in the general equation -Imaginary roots-Theorem determining the number of roots of an equation-Equal roots-Imaginary roots enter equations in pairs-Descartes' rule of signs for positive roots- Descartes' rule of signs for negative roots.

Unit- II

Relations between the roots and coefficients-Theorem-Applications of the theorem-Depression of an equation when a relation exists between two of its roots-The cube roots of unity Symmetric functions of the roots-examples.

Text:

- W.S. Burnside and A.W. Panton, *The Theory of Equations*

References:

- C. C. Mac Duffee, *Theory of Equations*
- Hall and Knight , *Higher Algebra*

2.5 Real Analysis

DSC-1C **BS:304**

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 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 Integral Tests .

Unit- III

Sequences 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 I*
- 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 $\sigma_n = \frac{1}{n}(s_1 + s_2 + ... + s_n)$. 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?

9. Let $t_1 = 1$ and $t_{n+1} = [1 - \frac{1}{(n+1)^2}].t_n$ for all $n \geq 1$.

   (a) Show $\lim t_n$ exists.

   (b) What do you think $\lim t_n$ is?

   (c) Use induction to show $t_n = \frac{n+1}{2n}$.

   (d) Repeat part (b).

10. Let $s_1 = 1$ and $s_{n+1} = \frac{1}{3}(s_n + 1)$ for $n \geq 1$.

    (a) Find s_2, s_3 and s_4.

    (b) Use induction to show $s_n > \frac{1}{2}$ for all n.

    (c) Show (s_n) is a decreasing sequence.

    (d) Show $\lim s_n$ exists and find $\lim s_n$.

Unit-II

11. Let $a_n = 3 + 2(-1)^n$ for $n \in \mathbb{N}$.

    (a) List the first eight terms of the sequence (a_n).

    (b) Give a subsequence that is constant [takes a single value]. Specify the selection function σ.

12. Consider the sequences defined as follows:

    $a_n = (-1)^n$, $b_n = \frac{1}{n}$, $c_n = n^2$, $d_n = \frac{6n+4}{7n-3}$.

    (a) For each sequence, give an example of a monotone subsequence.

    (b) For each sequence, give its set of subsequential limits.

    (c) For each sequence, give its lim sup and lim inf.

    (d) Which of the sequences converges? diverges to $+\infty$? diverges to $-\infty$?

    (e) Which of the sequences is bounded?

13. Prove $\limsup |s_n| = 0$ if and only if $\lim s_n = 0$.

14. Let (s_n) and (t_n) be the following sequences that repeat in cycles of four:

$$(s_n) = (0, 1, 2, 1, 0, 1, 2, 1, 0, 1, 2, 1, 0, 1, 2, 1, 0, ...)$$

$$(t_n) = (2, 1, 1, 0, 2, 1, 1, 0, 2, 1, 1, 0, 2, 1, 1, 0, 2, ...)$$

    Find

    (a) $\liminf s_n + \liminf t_n$,

    (b) $\liminf(s_n + t_n)$,

    (c) $\liminf s_n + \limsup t_n$,

    (d) $\limsup(s_n + t_n)$,

(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)** $\sum\left(\frac{1}{(n+1)^2 2^n}\right)x^n$

(g) $\sum(\frac{3^n}{n.4^n})x^n$ **(h)** $\sum\big(\frac{(-1)^n}{n^2.4^n}\big)x^n$

22. For $n = 0, 1, 2, 3, ...$, let $a_n = \big[\frac{4+2(-1)^n}{5}\big]^n$.

    (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 $f_n \to f$ uniformly on a set S, and if $g_n \to g$ uniformly on S, then $f_n + g_n \to f + g$ 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 $\lim_{n\to\infty}\int_2^7 f_n(x)dx$. 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 $P = \{a = u_0 < u_1 < ... < u_m = b\}$ 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 $|\int_{-2\pi}^{2\pi} x^2 \sin^8(e^x)dx| \le \frac{16\pi^3}{3}$.

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) $\lim_{x\to 0}\frac{1}{x}\int_0^x e^{t^2}dt$ **(b)** $\lim_{h\to 0}\frac{1}{h}\int_3^{3+h} e^{t^2}dt$.

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 $[a,b]$.

2.6 Transportation and Game Theory

SEC-2C **BS:401**

Credits: 2
Theory: 2 hours /week

Objective: Students learn Transportation problem, assignment problem Games with mixed strategies.
Outcome: Students come to know about nice applications of Operations Research.

Unit- I

The Transportation and Assignment Problems : The Transportation Problem - A Streamlined Simplex Method for the Transportation Problem - The Assignment Problem.

Unit- II

Game Theory: The Formulation of Two-Person, Zero-Sum Games - Solving Simple Games—A Prototype Example - Games with Mixed Strategies - Graphical Solution Procedure - Solving by Linear Programming - Extensions.

Text:

- Frederick S Hillier and Gerald J Lieberman, *An Elementary Introduction to Operations Research* (9*e*)

References:

- Hamdy A Taha , *Operations Research :An introduction*
- Gupta and Kapur , *Operations Research*

2.7 Number Theory

SEC-2D **BS:401**

Credits: 2
Theory: 2 hours /week

Objective: Students will be exposed to some of the jewels like Fermat's theorem, Euler's theorem in the number theory.
Outcome: Student uses the knowledge acquired solving some divisor problems.

Unit- I

The Goldbach conjecture - Basic properties of congruences- Binary and Decimal Representation of lntegers - Number Theoretic Functions; The Sum and Number of divisors- The Mobius Inversion Formula- The Greatest integer function.

Unit- II

Euler's generalization of Fermat's Theorem: Euler's Phi function- Euler's theorem Some Properties of the Euler's Phi function.

Text:

- David M Burton,*Elementary Number Theory* (7*e*)

References:

- Thomas Koshy, *Elementary Number Theory and its Applications*
- Kenneth H Rosen, *Elementary Number Theory*

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 $a \longrightarrow \log_{10} a$ 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

$$\begin{bmatrix} cosx & sinx \\ -sinx & cosx \end{bmatrix}$$

is a group homomorphism. What is the kernel of the homomorphism?

19. Suppose that f is a homomorphism from $Z30$ to $Z30$ and $Kerf = \{0, 10, 20\}$. If $f(23) = 9$, determine all elements that map to 9.

20. How many Abelian groups (up to isomorphism) are there
    a. of order 6?
    b. of order 15?
    c. of order 42?
    d. of order pq, where p and q are distinct primes?
    e. 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 $Z_3 \bigoplus Z_6$.

29. Find all maximal ideals in
    a. Z_8.
    b. Z_{10}.
    c. Z_{12}.
    d. 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 $111, 111, 111, ..., 111$ 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 $x \to 2x$ a ring homomorphism?

40. Determine all ring homomorphisms from Z to Z.

2.9 Probability and Statistics

SEC-3E **BS:501**

Credits: 2
Theory: 2 hours /week

Objective: Students are exposed some basic ideas like random variables and its related concepts.
Outcome: Students will be able to their knowledge to solve some real world problems.

Unit- I

Random Variables; Continuous Random Variables - Expectation of a Random Variable - Jointly Distributed Random Variables - Moment Generating Functions.

Unit- II

Conditional Probability and Conditional Expectation Introduction ; The Discrete Case -The Continuous Case - Computing Expectations by Conditioning - Computing Variances by Conditioning - Computing Probabilities by Conditioning.

Text:

- Sheldon M Ross,*Introduction to Probability Models* (9e)

References:

- Miller and Miller, *Mathematical Statistics with Applications*
- Hogg, McKeanand Craig; *Introduction to Mathematical Statistics*
- Gupta and Kapur, *Mathematical Statistics*

2.10 Mathematical Modeling

SEC-3F **BS:501**

Credits: 2
Theory: 2 hours /week

Objective: Some of the Physics problems will be solved using Differential Equations.
Outcome: Student realizes some beautiful problems can be modeled by using differential equations.

Unit- I

Linear Models-Nonlinear Models-Modeling with Systems of First-Order DEs.

Unit- II

Linear Models: Initial-Value Problems-Spring/Mass Systems: Free Undamped Motion Spring/Mass Systems: Free Damped Motion-Spring/Mass Systems: Driven Motion-Series Circuit Analogue-Linear Models: Boundary-Value Problems

Text:

- Dennis G Zill,*A first course in differential equations with modeling applications*

References:

- Shepley L. Ross, *Differential Equations*
- I. Sneddon , *Elements of Partial Differential Equations*

2.11 Lattice Theory

GE-1 **BS:502**

Credits: 2
Theory: 2 hours /week

Objective: Students will be exposed to elements of theory of lattices.
Outcome: Students apply their knowledge to solve some problems on switching circuits.

Unit- I

Lattices: Properties and Examples of Lattices - Distributive Lattices - Boolean Algebras - Boolean Polynomials - Ideals, Filters, and Equations - Minimal Forms of Boolean Polynomials.

Unit- II

Applications of Lattices - Switching Circuits - Applications of Switching Circuits - More Applications of Boolean Algebras.

Text:

- Rudolf Lidl and Gunter Pilz,*Applied Abstract Algebra* (2*e*)

References:

- Davey and Priestly, *Introduction to Lattices and Order*

2.12 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 -The Dimension of a Vector Space

Unit- II

Rank-Change of Basis - Eigenvalues and Eigenvectors - The Characteristic Equation

Unit- III

Diagonalization -Eigenvectors and Linear Transformations -Complex Eigenvalues - Applications to Differential Equations -Orthogonality and Least Squares : Inner Product, Length, and Orthogonality -Orthogonal Sets.

Text:

- David C Lay,*Linear Algebra and its Applications* 4*e*

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*

2.12.1 Practicals Question Bank

Linear Algebra

Unit-I

1. Let H be the set of all vectors of the form $\begin{bmatrix} -2t \\ 5t \\ 3t \end{bmatrix}$. Find a vector $\mathbf{v}$ in $\mathbb{R}^3$ such that $H = Span\{\mathbf{v}\}$.Why does this show that H is a subspace of $\mathbb{R}^3$?

2. Let V be the first quadrant in the xy-plane; that is, let $V = \left\{ \begin{bmatrix} x \\ y \end{bmatrix} : x \geq 0, y \geq 0 \right\}$

   a. If $\mathbf{u}$ and $\mathbf{v}$ are in V, is $\mathbf{u} + \mathbf{v}$ in V? Why?

   b. Find a specific vector $\mathbf{u}$ in V and a specific scalar c such

3. Let $\mathbf{v_1} = \begin{bmatrix} 1 \\ -2 \\ 3 \end{bmatrix}$ and $\mathbf{v_2} = \begin{bmatrix} -2 \\ 7 \\ -9 \end{bmatrix}$. Determine if $\{\mathbf{v_1}, \mathbf{v_2}\}$ is a basic for $\mathbb{R}^3$. Is $\{\mathbf{v_1}, \mathbf{v_2}\}$ a basis for $\mathbb{R}^2$?

4. The set $\mathcal{B} = \{1 + t^2, t + t^2, 1 + 2t + t^2\}$ is a basis for $\mathbb{P}_2$. Find the coordinate vector of $\mathbf{p}(t) = 1 + 4t + 7t^2$ relative to $\mathcal{B}$.

5. The set $\mathcal{B} = \{1 - t^2, t - t^2, 2 - t + t^2\}$ is a basis for $\mathbb{P}_2$. Find the coordinate vector of $\mathbf{p}(t) = 1 + 3t - 6t^2$ relative to $\mathcal{B}$.

6. The vector $\mathbf{v_1} = \begin{bmatrix} 1 \\ -3 \end{bmatrix}$, $\mathbf{v_2} = \begin{bmatrix} 2 \\ -8 \end{bmatrix}$, $\mathbf{v_3} = \begin{bmatrix} -3 \\ 7 \end{bmatrix}$ $span\mathbb{R}^2$ but do not form a basis. Find two different ways to express $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$ as a linear combination of $\mathbf{v_1}, \mathbf{v_2}, \mathbf{v_3}$.

7. Find the dimension of the subspace of all vectors in $\mathbb{R}^3$ whose first and third entries are equal.

8. Find the dimension of the subspace H of $\mathbb{R}^2$ spanned by $\begin{bmatrix} 1 \\ -5 \end{bmatrix}, \begin{bmatrix} -2 \\ 10 \end{bmatrix}, \begin{bmatrix} -3 \\ 15 \end{bmatrix}$.

9. Let H be an n-dimensional subspace of an n-dimensional vector space V. Show that $H = V$.

10. Explain why the space $\mathbb{P}$ of all polynomials is an infinite dimensional space.

Unit-II

11. If a 4×7 matrix A has rank 3, find dim Nul A, dim Row A, and rank A^T.

12. If a 7×5 matrix A has rank 2, find dim Nul A, dim Row A, and rank A^T.

13. If the null space of an 8×5 matrix A is 3-dimensional, what is the dimension of the row space of A?

14. If A is a 3×7 matrix, what is the smallest possible dimension of Nul A?

15. Let $\mathbf{u} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$. Find $\mathbf{v}$ in $\mathbb{R}^3$ such that $\begin{bmatrix} 1 & -3 & 4 \\ 2 & -6 & 8 \end{bmatrix} = \mathbf{u}\mathbf{v}^T$.

16. 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.

17. Without calculations, list rank A and dim Nul A

$$A = \begin{bmatrix} 2 & 6 & -6 & 6 & 3 & 6 \\ -2 & -3 & 6 & -3 & 0 & -6 \\ 4 & 9 & -12 & 9 & 3 & 12 \\ -2 & 3 & 6 & 3 & 3 & -6 \end{bmatrix}.$$

18. Use a property of determinants to show that A and A^T have the same characteristic polynomial.

19. Find the characteristic equation of

$$A = \begin{bmatrix} 5 & -2 & 6 & -1 \\ 0 & 3 & -8 & 0 \\ 0 & 0 & 5 & 4 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

.

20. Find the characteristic polynomial and the real eigenvalues of $\begin{bmatrix} 4 & 0 & -1 \\ 0 & 4 & -1 \\ 1 & 0 & 2 \end{bmatrix}, \begin{bmatrix} -1 & 0 & 2 \\ 3 & 1 & 0 \\ 0 & 1 & 2 \end{bmatrix}$

Unit-III

21. Let $A = PDP^{-1}$ and compute A^4, where $P = \begin{bmatrix} 5 & 7 \\ 2 & 3 \end{bmatrix}$,$D = \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$

22. Let $\mathcal{B} = \{\mathbf{b_1}, \mathbf{b_2}, \mathbf{b_3}\}$ and $\mathcal{D} = \{\mathbf{d_1}, \mathbf{d_2}\}$ be bases for vector spaces V and W, respectively. Let $T : V \to W$ be a linear transformation with the property that $T(\mathbf{b_1}) = 3\mathbf{d_1} - 5\mathbf{d_2}$, $T(\mathbf{b_2}) = -\mathbf{d_1} + \mathbf{6d_2}$, $T(\mathbf{b_3}) = 4\mathbf{d_2}$. Find the matrix for T relative to $\mathcal{B}$ and $\mathcal{D}$.

23. Let $\mathcal{D} = \{\mathbf{d_1}, \mathbf{d_2}\}$ and $\mathcal{B} = \{\mathbf{b_1}, \mathbf{b_2}\}$ be bases for vector spaces V and W, respectively. Let $T : V \to W$ be a linear transformation with the property that $T(\mathbf{d_1}) = 3\mathbf{b_1} - 3\mathbf{b_2}$, $T(\mathbf{d_2}) = -\mathbf{2b_1} + \mathbf{5b_2}$. Find the matrix for T relative to $\mathcal{B}$ and $\mathcal{D}$.

24. Let $\mathcal{B} = \{\mathbf{b_1}, \mathbf{b_2}, \mathbf{b_3}\}$ be a basis for a vector space V and let $T : V \to \mathbb{R}^2$ be a linear transformation with the property that

$$T(x_1\mathbf{b_1} + x_2\mathbf{b_2} + x_3\mathbf{b_3}) = \begin{bmatrix} 2x_1 - 3x_2 + x_3 \\ -2x_1 + 5x_3 \end{bmatrix}$$

Find the matrix for T relative to $\mathcal{B}$ and the standard basis for $\mathbb{R}^2$.

25. Let $T : \mathbb{P}_2 \to \mathbb{P}_3$ be the transformation that maps a polynomial $\mathbf{p}(t)$ into the polynomial $(t + 3)\mathbf{p}(t)$.

a. Find the image of $\mathbf{p}(t) = 3 - 2t + t^2$.

b. Show that T is a linear transformation.

c. Find the matrix for T relative to the bases $\{1, t, t^2\}$ and $\{1, t, t^2, t^3\}$.

26. Assume the mapping $T : \mathbb{P}_2 \to \mathbb{P}_2$ 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 $\mathcal{B} = \{1, t, t^2\}$.

27. Define $T : \mathbb{P}_3 \to \mathbb{R}^4$ by $T(\mathbf{p}) = \begin{bmatrix} \mathbf{p}(-2) \\ \mathbf{p}(3) \\ \mathbf{p}(1) \\ \mathbf{p}(0) \end{bmatrix}$

a. Show that T is a linear transformation.

b. Find the matrix for T relative to the bases $\{1, t, t^2, t^3\}$ for $\mathbb{P}_3$ and the standard basis for $\mathbb{R}^4$.

28. Let A be a 2×2 matrix with eigenvalues -3 and -1 and corresponding eigenvectors $\mathbf{v}_1 = \begin{bmatrix} -1 \\ 1 \end{bmatrix}$ and $\mathbf{v}_2 = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$. Let $\mathbf{x}(t)$ be the position of a particle at time t. Solve the initial value problem $\mathbf{x}' = A\mathbf{x}$, $\mathbf{x}(0) = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$.

29. Construct the general solution of $\mathbf{x}' = A\mathbf{x}$. $A = \begin{bmatrix} -3 & 2 \\ -1 & -1 \end{bmatrix}, \begin{bmatrix} -7 & 10 \\ -4 & 5 \end{bmatrix}$

30. Compute the orthogonal projection of $\begin{bmatrix} 1 \\ 7 \end{bmatrix}$ onto the line through $\begin{bmatrix} -4 \\ 2 \end{bmatrix}$ and the origin.

2.13 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 and Cylinders: 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-The Cylinder- The Right Circular Cylinder.

Unit- III

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* (17*e*)

References:

- Khaleel Ahmed, *Analytical Solid Geometry*
- S L Loney , *Solid Geometry*
- Smith and Minton, *Calculus*

2.13.1 Practicals Question Bank

Solid Geometry

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 the 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 the 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-axal system of spheres

$$x^2+y^2+z^2-20x+30y-40z+29+\lambda(2x-3y+4z)=0.$$

9. Find the equation to the two spheres of the co-axal 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 sphere of a co-axal system and of any given sphere pass through a line.

Unit-II

11. Find the equation of the cone whose vertex is the point $(1,1,0)$ and whose guiding curve is

$$y=0, x^2+z^2=4.$$

12. The section of a cone whose vertex is P and guiding curve the ellipse $x^2/a^2 + y^2/b^2 = 1, z = 0$ 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 enveloping cone of the sphere

$$x^2 + y^2 + z^2 - 2x + 4z = 1$$

with its vertex at $(1, 1, 1)$.

14. Find the equation of the quadric cone whose vertex is at the origin and which passes through the curve given by the equations

$$ax^2 + by^2 + cz^2 = 1, lx + my + nz = p.$$

15. Find the equation of the cone with vertex at the origin and direction cosines of its generators satisfying the relation

$$3l^2 - 4m^2 + 5n^2 = 0.$$

16. 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

$$x^2 + 2y^2 = 1, z = 3.$$

17. Find the equation of the right circular cylinder of radius 2 whose axis is the line

$$\frac{(x-1)}{2} = (y-2) = \frac{(z-3)}{2}.$$

18. The axis 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

$$10x^2 + 5y^2 + 13z^2 - 12xy - 6yz - 4zx - 8x + 30y - 74z + 59 = 0.$$

19. Find the equation of the circular cylinder whose guiding circle is

$$x^2 + y^2 + z^2 - 9 = 0, x - y + z = 3.$$

20. 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.

Unit-III

21. Find the points of intersection of the line

$$-\frac{1}{3}(x+5) = (y-4) = \frac{1}{7}(z-11)$$

with the conicoid

$$12x^2 - 17y^2 + 7z^2 = 7.$$

22. Find the equations to the tangent planes to

$$7x^2 - 3y^2 - z^2 + 21 = 0,$$

which pass through the line,

$$7x - 6y + 9 = 3, z = 3.$$

23. 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

$$lx + my + nz = 0.$$

24. Show that the plane $3x + 12y - 6z - 17 = 0$ touches the conicoid $3x^2 - 6y^2 + 9z^2 + 17 = 0$, and find the point of contact.

25. 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.

26. 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 $1/k$.

27. If the section of the enveloping cone 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

$$\frac{x^2 + y^2}{a^2 + b^2} + \frac{z^2}{c^2} = 1.$$

28. Find the locus of points from which three mutually perpendicular tangent lines can be drawn to the conicoid $ax^2 + by^2 + cz^2 = 1$.

29. $P(1, 3, 2)$ 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.

2.14 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-Changing the order of Integration

Unit- II

Triple Integrals: The Integrals over a Box- Elementary Regions in Space-Triple Integrals in General

Unit- III

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

Integral Calculus

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 $\iint_D xydA$, 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 $\iint_D 3ydA$, 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. 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 reverse. Evaluate this new integral and check your answer agrees with part (a).

10. Find the volume of the region under the graph of
$$f(x, y) = 2 - |x| - |y|$$
and above the $xy-$plane

Unit-II

Integrate the following over the indicated region W.

11. $f(x, y, z) = 2x - y + z$; W is the region bounded by the cylinder $z = y^2$, the $xy-$plane, the planes $x = 0$, $x = 1$, $y = -2$, $y = 2$.

12. $f(x, y, z) = y$; W is the region bounded by the plane $x + y + z = 2$, the cylinder $x^2 + z^2 = 1$ and $y = 0$.

13. $f(x, y, z) = 8xyz$; W is the region bounded by the cylinder $y = x^2$, the plane $y + z = 9$ and the $xy-$plane.

14. $f(x,y,z) = z$; 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 $z = 0$.

15. $f(x,y,z) = 1 - z^2$; W is the tetrahedron with vertices $(0,0,0)$, $(1,0,0)$,$(0,2,0)$ and $(0,0,3)$.

16. $f(x,y,z) = 3x$; W is the region in the first octant bounded by $z = x^2 + y^2$,$x = 0$,$y = 0$ and $z = 4$.

17. $f(x,y,z) = x + y$; W is the region bounded by the cylinder $x^2 + 3z^2 = 9$ and the plane $y = 0$, $x + y = 3$.

18. $f(x,y,z) = z$; W is the region bounded by $z = 0$, $x^2 + 4y^2 = 4$ and $z = x + 2$.

Unit-III

Integrate the following over the indicated region W.

19. $f(x,y,z) = 4x + y$; W is the region bounded by $x = y^2$, $y = z$, $x = y$ and $z = 0$.

20. $f(x,y,z) = x$; W is the region in the first octant bounded by $z = x^2 + 2y^2$, $z = 6 - x^2 - y^2$, $x = 0$ and $y = 0$.

Let $T(u,v) = (3u, -v)$

21. Write $T(u,v)$ as $A \begin{bmatrix} u \\ v \end{bmatrix}$ for a suitable matrix A.

22. Describe the image $D = T(D^*)$, where D^* is the unit square $[0,1] \times [0,1]$.

23. Determine the value of
$$\iint_D \sqrt{\frac{x+y}{x-2y}}\, dA$$
where D is the region in $\mathbf{R}^2$ enclosed by the lines $y = \frac{x}{2}$, $y = 0$ and $x + y = 1$.

24. Evaluate
$$\iint_D \sqrt{\frac{(2x+y-3)^2}{(2y-x+6)^2}}\, dxdy.$$
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.)

25. Evaluate
$$\iint_D \cos(x^2 + y^2)\, dA.$$
where D is the shaded region in the following figure-1.

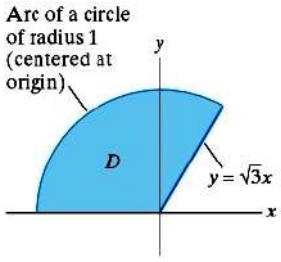

Figure 1:

26. 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.)

27. 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 $z = 2x^2 + 2y^2 - 6$.

2.15 Switching Circuits

SEC-4G **BS:601**

Credits: 2
Theory: 2 hours /week

Objective: Students will be exposed to Elements of theory of lattices.
Outcome: Students apply their Knowledge in solving some problems on switching circuits.

Unit- I

Lattices: Properties and Examples of Lattices- Distributive Lattices- Boolean Algebras - Boolean Polynomials - Ideals, Filters, and Equations - Minimal Forms of Boolean Polynomials.

Unit- II

Applications of Lattices - Switching Circuits - Applications of Switching Circuits - More Applications of Boolean Algebras.

Text:

- Rudolf Lidl and Gunter Pilz,*Applied Abstract Algebra* (2*e*)

References:

- Davey and Priestly, *Introduction to Lattices and Order*

2.16 Graph Theory

SEC-4H **BS:601**

Credits: 2
Theory: 2 hours /week

Objective: The students will be exposed to some basic ideas of group theory.
Outcome: Students will be able to appreciate the subject learnt.

Unit- I

Graphs: A Gentle Introduction - Definitions and Basic Properties - Isomorphism.

Unit- II

Paths and Circuits: Eulerian Circuits - Hamiltonian Cycles -The Adjacency Matrix Shortest Path Algorithms.

Text:

- Edgar Goodaire and Michael M. Parmenter,*Discrete Mathematics with Graph Theory* (2e)

References:

- Rudolf Lidl and Gunter Pilz, *Applied Abstract Algebra*
- S Pirzada , *Introduction to Graph Theory*

2.17 Elements of Number Theory

GE-2 **BS:602**

Credits: 2
Theory: 2 hours /week

Objective: Students will be exposed to some elements of number theory.
Outcome: Students apply their knowledge problems on check digits, modular designs.

Unit- I

The Division Algorithm- Number Patterns- Prime and Composite Numbers Fibonacci and Lucas' numbers- Fermat Numbers- GCD-The Euclidean AlgorithmThe Fundamental Theorem of Arithmetic-LCM- Linear Diophantine Equations Congruences- Linear Congruences.

Unit- II

The Pollard Rho Factoring Method- Divisibility Tests- Modular Designs- Check Digits- The Chinese Remainder Theorem- General Linear Systems- 2X2 Systems Wilson's Theorem- Fermat's Little Theorem- Pseudo primes- Euler's Theorem.

Text:

- Thomas Koshy,*Elementary Number Theory with Applications*

References:

- David M Burton, *Elementary Number Theory*

2.18 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 - Newton's Method and Its Extensions - Error Analysis for Iterative Methods - Accelerating Convergence - Zeros of Polynomials and Müller's Method - Survey of Methods and Software.

Unit- II

Interpolation and Polynomial Approximation: Interpolation and the Lagrange Polynomial - Data Approximation and Neville's Method - Divided Differences - Hermite Interpolation - Cubic Spline Interpolation.

Unit- III

Numerical Differentiation and Integration: Numerical Differentiation - Richardson's Extrapolation - Elements of Numerical Integration- Composite Numerical Integration - Romberg Integration - Adaptive Quadrature Methods - Gaussian Quadrature.

Text:

- Richard L. Burden and J. Douglas Faires,*Numerical Analysis* (9*e*)

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*

2.18.1 Practicals Question Bank

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 $f(x) = 3(x+1)(x-\frac{1}{2})(x-1)$.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 to within 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's method **c.** Secant method

d. method of False Position **e.** Müller's method

Unit-II

11. For the given functions $f(x)$, let $x_0 = 0, x_1 = 0.6$, and $x_2 = 0.9$. Construct interpolation polynomials 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 functions $f(x)$, let $x_0 = 1, x_1 = 1.25$, and $x_2 = 1.6$. Construct interpolation polynomials of 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.** $f(x) = \log_{10}(3x - 1)$

13. Let $P_3(x)$ be the interpolating polynomial 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.

$x_0 = 0$	$P_0 = 1$			
$x_1 = 0.25$	$P_1 = 2$	$P_{01} = 2.6$		
$x_2 = 0.5$	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. 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 $f(0.1) = -0.29004986, f(0.2) = -0.56079734, f(0.3) = -0.81401972, f(0.4) = -1.0526302$

18. 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 $f(-1) = 0.86199480, f(-0.5) = 0.95802009, f(0) = 1.0986123, f(0.5) = 1.2943767$

19. Determine the natural cubic spline S that interpolates the data $f(0) = 0, f(1) = 1$, and $f(2) = 2$.

20. Determine the clamped cubic spline S that interpolates the data $f(0) = 0, f(1) = 1, f(2) = 2$ and satisfies $s'(0) = s'(2) = 1$.

Unit-III

21. Use the forward-difference formulas and backward-difference formulas 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	0.00000	
0.2	0.74140	
0.4	1.3718	

22. 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 $x_0 \pm 2h$.

23. 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 an $O(h^3)$ formula for $f'(x_0)$.

24. Show that

$$\lim_{h \to 0} \left(\frac{2+h}{2-h}\right)^{1/h} = e.$$

25. 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. $\int_{0}^{1} x^2 e^{-x} dx$

26. 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?

27. 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.

28. Romberg integration is used to approximate

$$\int_2^3 f(x)dx.$$

If $f(2) = 0.51342, f(3) = 0.36788, R_{31} = 0.43687$, and $R_{33} = 0.43662$, find $f(2.5)$.

29. Use Romberg integration to compute $R_{3,3}$ for the following integrals.

a. $\int_1^{1.5} x^2 \ln x dx$ **b.** $\int_0^1 x^2 e^{-x} dx$

30. Use Romberg integration to compute $R_{3,3}$ for the following integrals.

a. $\int_{-1}^1 (\cos x)^2 dx$ **b.** $\int_{-0.75}^{0.75} x \ln(x+1) dx$

2.19 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 solvng 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.
Elementary Functions: The Exponential Function - The Logarithmic Function - Branches and Derivatives of Logarithms - Some Identities Involving Logarithms Complex Exponents - Trigonometric Functions - Hyperbolic Functions.

Unit- II

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- III

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* (8*e*)

References:

- Joseph Bak and Donald J Newman, *Complex analysis*
- Lars V Ahlfors , *Complex Analysis*
- S.Lang, *Complex Analysis*
- B Choudary, *The Elements Complex Analysis*

2.19.1 Practicals Question Bank

Complex Analysis

Unit-I

1. Sketch the following sets and determine which are domains:

   (a) $|z-2+i| \leq 1$; **(b)** $|2z+3| > 4$;

   (c) $Imz > 1$; **(d)** Im z = 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

   $$\lim_{z \to z_0} f(z)g(z) = 0$$

   if

   $$\lim_{z \to z_0} f(z) = 0$$

   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 $f\prime(z)$ 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) $f(z) = e^{-y} \sin x - ie^{-y} \cos x$ **(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)** $u(x,y) = y/(x^2+y^2)$.

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. Evaluate

$$\int_C f(z)dz.$$

$f(z) = (z+2)/z$ and C is

(a) the semicircle $z = 2e^{i\theta}$ $(0 \le \theta \le \pi)$

(b) the semicircle $z = 2e^{i\theta}$ $(\pi \le \theta \le 2\pi)$

(c) the circle $z = 2e^{i\theta}$ $(0 \le \theta \le 2\pi)$.

12. $f(z)$ is defined by means of the equations

$$f(z) = \begin{cases} 1 & when \quad y < 0 \\ 4y & when \quad y > 0 \end{cases}$$

and C is the arc from $z = -1 - i$ to $z = 1 + i$ along the curve $y = x^3$.

13. 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

$$\left| \int_C \frac{dz}{z^4} \right| \le 4\sqrt{2}$$

without evaluating the integral.

14. Let C_R denote the upper half of the circle $|z| = R(R > 2)$, taken in the counterclockwise direction. Show that

$$\left| \int_{C_R} \frac{2z^2 - 1}{z^4 + 5z^2 + 4} dz \right| \le \frac{\pi R(2R^2+1)}{(R^2-1)(R^2-4)}.$$

Then, by dividing the numerator and denominator on the right here by R^4, show that the value of the integral tends to zero as R tends to infinity.

15. By finding an antiderivative, evaluate each of these integrals, where the path is any contour between the indicated limits of integration:

(a) $\int_i^{i/2} e^{\pi z} dz$ **(b)** $\int_0^{\pi+2i} \cos\left(\frac{z}{2}\right) dz$ **(c)** $\int_1^3 (z-2)^3 dz$

16. Use an antiderivative to show that for every contour C extending from a point z_1 to a point z_2,

$$\int_C z^n dz = \frac{1}{n+1}(z_2^{n+1} - z_1^{n+1}) \qquad (n = 0, 1, 2, ...).$$

17. Let C_0 and C denote the circles $z = z_0 + Re^{i\theta}(-\pi \leq \theta \leq \pi)$ and $z = Re^{i\theta}(-\pi \leq \theta \leq \pi)$, respectively.
(a) Use these parametric representations to show that

$$\int_{C_0} f(z - z_0)dz = \int_C f(z)dz$$

18. Evaluate the integral

$$\int_c z^m \bar{z}^n dz,$$

where m and n are integers and C is the unit circle $|z| = 1$, taken counterclockwise.

19. $f(z) = 1$ and C is an arbitrary contour from any fixed point z_1 to any fixed point z_2 in the z plane. Evaluate

$$\int_C f(z)dz$$

20. $f(z) = \pi\exp(\pi\bar{z})$ 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-III

21. 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) $\int_C \frac{e^{-z}}{z-(\pi i/2)}dz$ **(b)** $\int_C \frac{\cos z}{z(z^2+8)}dz$ **(c)** $\int_C \frac{z}{2z+1}dz$

22. Find the value of the integral of $g(z)$ around the circle $|z - i| = 2$ in the positive sense when

(a) $g(z) = \frac{1}{z^2+4}$ **(b)** $g(z) = \frac{1}{(z^2+4)^2}$

23. C be the circle $|z| = 3$, described in the positive sense. Show that if

$$g(z) = \int_C \frac{2s^2 - s - 2}{s - z}ds \qquad (|z| \neq 3)$$

then $g(2) = 8\pi i$. What is the value of $g(z)$ when $|z| > 3$?

24. Let C be any simple closed contour, described in the positive sense in the z plane, and write

$$g(z) = \int_C \frac{s^3 + 2s}{(s - z)^3}ds$$

Show that $g(z) = 6\pi iz$ when z is inside C and that $g(z) = 0$ when z is outside.

25. Show that if f is analytic within and on a simple closed contour C and z_0 is not on C, then

$$\int_C \frac{f'(z)}{z - z_0}dz = \int_C \frac{f(z)}{(z - z_0)^2}dz.$$

26. 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

$$\int_0^\pi e^{a\cos\theta} \cos(a \sin\theta) d\theta = \pi.$$

27. Suppose that $f(z)$ is entire and that the harmonic function $u(x, y) = Re[f(z)]$ has an upper bound u_0 ; that is, $u(x, y) \leq u_0$ for all points (x, y) in the xy plane. Show that $u(x, y)$ must be constant throughout the plane.

28. 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 occurs on the boundary of R and never in the interior. Do this by applying the corresponding result for *maximum values* to the function $g(z) = 1/f(z)$.

29. 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 not 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.

30. Let f be the function $f(z) = e^z$ and R the rectangular region $0 \leq x \leq 1$, $0 \leq y \leq \pi$. Finding points in R where the component function $u(x, y) = Re[f(z)]$ reaches its *maximum* and *minimum values*.

2.20 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 IntegralsConservative Vector Fields-Surface Integrals: Introductory Example : Flow Through a PipeEvaluation of Surface Integrals.

Unit- II

Volume Integrals: Evaluation of Volume integrals
Gradient, Divergence and Curl: Partial differentiation and Taylor series-Partial differentiationTaylor series in more than one variable-Gradient of a scalar field-Gradients, conservative fields and potentials-Physical applications of the gradient.

Unit- III

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*

2.20.1 Practicals Question Bank

Vector Calculus

Unit-I

1. Evaluate the line integral
$$\int_C \mathbf{F} \times \mathbf{dr},$$
where $\mathbf{F}$ 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
$$\int_C x + y^2 \mathbf{dr},$$
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
$$\int_C \mathbf{F}.\mathbf{dr}$$
where $\mathbf{F} = (5z^2, 2x, x + 2y)$ 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 $\mathbf{u} = (y^2, x, z)$ along the curve given by $z = y = e^x$ from $x = 0$ to $x = 1$.

5. Evaluate the surface integral of $\mathbf{u} = (y, x^2, z^2)$, over the surface S, where S is the triangular surface on $x = 0$ with $y \geq 0, z \geq 0, y + z \leq 1$, with the normal n directed in the positive x direction.

6. Find the surface integral of $\mathbf{u} = \mathbf{r}$ over the part of the paraboloid $z = 1 - x^2 - y^2$ with $z > 0$, with the normal pointing upwards.

7. If S is the entire x, y plane, evaluate the integral
$$I = \iint_S e^{-x^2-y^2} dS,$$
by transforming the integral into polar coordinates.

8. Find the line integral $\oint_C \mathbf{r} \times \mathbf{dr}$ 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 $\mathbf{F} = (y, x^2 - x, 0)$ around the square in the x, y plane connecting the four points$(0, 0), (1, 0), (1, 1)$ and $(0, 1)$, show that $\mathbf{F}$ cannot be a conservative vector field.

10. Evaluate the line integral of the vector field $\mathbf{u} = (xy, z^2, x)$ along the curve given by $x = 1 + t, y = 0, z = t^2, 0 \leq t \leq 3$.

Unit-II

11. 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?

12. Find the volume of the tetrahedron with vertices $(0, 0, 0)$, $(a, 0, 0)$, $(0, b, 0)$ and $(0, 0, c)$.

13. 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.

14. Find the surface integral of $\mathbf{u} = \mathbf{r}$ over the surface of the unit cube $0 \leq x, y, z \leq 1$, with $\mathbf{n}$ pointing outward.

15. 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 $\mathbf{u}.\mathbf{n}$ over S where $\mathbf{u} = (z, xy, x^2)$ and $\mathbf{n} = (0, 0, 1)$.

16. Find the surface integral of $\mathbf{u}.\mathbf{n}$ 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.

17. Find the volume integral of the scalar field $\phi = x^2 + y^2 + z^2$ over the region V specified by $0 \leq x \leq 1$, $1 \leq y \leq 2$, $0 \leq z \leq 3$.

18. Find the volume of the section of the cylinder $x^2 + y^2 = 1$ that lies between the planes $z = x + 1$ and $z = -x - 1$.

19. Find the unit normal $\mathbf{n}$ to the surface $x^2 + y^2 - z = 0$ at the point $(1, 1, 2)$.

20. Find the gradient of the scalar field $f = xyz$ and evaluate it at the point $(1, 2, 3)$. Hence find the directional derivative of f at this point in the direction of the vector $(1, 1, 0)$.

Unit-III

21. Find the divergence of the vector field $\mathbf{u} = \mathbf{r}$.

22. The vector field $\mathbf{u}$ is defined by $\mathbf{u} = (xy, z + x, y)$. Calculate $\nabla \times \mathbf{u}$ and find the point where $\Delta \times \mathbf{u} = 0$.

23. Find the gradient $\nabla\phi$ and the Laplacian $\nabla^2\phi$ for the scalar field $\phi = x^2 + xy + yz^2$.

24. Find the gradient and the Laplacian of

$$\phi = \sin(kx)\sin(ly)\mathrm{e}^{\sqrt{k^2+l^2}z}.$$

25. Find the unit nirmal to the surface $xy^2 + 2yz = 4$ at the point $(-2, 2, 3)$.

26. For $\phi(x, y, z) = x^2 + y^2 + z^2 + xy - 3x$, find $\nabla\phi$ and find the minimum value of ϕ.

27. Find the equation of the plane which is tangent to the surface $x^2 + y^2 - 2z^3 = 0$ at the point $(1, 1, 1)$.

28. Find both the divergence and the curl of the vector fields

    (a) $\mathbf{u} = (y, z, x)$;

(b) $\mathbf{v} = (xyz, z^2, x - y)$.

29. 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?

30. **(a)** Show that $\mathbf{u} = (y^2 z, -z^2 \sin y + 2xyz, 2z\cos y + y^2 x)$ is irrotational.

    (b) Find the corresponding potential function.

    (c) Hence find the value of the line integral of $\mathbf{u}$ along the curve $x = \sin \pi t/2, y = t^2 - t, z = t^4, 0 \leq t \leq 1$.

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3 MOOCs(Massive Online Open Courses) Resources for ICT based Learning and Teaching

A Set of MOOCS Resources for ICT based Learning and Teaching

Few Websites

- NPTEL: nptel.ac.in
- COURSERA: www.coursera.org
- MITOCW: ocw.mit.edu
- ACADEMIC EARTH: www.academicearth.org
- EdX : www.edx.org
- KHAN ACADEMY :www.khanacademy.org
- ALISON: www.alison.com
- STANFORD ONLINE: www.online.stanford.edu
- VIDEO LECTURES: videolectures.net
- INTERACTIVE REAL ANALYSIS: mathcs.org
- VISUAL CALCULUS: archives.math.utk.edu/visual.calculus
- MOOCS CALCULUS: mooculus.osu.edu

Few Math Softwares

- Useful for Classroom teaching: *Geogebra (Freeware)*
- Type setting software:*LaTeX*
- High end commercial softwares: *Mathematica , Maple , Matlab*
- Answering search engine: www.wolframalpha.com
- Group theory software: *group explorer 2.2 (Freeware)*
- Visualization software: *Mathematics Visualization Toolkit (freeware)*

A Appendix-I

ज्ञान विज्ञान विमुक्तये
प्रो. (डॉ.) जसपाल एस. सन्धू
सचिव
Prof. (Dr.) Jaspal S. Sandhu
MBBS, MS (Ortho), DSM, FAIS, FASM, FAFSM, FFIMS, FAMS
Secretary

विश्वविद्यालय अनुदान आयोग
University Grants Commission
(मानव संसाधन विकास मंत्रालय, भारत सरकार)
(Ministry of Human Resource Development, Govt. of India)
बहादुरशाह ज़फ़र मार्ग, नई दिल्ली-110002
Bahadur Shah Zafar Marg, New Delhi-110002
Ph.: 011-23239337, 23236288,
Fax : 011-23238858, email : jssandhu.ugc@nic.in

BY SPEED POST

D.O.No. F. 1-1/2014(Secy) 12th November, 2014

Dear Sir/Madam,

The UGC has embarked on numerous measures to enhance efficiency and excellence in the higher education system in the country. The reforms undertaken in this regard have led to noticeable improvement in the standards of education. However, because of the diversity in the evaluation system followed by different universities in India, students have suffered acceptance of their credentials, at times, across the university system, as well as the employment agencies.

In order to mitigate this procedure, it has been thought that the Choice-Based Credit System (CBCS) proposed by the UGC should be adopted by all the Universities. This would ensure seamless mobility of students across the higher education institutions in the country as well as abroad. The credits earned by the student can be transferred and would be of great value to the students in the event of their seeking migration from one institution to the other.

Even in the universities which have already adopted the CBCS it has come to our notice that there is tremendous diversity in the adoption of the system that inter-university migration of students amongst such universities has also posed problems. Under the situation mentioned, the UGC has formulated Guidelines for adoption of uniform Choice-Based Credit System across all the universities. The Guidelines have been uploaded on the website of the UGC (www.ugc.ac.in).

You are requested that the Guidelines may kindly be accessed from the UGC website and the system introduced in your esteemed university from the academic year 2015-16. All the actions taken in this regard may kindly be communicated to the Secretary, UGC (email: ugc.action@gmail.com).

With kind regards,

Yours sincerely,

(Jaspal S. Sandhu)

The Vice-Chancellors of all Universities.

B Appendix-II

UGC GUIDELINES ON ADOPTION OF CHOICE BASED CREDIT SYSTEM

UNIVERSITY GRANTS COMMISSION
BAHADURSHAH ZAFAR MARG NEW
DELHI — 110 002

UGC Guidelines on Adoption of Choice Based Credit System

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1. Preamble

The University Grants Commission (UGC) has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of country. The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The UGC has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Higher Educational Institutions (HEIs) in India. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system. However, due to lot of diversity in the system of higher education, there are multiple approaches followed by universities towards examination, evaluation and grading system. While the HEIs must have the flexibility and freedom in designing the examination and evaluation methods that best fits the the curriculum, syllabi and teaching–learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the HEIs in the country. This creates difficulty for the acadamia and the employers to understand and infer the performance of the students graduating from different universities and colleges based on grades.

The grading system is considered to be better than the conventional marks system and hence it has been followed in the top instutitions in India and abroad. So it is desirable to introduce uniform grading system. This will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated these guidelines.

2. Applicability of the Grading System

These guidel

ines shall apply to all undergraduate and postgraduate level degree, diploma and certificate programmes under the credit system awarded by the Central, State and Deemed to be universities in India.

3. Definitions of Key Words:

1. **Academic Year**: Two consecutive (one odd + one even) semesters constitute one academic year.
2. **Choice Based Credit System (CBCS):** The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).
3. **Course**: Usually referred to, as ‘papers’ is a component of a programme. All courses need not carry the same weight. The courses should define learning objectives and

learning outcomes. A course may be designed to comprise lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.

4. **Credit Based Semester System (CBSS)**: Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by the students.
5. **Credit Point**: It is the product of grade point and number of credits for a course.
6. **Credit**: A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.
7. **Cumulative Grade Point Average (CGPA)**: It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.
8. **Grade Point**: It is a numerical weight allotted to each letter grade on a 10-point scale.
9. **Letter Grade:** It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.
10. **Programme**: An educational programme leading to award of a Degree, diploma or certificate.
11. **Semester Grade Point Average (SGPA)**: It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.
12. **Semester**: Each semester will consist of 15-18 weeks of academic work equivalent to 90 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June.
13. **Transcript or Grade Card or Certificate:** Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester and CGPA earned till that semester.

4. Semester System and Choice Based Credit System

The Indian Higher Education Institutions have been moving from the conventional annual system to semester system. Currently many of the institutions have already introduced the choice based credit system. The semester system accelerates the teaching-learning process and enables vertical and horizontal mobility in learning. The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a 'cafeteria' type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning, It is desirable that the HEIs move to CBCS and implement the grading system.

5. Types of Courses:

Courses in a programme may be of three kinds: Core, Elective and Foundation.

1. Core Course:-

There may be a Core Course in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

2. Elective Course:-

Elective course is a course which can be chosen from a pool of papers. It may be:

- Supportive to the discipline of study
- Providing an expanded scope
- Enabling an exposure to some other discipline/domain
- Nurturing student's proficiency/skill.

An elective may be "Generic Elective" focusing on those courses which add generic proficiency to the students. An elective may be "Discipline centric"or may be chosen from an unrelated discipline. It may be called an "Open Elective."

3. Foundation Course:-

The Foundation Courses may be of two kinds: Compulsory Foundation and Elective foundation. "Compulsory Foundation" courses are the courses based upon the content that leads to Knowledge enhancement. They are mandatory for all disciplines. Elective Foundation courses are value-based and are aimed at man-making education.

6. Examination and Assessment

The HEIs are currently following various methods for examination and assessment suitable for the courses and programmes as approved by their respective statutory bodies. In assessing the performance of the students in examinations, the usual approach is to award marks based on the examinations conducted at various stages (sessional, mid-term, end-semester etc.,) in a semester. Some of the HEIs convert these marks to letter grades based on absolute or relative grading system and award the grades. There is a marked variation across the colleges and universities in the number of grades, grade points, letter grades used, which creates difficulties in comparing students across the institutions. The UGC recommends the following system to be implemented in awarding the grades and CGPA under the credit based semester system.

6.1. Letter Grades and Grade Points:

i. Two methods -relative grading or absolute grading– have been in vogue for awarding grades in a course. The relative grading is based on the distribution (usually normal distribution) of marks obtained by all the students of the course and the grades are awarded based on a cut-off marks or percentile. Under the absolute grading, the marks are converted to grades based on pre-determined class intervals. To implement the following grading system, the colleges and universities can use any one of the above methods.

ii. The UGC recommends a 10-point grading system with the following letter grades as given below:

Table 1: Grades and Grade Points

Letter Grade	Grade Point

O (Outstanding)	10
A+(Excellent)	9
A(Very Good)	8
B+(Good)	7
B(Above Average)	6
C(Average)	5
P (Pass)	4
F(Fail)	0
Ab (Absent)	0

iii. A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

iv. For non credit courses 'Satisfactory' or "Unsatisfactory' shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.

v. The Universities can decide on the grade or percentage of marks required to pass in a course and also the CGPA required to qualify for a degree taking into consideration the recommendations of the statutory professional councils such as AICTE, MCI, BCI, NCTE etc.,

vi. The statutory requirement for eligibility to enter as assistant professor in colleges and universities in the disciplines of arts, science, commerce etc., is a minimum average mark of 50% and 55% in relevant postgraduate degree respectively for reserved and general category. Hence, it is recommended that the cut-off marks for grade B shall not be less than 50% and for grade B+, it should not be less than 55% under the absolute grading system. Similarly cut-off marks shall be fixed for grade B and B+ based on the recommendation of the statutory bodies (AICTE, NCTE etc.,) of the relevant disciplines.

6.2. Fairness in Assessment:

Assessment is an integral part of system of education as it is instrumental in identifying and certifying the academic standards accomplished by a student and projecting them far and wide as an objective and impartial indicator of a student's performance. Thus, it becomes bounden duty of a University to ensure that it is carried out in fair manner. In this regard, UGC recommends the following system of checks and balances which would enable Universities effectively and fairly carry out the process of assessment and examination.

i. In case of at least 50% of core courses offered in different programmes across the disciplines, the assessment of the theoretical component towards the end of the semester should be undertaken by external examiners from outside the university conducting examination, who may be appointed by the competent authority. In such courses, the question papers will be set as well as assessed by external examiners.

ii. In case of the assessment of practical component of such core courses, the team of examiners should be constituted on 50 – 50 % basis. i.e. half of the examiners in the team should be invited from outside the university conducting examination.

iii. In case of the assessment of project reports / thesis / dissertation etc. the work should be undertaken by internal as well as external examiners.

7. Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

SGPA (Si) = $\sum(C_i \times G_i) / \sum C_i$

where C_i is the number of credits of the ith course and G_i is the grade point scored by the student in the ith course.

ii. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

CGPA = $\sum(Ci \times Si) / \sum Ci$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

8. Illustration of Computation of SGPA and CGPA and Format for Transcripts

i. Computation of SGPA and CGPA

Illustration for **SGPA**

Course	**Credit**	**Grade letter**	**Grade point**	**Credit Point** (Credit x Grade
Course 1	3	A	8	3 X 8 = 24
Course 2	4	B+	7	4 X 7 = 28
Course 3	3	B	6	3 X 6 = 18
Course 4	3	O	10	3 X 10 = 30
Course 5	3	C	5	3 X 5 = 15
Course 6	4	B	6	4 X 6 = 24
	20			139

Thus, **SGPA =139/20 =6.95**

Illustration for **CGPA**

Semester 1	**Semester 2**	**Semester 3**	**Semester 4**
Credit : 20 SGPA:6.9	Credit : 22 SGPA:7.8	Credit : 25 SGPA: 5.6	Credit : 26 SGPA:6.0

Semester 5	**Semester 6**		
Credit : 26 SGPA:6.3	Credit : 25 SGPA: 8.0		

Thus, **CGPA** = $\frac{20 \times 6.9 + 22 \times 7.8 + 25 \times 5.6 + 26 \times 6.0 + 26 \times 6.3 + 25 \times 8.0}{144}$ = **6.73**

ii. Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CCPA, the HEIs may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

Department Of Physics

Palamuru University

Scheme of Instruction and Syllabus

B.Sc Physics

Under CBCS scheme

(from the academic year 2016)

B.Sc. PHYSICS SYLLABUS UNDER CBCS SCHEME
SCHEME OF INSTRUCTION

Semester	Paper [Theory and Practical]	Instructions Hrs/week	Marks	Credits
I sem	Paper – I : Mechanics	4	100	4
	Practicals – I : Mechanics	3	50	1
II sem	Paper – II: Waves and Oscillations	4	100	4
	Practicals – II : Waves and Oscillations	3	50	1
III sem	Paper – III : Thermodynamics	4	100	4
	Practicals – III : Thermodynamics	3	50	1
IV sem	Paper – IV : Optics	4	100	4
	Practicals – IV :Optics	3	50	1
V sem	Paper –V : Electromagnetism	3	100	3
	Practicals – V: Electromagnetism	3	50	1
	Paper – VI : Elective – I Solid state physics/ Quantum Mechanics and Applications	3	100	3
	Practicals – VI : Elective – I Practical Solid state physics/ Quantum Mechanics and Applications	3	50	1
VI sem	Paper – VII : Modern Physics	3	100	3
	Practical – VII : Modern Physics Lab	3	50	1
	Paper – VIII : Elective – II Basic Electronics/ Physics of Semiconductor Devices	3	100	3
	Practicals – VIII : Elective – II Practical Basic Electronics/ Physics of Semiconductor Devices	3	50	1

Total Credits 36

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

56 hrs

(W.E.F the academic year 2016-2017)
(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. Centralforces (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.

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*.

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. **Sears and Zemansky's University Physics** by Hugh D. Young, Roger A. Freedman *Pearson Education Eleventh Edition*.
4. **An introduction to Mechanics** by Daniel Kleppner& Robert Kolenkow. *The McGraw Hill Companies*.
5. **Mechanics**. Hans &Puri. *TMH Publications*.
6. **Engineering Physics**. R.K. Gaur & S.L. Gupta. *DhanpatRai Publications*.
7. R P Feymman, RB Lighton and M Sands - The Feymman Lectures in Physics, Vol.-1, BI Publications,
8. J.C. Upadhyay - Mechanics.
9. P.K. Srivastava - Mechanics, New Age International.

42 hrs
(3 hrs / week)

FIRST SEMISTER PRACTICALS

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.

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

B.Sc. (Physics)Semester II-Theory Syllabus
Paper – II : Waves and Oscillations

56 hrs

(W.E.F the academic year 2016-2017)
(CBCS)

Unit – I

1. Fundamentals of vibrations (14)

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

2. Damped and forced oscillations (14)

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

3. Vibrating Strings (14)

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

4. Vibrations of bars (14)

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.

Textbooks

1. **Fundamentals of Physics**. Halliday/Resnick/Walker *Wiley India Edition 2007*.
2. **First Year Physics** - *Telugu Academy*.
3. **Introduction to Physics for Scientists and Engineers**. F.J. Ruche. *McGraw Hill*.
4. **Fundamentals of Acoustics by Kinsler and Fray, Meer publishers**.

Reference Books

1. **Fundamentals of Physics** by Alan Giambattista et al *TMH 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. **Engineering Physics**. R.K. Gaur & S.L. Gupta. *Dhanpat Rai Publications*.

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42 hrs

SECOND SEMISTER PRACTICALS

Practical Paper – II : Waves and Oscillations

1. Study of damping of an oscillating disc in Air and Water logarithmic decrement.
2. Study of Oscillations under Bifilar suspension.
3. Study of oscillations of a mass under different combination of springs.
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.
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
10. Study of coupled oscillator.

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. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, AnchalSrivastava

Subject: Physics

B.Sc. Semester III-Theory Syllabus
Paper – III : Thermodynamics
(W.E.F the academic year 2017-2018)

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 Claussius 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 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. Murugeshan and Kiruthiga Siva Prasath (for statistical Mechanics) *S. Chand & Co*.
4. **Heat and Thermodynamics** by Mark W.Zemansky 5th edition Mc Graw - Hill
5. **Heat and Thermodynamics** by D.S. Mathur.

Reference Books

1. **Modern Physics** by G. Aruldhas and P. Rajagopal, *Eastern Economy Education*.
2. Berkeley Physics Course. Volume-5. **Statistical Physics** by F. Reif. *The McGraw-Hill Companies*.
3. **An Introduction to Thermal Physics** by Daniel V. Schroeder.*Pearson Education Low Price Edition*.
4. **Thermodynamics** by R.C. Srivastava, Subit K. Saha&Abhay K. *Jain Eastern Economy Edition*.
5. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand& Co. Publications*.
6. **Feyman's Lectures on Physics** Vol. 1,2,3& 4. *Narosa Publications*.
7. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*

8 .B.B. Laud **"Introduction to statistics Mechanics"**(Macmillan 1981)

9. F.Reif**: "Statistical Physics "**(Mcgraw-Hill,1998)

10.K.Haung: "**Statistical Physics "**(Wiley Eastern 1988)

42 hrs
(3 hrs / week)

III SEMESTER Practicals Paper – III : Thermodynamics

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 mechanical energy to 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" (PragatiPrakashan, Meerut).
3. Worsnop and Flint- Advanced Practical physics for students.
4. "Practical Physics" R.K Shukla, AnchalSrivastava

B.Sc. Semester IV-Theory Syllabus

56 hrs

Subject : (Physics) Paper – IV : Optics

(W.E.F the academic year 2017-2018)

Unit I

1 Interference: (14)

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 I1:

2 Diffraction: (14)

Introduction – Distinction between Fresnel and Fraunhoffer diffraction Fraunhoffer diffraction:- Diffraction due to single slit and circular aperture – Limit of resolution – Fraunhoffer diffraction due to double slit – Fraunhoffer 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 I1I:

3 Polarization (14)

Polarized light : Methods of Polarization, Polarization by reflection, refraction, Double refraction, selective absorption , scattering of light – Brewsters 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:

4 Aberrations and Fiber Optics : (14)

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 – Principles of fiber communication – Step and graded index fibers – Rays and modes in an optical fiber – Fiber material – Types of optical fibers and advantages of fiber communication.

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

Textbooks

1. **Optics** by AjoyGhatak. *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. Murugeshan and Kiruthiga Siva Prasath. *S. Chand & Co*.
5. **Second Year Physics** – *Telugu Academy.*

Reference Books

1. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand & Co. Publications*.
2. **Feyman'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)
6. Jenkins and White: 'Fundamental of Optics' (McGraw-Hill)
7. Smith and Thomson: 'Optics' (John Wiley and sons)

42 hrs

IV SEMESTER Practicals Paper – IV : Optics

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.

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, AnchalSrivastava

B.Sc. Semester V-Theory Syllabus

42 hrs

Subject : (Physics) **Paper – V : Electromagnetism**

(DSE- Compulsory)

(W.E.F the academic year 2018-2019)

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

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 Mc Graw Hill, 2006).

36 hrs

V SEMISTER Practicals Paper – V : Electromagnetism

PHYSICS LABORATORY Marks: 50

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. Indu Prakash and Ramakrishna, A Text Book of Practical Physics, Kitab Mahal

B.Sc. Semester V-Theory Syllabus

Subject : (Physics) **(DSE- Elective-I)** **42 hrs**

Paper-VI-A – Solid State Physics

Unit-I (11hrs)

Crystal Structure: Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis – Central and Non-Central Elements. Unit Cell. Miller Indices. Types of Lattices, Reciprocal Lattice. Brillouin Zones. Diffraction of X-rays by Crystals. Bragg's Law. Atomic and Geometrical Factor.

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. T3 law

Unit-II (11 hrs)

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin Theory of dia–and Paramagnetic Domains. 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. Conductor, Semiconductor (P and N type) and insulator. Conductivity of Semiconductor, mobility, Hall Effect, Electric Conductivity by four probe method & Hall coefficient.

UNIT IV (10hrs)

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: Experimental Results. Critical Temperature. Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth. Isotope effect. Idea of BCS theory. D.C and A.C Josepson effects.

Text 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. Solid State Physics, M.A. Wahab, 2011, Narosa Publications
4. Solid State Physics – S. O. Pillai (New Age Publication)
5. Modern Physics by R.Murugesham

Reference 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. 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.
7. LASERS: Fundamentals and Applications – Thyagarajan and Ghatak (McMillanIndia)

36 hrs

V SEMISTER Practicals Paper – VI A
Solid State Physics

1. Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
2. To measure the Magnetic susceptibility of Solids.
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 PE Hysteresis loop of a Ferroelectric Crystal.
6. To draw the BH 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 150^0 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 powder diffraction method.
12. To study the spectral characteristics of a Photo- Voltaic cell.
13. Verification of Bragg's equation.

Reference Books

• Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
• Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
• A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
• Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India

B.Sc. Semester V-Theory Syllabus 42 hrs

Subject : (Physics) **(DSE- Elective-I)**

Paper-VI-B – QUANTUM MECHANICS AND APPLICATIONS

Unit-I (11 hrs)
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 dimensionacross a step potential & rectangular potential barrier.

Unit-IV (10 hrs)
Atoms in Electric & Magnetic Fields: Electron angular momentum. Space quantization. Electron Spin and Spin Angular Momentum. Larmor's Theorem. Spin Magnetic Moment. SternGerlach 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. Aruldhas, 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 (Mc Millan India) 2012
3. Introduction to Quantum Mechanics, D.J. Griffith, 2nd Ed. 2005, Pearson • Quantum Physics----S. Gasiorowicz (Wiley India) 2013

36 hrs

V – SEMESTER Practicals Paper – VI C

Quantum Mechanics and Applications

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, ħc = 1973 (eVÅ) and m = 0.511x106 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 = 0.511x106 eV/c2, and a = 3 Å, 5 Å, 7 Å. In these units ħc = 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-3In these units, cħ = 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 = 940x106eV/C2, D = 0.755501 eV, α = 1.44, ro = 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. Pressetal., 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. Vande Wouwer, 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

B.Sc. Semester VI-Theory Syllabus

42 hrs

Subject : (Physics) **(DSC- Compulsory)**

Paper-VII – MODERN PHYSICS

UNIT-I (11hrs)

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 H 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 Expt. Sommerfeld's Modification of Bohr's Theory.

UNIT-II (11hrs)

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; Wave Particle Duality, Complementarity . Heisenberg Uncertainty Principle, Illustration of the Principle through thought Experiments of Gamma ray microscope and electron diffraction through a slit. Time independent and time dependent Schrodinger wave equation. Estimation of ground state energy of harmonic oscillator and hydrogen atom, non-existence of electron in the nucleus. Uncertainty and Complementarities.

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 deficit, 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 discussions), Classification of Elementary Particles

Text Books:

1. Concepts of Modern Physics, Arthur Beiser, 2002, McGraw-Hill.
2. Modern Physics ---Murugesan and Sivaprasad –(S. Chand Higher Academics)
3. Introduction to Modern Physics, Rich Meyer, Kennard, Coop, 2002, Tata McGraw Hill
4. Introduction to Quantum Mechanics, David J. Griffith, 2005, Pearson Education.
5. Physics for scientists and Engineers with Modern Physics, Jewett and Serway, 2010, Cengage Learning. •
6. 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. Theory and Problems of Modern Physics, Schaum`s outline, R. Gautreau and W. Savin, 2nd Edn, Tata McGraw-Hill Publishing Co. Ltd.
5. Quantum Physics, Berkeley Physics, Vol.4. E.H.Wichman, 1971, Tata McGraw-Hill Co.
6. Basic ideas and concepts in Nuclear Physics, K.Heyde, 3rd Edn., Institute of Physics Pub.
7. Six Ideas that Shaped Physics: Particle Behave like Waves, T.A.Moore, 2003, McGraw Hill
8. Modern Physics-Serway (CENGAGE Learnings) 2014
9. Physics of Atoms and Molecules – Bransden (Pearson India) 2003

36 hrs

VI SEMISTER Practicals Paper – VII :
Modern Physics

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 Ridge berg'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

B.Sc. Semester VI-Theory Syllabus

Subject : (Physics) **(DSE- Elective-II)** **42 hrs**

Paper-VIII-A : Basic Electronics

Unit-I: (10 hrs)

Network Elements and 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).

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 solids, Insulators, semi conductors and, pure or intrinsic semiconductors and impurity or extrinsic semi-conductors. N-type extrinsic semi-conductors, P-type extrinsic semi-conductors, Fermi level, continuity equation.

2. Diodes: P-N junction diode, Bridge rectifier. Zener diode & its Characteristics. Zener diode as voltage regulator.

Unit-III: (11hrs)

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. (Qualitative analysis)

2. Feedback Concept & Oscillators: Feedback, General theory of feedback–Concepts of a Oscillators, Barkhausen's criteria, Phase shift Oscillator.

Unit-IV: (11 hrs)

1. Digital Electronics

Binary number system, converting 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 – vice versa and Decimal to Hexadecimal vice versa.

1. 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.
4. A First Course in Electronics- Anwar A. Khan& Kanchan K. Dey, PHI.

Reference Books

1. Basic Electronics – Bernod Grob.
2. Third year Electronics – Telugu Academy
3. Digital Principles & Applications – A.P. Malvino and D.P. Leach
4. Circuit theory- Umesh.

36 hrs

VI SEMISTER Practicals Paper – VIII A :
Basic Electronics

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. Verification Thevenin's theorem.
9. Maximum Power Transfer theorem
10. P-n junction diode V- I characteristics.
11. Zener diode as a voltage regulator
12. Construction of a model D.C. power supply
13. 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, Pragathi Prakashan, 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.

B.Sc. Semester VI-Theory Syllabus

42 hrs

Subject : (Physics) **(DSE- Elective-II)**

Paper-VIII-B : Physics of Semiconductor Devices

Unit-I: (11 hrs)

Semiconductor Physics: Conductors, Semiconductors, forbidden orbits, 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-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), Phototransistor and MOSFETTs.

Unit-IV: (10 hrs)

Control devices- Shockley Diode, Silicon Controlled Rectifier (SCR), Silicon Controlled Switch (SCS), Unijunction transistor (UJT), Solar Cells, Opto-couplers.

Text books

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

36 hrs

VI SEMISTER Practicals Paper – VIII-B :

Physics of Semiconductor Devices

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 for LAB (Practical 6)

1. Basic electronics Grob
2. Practical Electronics Zbar

PALAMURU UNIVERSITY
DEPARTMENT OF POLITICAL SCIENCE

SCHEME OF INSTRUCTION AND SYLLABUS

B.A POLITICAL SCIENCE(III &IV SEMESTERS)

UNDER CBCS SCHEME

(FROM THE ACADEMIC YEAR 2017-18)

PALAMURU UNIVERSITY

Model

Scheme of Introduction and Examination

UG Political Science (Regular)

Choice Based Credit System (CBSC) Syllabus – w.e.f. 2016-17

Year	Semester	**DSC/GE/ DSE/SEC**	Paper	Title	**Credits**	Hours
I	I	DSC*	Paper - I	CONCEPTS, THEORIES AND INSTITUTIONS-I	5	5
	II	DSC*	Paper - II	CONCEPTS, THEORIES AND INSTITUTIONS-II	5	5
II	III	SEC*	Paper - I		2	2
		DSC*	Paper - III	INDIAN GOVERNMENT AND POLITICS-I	5	5
	IV	SEC*	Paper - II		2	2
		DSC*	Paper - IV	INDIAN GOVERNMENT AND POLITICS-II	5	5
III	V	SEC*	Paper - III		2	2
		GE**	Paper – I	INDIAN CONSTITUTION- I	5+1	6
		DSC*	Paper - V	WESTERN POLITICAL THOUGHT	4	4
		DSE*	Paper – I A	INTERNATIONAL RELATIONS - I	4	4
		DSE*	Paper – I B	GOVERNMENT AND POLITICS IN TELANGANA - I		
		DSE*	Paper – I C			
	VI	SEC*	Paper - IV		2	2
		GE**	Paper – II	INDIAN CONSTITUTION- II	5+1	6
		DSC*	Paper – VI	INDIAN POLITICAL THOUGHT	4	4
		DSE*	Paper – II A	INTERNATIONAL RELATIONS - II	4	4
		DSE*	Paper – II B	GOVERNMENT AND POLITICS IN TELANGANA - II		
		DSE*	Paper – II C			

*DSC (Discipline Specific Course), SEC(Skill Enhancement Course) & DSE(Discipline Specific Elective) for students of political Science.

**GE (Generic Elective) or Inter – Disciplinary Course for Students of Social Sciences other than Political Science (5 Credits + 1 Tutorial).

B.A. POLITICAL SCIENCE
CBCS
PATTERN OF EXAMINATION

Question paper pattern for theory examination for B.A. all combinations and for all Papers is given here.

EVALUATION PLAN
- Internals-10 Marks
- Endsemester-40 Marks
- Total-50 Marks
- Pass Marks-18

Internal Assessment

a. Two internals of 10 marks of each, average of the two internals is considered for computation in marks memo.

b. Internals shall be held at the end of every 10th and 15thweek of the semester.

c. The time of duration for internals shall be 30minutes

End Semester Examination

40 marks are allotted for the main exam per each semester. The time of duration For external exam will be of 2 hours.

Examination Pattern

Section A	-	Essay Type Questions	5x5 = 25
Section B	-	Short Type Questions	5x2 = 10
Section C	-	Very Short Question	5x1 = 5
			Total = 40

B.A PAPER 1
POLITICAL SCIENCE - I SEMESTER
MODEL QUESTION PAPER

Time: 2 Hours

SECTION – A Marks: 40

Note: Answer the following Questions using internal choice.

5 x 5 = 25 Marks

1. a. Explain the scope of Political Science.
   (OR)
   b. Describe the evolution of Political Science.

2. a. Explain the relationship betweenPolitical Science and History.
   (OR)
   b. Point out the differences between Political Science and Economics.

3. a. Explain the Liberal approach of Political Science.
   (OR)
   b. Describe the Behavioural approach.

4. a. Elucidate the evolutionary theory of state.
   (OR)
   b. Explain Thomas Hobbes' social contract theory.

5. a. Explain the sources of Law.
   (OR)
   b. Explain different kinds of Liberty.

SECTION-B

Answer any five of the following Questions. 5 x 2 = 10 Marks

6. Marxist approach
7. Behaviouralism
8. General will
9. Nominal Sovereignty
10. Pluralism
11. Rule of Law
12. Economic Equality
13. Legitimacy

SECTION-C

Answer any five of the following Questions. 5 x 1= 5 Marks

14. Definition of Political Science
15. State of Nature
16. Sovereignty
17. Monism 18. Political Liberty 19. Human Rights 20. Right to Property 21. Power

B.A. POLITICAL SCIENCE
PAPER I
CONCEPTS, THEORIES AND INSTITUTIONS-I

Unit 1: Introduction:

Definition, Scope and Importance of Political Science.
Evolution of Political Science.
Political Science as a Science.

Unit II: Political Science- Relations with other Social Sciences:
History, Economics and Sociology.

Unit III: Approaches to the Study of Politics: Liberal, Marxist,
Behavioural.

Unit IV: Ideologies: Individualism, Marxism, Anarchism, Fascism and Socialism.

Unit V: Theories of Origin of the State:
Divine, Evolutionary (Historical) and Social Contract.

BOOKS RECOMMENDED:

1. *Principles of Political Science* : Prof. A.C. Kapoor.
2. *Grammar of Politics* : Laski H.J.
3. *Substance of Politics* : A. Appadorai.
4. *Political Theory* : AShirvadam.
5. *Introduction to Political Theory*: : OP Gauba
6. *Political Theory* : Rajiv Bhargava.
7. *Political Theory* : P.G. Das
8. *Political Ideologies:* Their Origins and Impact: Baradat, Prentice Hall of India.
9. *Political Theory*: *Ideas & Concepts :* Sushila Ramaswamy, Prentice Hall of India

B.A. POLITICAL SCIENCE
PAPER-II
CONCEPTS, THEORIES AND INSTITUTIONS-II

Unit I: State; Nation; Civil Society.

Unit II: Sovereignty: Monism and Pluralism.

Unit III: Concepts:
Law: Sources of Law, Rule of Law.
Power, Authority and Legitimacy.
Citizenship Aspects
Liberty and Equality Their Relationship.
Theories and kinds of Rights; Human Rights.

Unit IV: Forms of Government:
Democracy: Direct and Indirect.
Unitary and Federal.
Parliamentary and Presidential.

Unit V: Organs of Government:

Theory of Separation of Powers (Montesquieu)
A. Legislature: i) Unicameral and Bi-cameral - Powers and Functions.
B. Executive: i) Powers and Functions.
C. Judiciary: i) Powers and Functions.
ii) Independence of Judiciary, Judicial Review.

BOOKS RECOMMENDED:

1. *Principles of Political Science* : Prof. A.C. Kapoor.
2. *Grammar of Politics* : Laski H.J.
3. *Substance of Politics* : A. Appadorai.
4. *Political Theory* : AShirvadam.
5. *Introduction to Political Theory* : OP Gauba
6. *Political Theory* : Rajiv Bhargava.

7. Political Ideologies: Their Origins and Impact: Baradat, Prentice Hall of India.
8. Political Theory: *Ideas & Concepts* : Sushila Ramaswamy, Prentice Hall of India

B.A. POLITICAL SCIENCE
PAPER- III
INDIAN GOVERNMENT AND POLITICS-I

Unit 1: Nationalist Movement and Constitutional Development:

Impact of Colonial Rule and Indian National Movement.
Making of the Indian Constitution.
Philosophical Foundations and Salient Features of the Indian Constitution.

Unit II: Fundamental Rights and Directive Principles:

Fundamental Rights and Duties.
Directive Principles of State Policy.
Relationship between Fundamental Rights and Directive Principles of State Policy.

Unit III: Union Government:

President: Election; Powers and Functions.
Parliament: Composition; Powers and Functions.
Prime Minister and Council of Ministers.
Supreme Court: Composition; Powers and Functions
Judicial Review; Judicial Activism.

Unit IV: State Government:

Governor.
Chief Minister and Council of Ministers.
Legislature.
High Court: Composition; Powers and Functions.

Unit V: Union - State Relations:
Features of Indian Federal System.
Centre - State Relations.
Recent Trends in Centre-State Relations.

BOOKS RECOMMENDED:

1. *Politics in India* : Rajni Kothari.
2. *Indian Constitution* : M.V. Pylee.
3. *Indian Government and Politics* : S. S. Awasti.
4. *Introduction for Constitution of India* : D.D. Basu.
5. *Indian Government and Politics* : K.R. Acharya.
6. *Indian Politics : Contemporary Issues and Concerns,* Singh & Saxena.
7. *Introduction to the Constitution of India,* 5th ed., Sharma.
8. *Indian Polity:* V. Lakshmikant.

B.A. POLITICAL SCIENCE
PAPER-IV
INDIAN GOVERNMENT AND POLITICS-II

Unit I: Political Process:

Nature of Indian Political Party System.
Political Parties- National: INC, BJP, CPI, CPM, BSP.
Political Parties- *Regiona*l: Akali Dal, DMK, TRS, TDP.
Pressure Groups.
Right to Information Act.

Unit II: Electoral Politics:

Election Commission: Composition; Powers and Functions.
Voting Behaviour; Influence of Socio-Economic Factors, Electoral Reforms.

Unit III: Social and Political Movements in India:

a) Farmers Movements.
b) Dalit Movements.
c) Tribal Movements.
d) Environmental Movements
e) Women Movement

Unit IV: Statutory Commissions for Protection of Rights:

a) National Human Rights Commission (NHRC).
b) National Commission for Women (NCW).
c) National Commission for SC's (NCSC's)
d) National Commission for ST's (NCST's)
e) National Minorities Commission.

Unit V: Local Self Government: Democratic Decentralization.

Panchayati Raj Institutions: 73rd Constitutional Amendment.
Urban Self Governing Bodies: 74th Constitutional Amendment

BOOKS RECOMMENDED:

1. *Politics in India* : Rajni Kothari.
2. *Indian Constitution* : M.V. Pylee.
3. *Indian Government and Politics* : S. S. Awasti.
4. *Introduction for Constitution of India* : D.D. Basu.
5. *Indian Government and Politics* : K.R. Acharya.
6. *Indian Politics : Contemporary Issues and Concerns,* Singh & Saxena.
7. *Indian Polity:* V. Lakshmikant.

B.A. POLITICAL SCIENCE
PAPER-V
WESTERN POLITICAL THOUGHT

Unit I: Introduction:

Political Thought: Nature, Methods and Significance.
Western and Indian Political Thought - Comparison.

Unit II: Ancient and Medieval Political Thought:

Plato: Theory of Justice and Ideal State.
Aristotle: Classification of Governments, Theory of Revolutions and Slavery.
Thomas Aquinas: Theory of Law.
Early Modern Western Political Thought:
Church - State Controversy.
Nicolo Machiavelli as a modern political thinker and views on State Craft.

Unit III: Social Contractualists & Utilitarianism

Thomas Hobbes- Individualism and Absolute (State) Sovereignty.
John Locke - Natural Rights and Limited Government.
Jean Jouques Rousseau- General Will and Popular Sovereignty.
Jermy Bentham- Principles of Utilitarianism.
J.S. Mill- Liberty, Representative Government.

Unit VI: Idealists:

GWF Hegel- Dialectics and Theory of State.
TH Green- Rights and Political Obligation.

Unit V: Marxist Political Theory

Karl Marx: Dialectical and Historical Materialism.
Lenin: concept of Imperialism.
Antonio Gramsci: Hegemony and Civil Society

Books Recommended:

1. *Political Ideas in Ancient India* : R.S. Sharma.
2. *Western Political Thought:* Amal Kumar Mukopadhyay.
3. *A History of Political Thought* : Sabine G.H.
4. *Modern Political Theory* : Ebentein W.
5. *A History of Political Thought,: Plato to Marx*, Mukherjee & Ramaswamy.
6. *Political Ideologies*: *Their Origins and Impact:* Baradat, Prentice Hall of India.

B.A. POLITICAL SCIENCE

PAPER-VI
INDIAN POLITICAL THOUGHT

Unit-I: Manu- Dharma and Varna.
Kautilya - Saptanga Theory, Mandala Theory.

Unit- II: Indian Political Thought – I
Buddha- Social and Political Ideas; Dhamma and Sangha.
Basava - Social Ideas.

Unit-III: JyotiraoPhule- Critique of Brahmanism, Social Revolution.
RajaRam MohanRoy: Reformist Thought

Unit- IV: Indian Nationalist Political Thought –II
Mohandas Karamchand Gandhi - Ahimsa, Satyagraha.
Jawaharlal Nehru - Democratic Socialism, Secularism.

Unit- V: Dr. B.R. Ambedkar- Theory of Caste, Annihilation of Caste and State Socialism.
Periyar- Critic of Religion

Books Recommended:

1. *Political Ideas in Ancient India*: R.S. Sharma.
1. *A History of Political Thought*: Sabine G.H.
2. *Annihilation of Caste*: Ambedkar B.R.
3. *Modern Political Theory*: Bernstein W.
4. *Political Ideologies*: *Their Origins and Impact:* Baradat, Prentice Hall of India.

B.A. POLITICAL SCIENCE
PAPER VI- OPTIONAL-(A)
INTERNATIONAL RELATIONS-I

Unit I: Introduction:

International Relations: Definition, Evolution, Scope and Significance.
Emergence of Sovereign State System.

Unit II: History of International Relations:

Colonialism: Causes, Phases and Impact.
The First World War; The Second World War: Causes and Consequences.

Unit III: Post - War Developments:

Decolonization.
Emergence of Third World - Problems and Prospects.
Cold War- Causes, Phases and Impact.

Unit IV: Concepts:

Power; National Power.
Super Power; Regional Power; Détente.
Bipolarity; Unipolarity; Multipolarity.
Peace; Security.

Unit V: International Organisations:

United Nations: Structure and Role; Need for Reforms
Regional Organisations: EU, ASEAN, SAARC, BRICS.

Books Recommended:

1. *Politics Among Nations* : Hans J. Morgenthau.
2. *International Relations*:: Peu Ghosh, Prentice Hall.
3. *International Relations* : Prakash Chander & Prem Arora, 'Cosmos Book hives.'
4. *India Foreign Policy*, Foreign Service Institute, New Delhi, India.
5. *International Relations between the Two World Wars*: Carr E.H.
6. *International Relations* : Vinay Kumar Malhotra.

B.A. POLITICAL SCIENCE
PAPER VI- OPTIONAL (A)
INTERNATIONAL RELATIONS-II

Unit I: International Political Economy:

Neo Colonialism: North-South Dialogue; South-South Cooperation.
IBRD, IMF, WTO and MNCs.
Globalisation.

Unit II: International Security:

Arms Race, Arms Control, Disarmament.
Issues in Nuclear Politics.

Unit III: Emerging Areas in International Relations:

Environment.
Human Rights.
Terrorism.

Unit VI: Foreign Policy:

Foreign Policy- Determinants.
India's Foreign Policy: Features.
Non-Alignment - Relevance.

Unit V: India's Bilateral Relations:

India and Major Powers (U.S.A., Russia).
India and Neighbouring Countries (China and Pakistan).

Books Recommended:

1. *Politics Among Nations* : Hans J. Morgenthau.
2. *International Relations*:: Peu Ghosh, Prentice Hall.
3. *International Relations* : Prakash Chander & Prem Arora, 'Cosmos Book hives.'
4. *India Foreign Policy*, Foreign Service Institute, New Delhi, India.
5. *International Relations between the Two World Wars*: Carr E.H.
6. *International Relations* : Vinay Kumar Malhotra.

B.A. POLITICAL SCIENCE
PAPER VI- OPTIONAL (B)
GOVERNMENT AND POLITICS IN TELANGANA-I

Unit I: Historical background of Telangana:

A. Nizam's Hyderabad State.
B. Integration of Princely State – Hyderabad State Congress, Police Action, Emergence of Hyderabad State.

Unit II: Public Awakening in Telangana:

A. Library Movement.
B. Dalit Movement.
C. Tribal Movement.
D. Telangana Peasant Armed Struggle.

Unit III: States Reorganisation:

A. Fazal Ali Commission Observations.
B. Formation of Andhra Pradesh.
C. Gentlemen's Agreement.
D. Mulki Rules – Supreme Court Verdicts.
E. Formation of Regional Committees – Six Point Formula.

Unit IV: Injustices to Telangana:

A. Water resources.
B. Employment.
C. Educational Opportunities.
D. Cultural discrimination.
E. Budgetary deprivation.

Unit V: Phases of Telangana Agitation:

A. Telangana Agitation – 1969.
B. Separate Andhra Agitation – 1972.
C. Telangana Maha Sabha – Teangana Jana Sabha.
D. Telangana Rashtra Samiti (TRS) Movement - 2001-2014.
E. Cultural Organisation, Intervention.

Books Recommended:

1. *Bala Ramulu.Ch and D.Ravinder. June 2012 "Five Decades of Democratic Decentralization process in Andhra Pradesh" in Social Change (Journal of the Council for Social Development-Published by Sage international), Vol.42, No.2. Pp. 165-186.*
2. *Bhukya Bhangya, 2013 "Between Tradition and Modernity: Nizam's, Colonialism and Modernity in Hyderabad State" Economic and Political Weekly, Vol-XLVIII No.48, Nov 30, pp. 120-125.*

3. *Haragopal.G, 2010 "The Telangana People's Movement: The Unfolding Political Culture" Economic and Political Weekly, Vol-XLV No.42, Oct 16, pp.51-60.*
4. *Jadhav Keshav Rao, 2010 "'Backwardisation' of Telangana" Economic and Political Weekly, Vol-XLV No.13, Mar 27, pp. 15-20.*
5. *Kodanda Ram.M, 2007 "Movement for Telangana State: A Struggle for Autonomy" Economic and Political Weekly, Vol-XLII No.02, Jan 13, pp.92-94.*
6. *Melkota, S.Rama, Revathi E, Lalitha K, Sajaya K and Sunitha A, 2010 "The Movement for Telangana: Myth and Reality" Economic and Political Weekly, Vol-XLV No.2, Jan 9, pp.8-11.*
7. *Pavier Barry, Telangana Peasant Movement 1944-51, Vikas Publications.*
8. *Pingle, Gautam 2014 The Fall and Rise of Telangana, Orient Blackswan.*
9. *Rao. K.V. Narayan, "Emergence of Andhra Pradesh", Popular Prakashan.*
10. *Rao.P.L.Visweshwar and S.Simhadri (eds.), 1998 "Telangana: Dimensions of Under Development", Centre for Telengana Studies, Hyderabad.*
11. *Rao. CH.Hanumanth, 2014 "The New Telangana State: A Perspective for Inclusive and Sustainable Development" Economic and Political Weekly, Vol-XLIX No.9, March 1, pp.10-13.*
12. *Ravinder.D. 1998 "Rural Development and Regional Imbalances: A Study of IRDP" in P.L.Visweshwar Rao and S.Simhadri (eds.) Telangana: Dimensions of Under Development (Hyderabad, Centre for Telengana Studies), Pp.173-179.*
13. *Reddy. G Krishna, March, 2002 "New Populism and Liberalization: Regime Shift under Chandra Babu Naidu in Andhra Pradesh", Economic and Political Weekly, Vol.XXXVII (9), 2-8, pp.871-883.*
14. *Reddy. G Krishna, 2009 "Forging Public Opinion: The press, Television and Electoral Campaigns in Andhra Pradesh" Arvind Rajgopal (ed), Indian Public Sphere: Structure and Transformation-A Reader, OUP.*
15. *Reddy. G Ram and B.A.V.Sharma (eds), "State Government and Politics –A.P", Sterling.*
16. *Sharma.B.A.V, "Political Economy of India", Light and Life Publishers.*
17. *Srinivasulu.K, 2002 "Caste, Class and Social Articulation in Andhra Pradesh, India: Mapping Differential Regional Trajectories", Working Paper 179, Overseas Development Institute, London,*
18. *Srinivasulu.K, M.Channa Basavaiah and D.Ravinder, 2011 "Srikrishna Committee: Thorough but Unviable" in Economic and Political Weekly, Vol.XLVI, No.10, March 5, pp.16-18.*

19. *Tillin Louise. C., October 2013 Remapping India: New States and their Political Origins. Hurst and Co.*
20. *Telangana Peasant Movement – 1948: Velapati Ramareddy- Telugu Akademi.*
21. *Telangana Movement and State formation: Prof. Kodandaram and others - Telugu Akademi.*
22. *Telangana History and Culture: G. Anjaiah and others - Telugu Akademi.*
23. *Telangana Movement - State formation: V. Prakash*
24. *Telangana Social, Cultural History (Telugu): Dr. M Jithendar Reddy.*
25. *Telangana Movement – History (Telugu): Dr. M Jithendar Reddy.*

B.A. POLITICAL SCIENCE
PAPER VIII- OPTIONAL (B)
GOVERNMENT AND POLITICS IN TELANGANA-II

Unit-I: Nature of the Telangana Movement:

A) Role of the Political Parties

B) Role of the Non- Party Agencies

1) Students JAC.
2) Political JAC and its activities.
3) Other JACs:
   a. Cultural JAC.
   b. Employees JAC.
   c. Lawyers JAC.
   d. Caste and Community JACs.

C) Role of Media.

Unit II: Committees and Commissions on Telangana:

A. Girglani Commission.
B. Rosaiah Committee.
C. Justice Sri Krishna Committee.
D.

Unit III: Emergence of Telangana State:

A. Constitutional Processes.
B. Formation of Telangana State.

Unit V I: Structure of the Government:

Legislature: Assembly, Council
Executive: Governor, Chief Minister & council of Minister
Judiciary: High Court & District Court System

Unit-V: A) Party System in Telangana

India National Congress-INC, Barathiya Janatha Party- BJP, Communist Party of India - CPI, Communist Party of India (Marxist)-CPI (M).

Telangana Rastra Samithi-TRS, Telugu Desham Party-TDP, MIM, ML Parties- Maoist party, Jana Shakthi, New Democracy**.**

B) Political Process in Telanga

1) Caste 2) Religion 3) Media

Books Recommended:

1. *Bala Ramulu.Ch and D.Ravinder. June 2012 "Five Decades of Democratic Decentralization process in Andhra Pradesh" in Social Change (Journal of the Council for Social Development-Published by Sage international), Vol.42, No.2. Pp. 165-186.*

2. Bhukya Bhangya, 2013 "Between Tradition and Modernity: Nizam's, Colonialism and Modernity in Hyderabad State" Economic and Political Weekly, Vol-XLVIII No.48, Nov 30, pp. 120-125.

3.Haragopal.G, 2010 "The Telangana People's Movement: The Unfolding Political Culture" Economic and Political Weekly, Vol-XLV No.42, Oct 16, pp.51-60.

4.Jadhav Keshav Rao, 2010 "'Backwardisation' of Telangana" Economic and Political Weekly, Vol-XLV No.13, Mar 27, pp. 15-20.

5.Kodanda Ram.M, 2007 "Movement for Telangana State: A Struggle for Autonomy" Economic and Political Weekly, Vol-XLII No.02, Jan 13, pp.92-94.

6.Melkota, S.Rama, Revathi E, Lalitha K, Sajaya K and Sunitha A, 2010 "The Movement for Telangana: Myth and Reality" Economic and Political Weekly, Vol-XLV No.2, Jan 9, pp.8-11.

7.Pavier Barry, Telangana Peasant Movement 1944-51, Vikas Publications.

8.Pingle, Gautam 2014 The Fall and Rise of Telangana, Orient Blackswan.

9.Rao. K.V. Narayan, "Emergence of Andhra Pradesh", Popular Prakashan.

10.Rao.P.L.Visweshwar and S.Simhadri (eds.), 1998 "Telangana: Dimensions of Under Development", Centre for Telengana Studies, Hyderabad.

11.Rao. CH.Hanumanth, 2014 "The New Telangana State: A Perspective for Inclusive and Sustainable Development" Economic and Political Weekly, Vol-XLIX No.9, March 1, pp.10-13.

12.Ravinder.D. 1998 "Rural Development and Regional Imbalances: A Study of IRDP" in P.L.Visweshwar Rao and S.Simhadri (eds.) Telangana: Dimensions of Under Development (Hyderabad, Centre for Telengana Studies), Pp.173-179.

13.Reddy. G Krishna, March, 2002 "New Populism and Liberalization: Regime Shift under Chandra Babu Naidu in Andhra Pradesh", Economic and Political Weekly, Vol.XXXVII (9), 2-8, pp.871-883.

14.Reddy. G Krishna, 2009 "Forging Public Opinion: The press, Television and Electoral Campaigns in Andhra Pradesh" Arvind Rajgopal (ed), Indian Public Sphere: Structure and Transformation-A Reader, OUP.

15.Reddy. G Ram and B.A.V.Sharma (eds), "State Government and Politics –A.P", Sterling.

16.Sharma.B.A.V, "Political Economy of India", Light and Life Publishers.

17.Srinivasulu.K, 2002 "Caste, Class and Social Articulation in Andhra Pradesh, India: Mapping Differential Regional Trajectories", Working Paper 179, Overseas Development Institute, London,

18.Srinivasulu.K, M.Channa Basavaiah and D.Ravinder, 2011 "Srikrishna Committee: Thorough but Unviable" in Economic and Political Weekly, Vol.XLVI, No.10, March 5, pp.16-18.

19.Tillin Louise. C., October 2013 Remapping India: New States and their Political Origins. Hurst and Co.

20.Telangana Movement and State formation: Prof. Kodandaram and others - Telugu Akademi.

21.Telangana History and Culture: G. Anjaiah and others - Telugu Akademi.

22.Telangana Movement - State formation: V. Prakash

23.Telangana Social, Cultural History (Telugu): Dr. M Jithendar Reddy.

24.Telangana Movement – History (Telugu): Dr. M Jithendar Reddy.

Telugu

(Second Language)

B.A./ B.Com./ B.Sc. I - IV Semester Syllabus (CBCS)

(w.e.f. 2016 - 2017)

Faculty of Arts

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

PALAMURU UNIVERSITY, MAHABUBNAGAR

Syllabus for B.A./ B.Sc./B.Com under CBCS pattern

TELUGU (SECOND LANGUAGE)

1st Semester

ప్రాచీన పద్యభాగం.

1.శకుంతలోపాఖ్యానము

2.గొడగూచి

3.త్యాగనిరతి

ఆధునిక కవిత్వం

1.కాసులు

2.రాజు – కవి

3.గంగిరెద్దు.

4.జయభేరి

1. ఉపవాచకం

రుద్రమదేవి (నవల)

భాషా విభాగం

భాషా భాగాలు, సాధుశబ్దాల గుర్తింపు

పర్యాయపదాలు, నానార్థాలు.

పాఠ్యగ్రంథం: తెలుగుఅకాడమీ ప్రచురించిన సాహితీమంజీర. దీనిలోని రెండు పాఠాలు- (సంవరణుని తపస్సు, శ్రీరంగక్షేత్ర మహిమ) ఉస్మానియావిశ్వవిద్యాలయ పరిధిలోని డిగ్రీ ద్వితీయభాష(తెలుగు), విద్యార్థులకు తొలగించి, వాటిని మాడర్న్ లాంగ్వేజ్ (తెలుగు)విద్యార్థులకు నిర్దేశించనైంది.

పరీక్షా పద్ధతి

ఎ. ఇంటర్నల్ ఎసెస్ మెంట్	**20** మార్కులు
బి. సెమిస్టర్ పరీక్ష	**80**మార్కులు
1.పద్యం, ప్రతిపదార్థ తాత్పర్యాలు – సమగ్ర వ్యాఖ్య	12
2.సందర్భ సహిత వ్యాఖ్యలు (ప్రాచీనపద్యభాగం నుండి 2, ఆధునికకవిత్వభాగం నుండి 2 రాయాలి,ప్రతిభాగం నుండి 4 ఇస్తారు.)	12 (4X3)
3.వ్యాసరూప ప్రశ్న (ప్రాచీన పద్యభాగం- ఇంటర్నల్ చాయిస్.)	12
4. వ్యాసరూప ప్రశ్న (ఆధునిక కవిత్వం- ఇంటర్నల్ చాయిస్)	12
5.వ్యాసరూప ప్రశ్నలు (ఉపవాచకంనుండి 4 ప్రశ్నలిస్తే 2రాయాలి)	20 (10+10)
6.భాషా విభాగం (భాషా భాగాల గుర్తింపు, సాధు శబ్దాల గుర్తింపునకు సంబంధించి పర్యాయపదాలు, నానార్థాలకు సంబంధించి ప్రశ్నలిస్తారు)	12(6+6)

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PALAMURU UNIVERSITY, MAHABUBNAGAR

Syllabus for B.A./ B.Sc./B.Com under CBCS pattern

TELUGU (SECOND LANGUAGE)

2nd Semester

ప్రాచీన పద్యభాగం.

1.గజేంద్ర మోక్షము

2.హనుమత్సందేశము

3. సుభాషితములు

ఆధునిక కవిత్వం

1.అంతర్నాదము

2..ప్రపంచ పదులు

3..రోడ్డురోలర్

4. అల్విదా

వచన విభాగం

1.యుగాంతం

2.ఎంకన్న

3. మామిడి పండు

4.మా ఊరు పోయింది.

5. ఇదీ ఒక కళే – పేరులు దారులు గుర్తుంచుకోవడం.

భాషా విభాగం

సంధులు, సమాసాలు

పరీక్షా పద్ధతి

ఎ. ఇంటర్నల్ ఎసెస్ మెంట్	**20** మార్కులు
బి. సెమిస్టర్ పరీక్ష	**80** మార్కులు
1.పద్యం, ప్రతిపదార్థ తాత్పర్యాలు – సమగ్ర వ్యాఖ్య	12
2.సందర్భ సహిత వ్యాఖ్యలు (ప్రాచీనపద్యభాగం నుండి 2, ఆధునికకవిత్వభాగం నుండి 2 రాయాలి. ప్రతిభాగం నుండి 4 ఇస్తారు.)	12 (4X3)
3.వ్యాసరూప ప్రశ్న (ప్రాచీన పద్యభాగం- ఇంటర్నల్ చాయిస్.)	12
4. వ్యాసరూప ప్రశ్న (ఆధునిక కవిత్వం- ఇంటర్నల్ చాయిస్)	12
5.వ్యాసరూప ప్రశ్నలు (వచనవిభాగంనుండి 4 ప్రశ్నలిస్తే 2 రాయాలి)	20 (2x10)
6.భాషా విభాగం (సంధులగుర్తింపు, సూత్రవివరణకు సంబంధించి 3 సమాసాలగుర్తింపు విగ్రహవాక్యాలకు సంబంధించి 3 ప్రశ్నలిస్తారు)	12 (6+6)

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Palamuru University, Mahabubnagar

CBCS SEMESTER - 3 (2017-18) TELUGU SYLLABUS

B.A., /B.Com.,/ B.Sc., / B.B.A., (ద్వితీయ భాష) తెలుగు – మూడవ సెమిస్టర్

సిలబస్ (మార్గదర్శి)

ప్రాచీన పద్యభాగం

1. ధర్మరాజు వాక్ చాతుర్యం .... తిక్కన
2. విభీషణ శరణాగతి .... గోన బుద్ధారెడ్డి
3. గుణనిధి కథ .... శ్రీనాథుడు

ఆధునిక పద్యభాగం

1. రైతు ప్రశస్తి ... వానమామలై జగన్నాథాచార్యులు
2. గురు దక్షిణ ... అంబటి లక్ష్మీనరసింహ రాజు
3. గుడిసెలు కాలిపోతున్నై ... బోయి భీమన్న

వచన విభాగం (నాటకం)

చలి చీమలు నాటకం ... పి.వి. రమణ

అలంకారాలు

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

అర్థాలంకారాలు : ఉపమ, ఉత్ప్రేక్ష, రూపక, స్వభావోక్తి, ఉల్లేఖ, అర్థాంతరన్యాస, శ్లేష, దృష్టాంతాలంకారాలు.

Palamuru University, Mahabubnagar

CBCS SEMESTER - 4 (2017-18) TELUGU SYLLABUS

B.A., /B.Com.,/ B.Sc., / B.B.A., (ద్వితీయ భాష) తెలుగు – నాల్గవ సెమిస్టర్

సిలబస్ (మార్గదర్శి)

ప్రాచీన పద్యభాగం

1. నారద గాన మాత్సర్యం .... పింగళి సూరన
2. వాగ్దాన భంగం .... ఆసూరి మరింగంటి వేంకట నరసింహాచార్యులు
3. నారసింహ శతకం ... ధర్మపురి శేషప్ప

ఆధునిక పద్యభాగం

1. నరుడా నేను నరుడా నేను .... కాళోజీ
2. ఆర్తగీతం ... తిలక్
3. దేవరకొండ దుర్గం ... డా॥ ముకురాల రామారెడ్డి

వచన విభాగం

1. అర్ధరాత్రి అరుణోదయం ... దాశరథి
2. సి.పి.బ్రౌన్ సాహిత్య సేవ ... జానుమద్ది హనుమచ్ఛాస్త్రి
3. మన గ్రామనామాలు ... డా॥ కపిలవాయి లింగమూర్తి
4. నివురు తొలగిన నిప్పు ... పోల్కంపల్లి శాంతాదేవి
5. కొండ మల్లెలు ... ఇల్లిందల సరస్వతీ దేవి

ఛందస్సు

పాఠ్య గ్రంథము లోనివి.

సామాజిక వ్యాసం.

Palamuru University, Mahabubnagar

CBCS SEMESTER - 4 (2017-18) TELUGU QUESTION PAPER

B.A., /B.Com.,/ B.Sc., / B.B.A., (ద్వితీయ భాష) తెలుగు – నాల్గవ సెమిస్టర్

అ – భాగం

ఏవేని ఐదు ప్రశ్నలకు సమాధానం రాయాలి. (5 × 4 = 20)

1. ఉత్తముల మహిమ నీరుకొలది తామర సుమ్మీ ..... సందర్భ సహిత వ్యాఖ్య రాయండి.
2. తెగు నా పాండవుల తోడ నిక బాంధవమున్ .... సందర్భ సహిత వ్యాఖ్య రాయండి.
3. చావు రాక మున్నే పిరికి; చావు చావలేను నేను .... సందర్భ సహిత వ్యాఖ్య రాయండి.
4. విధి ఇన్ని కత్తులను దూసినదేమీ? .... సందర్భ సహిత వ్యాఖ్య రాయండి.
5. ఆటవెలది పద్యాన్ని ఉదాహరణతో వివరించండి.
6. ధర్మపురి శేషప్ప కవి గురించి వివరించండి.
7. కొండమల్లెలు కథానిక నుండి పోచాలు పాత్రను పరిచయం చేయండి.
8. స్వచ్ఛభారత్‌పై మీ అభిప్రాయాన్ని ఒక కవిత ద్వారా తెలపండి.

ఆ – భాగం

ఈ క్రింది ప్రశ్నలకు సమాధానాలు రాయండి. (5 × 12 = 60)

9. ఈ క్రింది పద్యంలో ఒకదానికి సమగ్ర వ్యాఖ్యను రాయండి.

   అ) వారిద పంక్తిలో వెడలివచ్చు మెఱుంగుల పిండి నా, సఖీ
   వారముతో రమారమణి వచ్చెను; హెగ్గెడి కత్తెలెందఱే
   గోరి భజింప, నా కొలువు కూటము ముందఱి వంక నొప్పు సం
   గారపు దోటనుండి యధికంబగు వైభవ మింప మీఱగన్.

   ఆ) కనుగవ కెంపు బార మది కళ్వళ మంతకు బెంపుదేర, హె
   చ్చిన తమి మీర జెక్కుగవ చెమ్మట జార ప్రలంబ వైరి పై
   తన కసిదీర పట్టువిడి తాలిమి దూర సరోష భీషణా
   నన మలరార, నా కమలనాభుని చెంతకు జేరి యిట్లనెన్.

10. దేవరకొండ దుర్గ వైభవాన్ని వివరించండి.

    లేదా

    తిలక్ ఆర్తగీతం ద్వారా వెలిబుచ్చిన అభిప్రాయాన్ని తెలపండి.

11. సి.పి.బ్రౌన్ సాహిత్య సేవను వివరించండి.

    లేదా

    1947 ఆగస్టు 15 కాలం నాటి హైదరాబాద్ పరిస్థితులను తెలపండి.

12. గ్రామానామాల అధ్యయనం వల్ల కలిగే ప్రయోజనాలను తెలపండి.

    లేదా

    నివురు తొలగిన నిప్పు కథానికలో రమణ పాత్ర గురించి రచయిత్రి భావాలు వివరించండి.

13. చంపకమాల, మత్తేభము, ద్విపద ఛందస్సుల లక్షణాలను ఉదాహరణతో వివరించండి.

    లేదా

ఈ క్రింది పద్య పాదాలలోని ఛందస్సును గుర్తించి లక్షణాలను రాయండి.

అ) ఏనును దుంబురుం డెచటి కేగె? గృహంబున నున్నవాడె? యం

ఆ) వైకుంఠంబున నొక్కనాడతులితైశ్వర్యుండు విష్ణుండు నా

ఇ) భరత ఖండంబు చక్కని పాడియావు.

Palamuru University, Mahabubnagar

CBCS SEMESTER - 3 (2017-18) TELUGU QUESTION PAPER

B.A., /B.Com.,/ B.Sc., / B.B.A., (ద్వితీయ భాష) తెలుగు – మూడవ సెమిస్టర్

అ – భాగం

ఏవేని ఐదు ప్రశ్నలకు సమాధానం రాయాలి. (5 × 4 = 20)

1. వలవ దధిక దీర్ఘ వైర వృత్తి ..... సందర్భ సహిత వ్యాఖ్య రాయండి.
2. మరియాదలిట్టివి మా కులంబు నకు .... సందర్భ సహిత వ్యాఖ్య రాయండి.
3. లేచి ఎదురు తిరిగెనేని ఎదురు లేదు .... సందర్భ సహిత వ్యాఖ్య రాయండి.
4. ఇది మనధర్మంలోని రహస్యం .... సందర్భ సహిత వ్యాఖ్య రాయండి.
5. అంత్యానుప్రాసాలంకారాన్ని ఉదాహరణతో వివరించండి.
6. తాతాచారి పాత్ర చిత్రణ
7. విభీషణుని గూర్చి రాయండి
8. ఈ క్రింది వాక్యాలను తెలుగులోనికి అనువదించండి.

To Terry Fox, the one-legged runner whose life was the antithesis of self-aggrand-izement, the thought he would be the first Canadian depicted on a circulating coin would be considered loony, Fox asked every Canadian for a dollar toward cancer research whern he dipped his prosthesis into the frigid of St.John's harbour on April 12, 1980 and began his cross Canada marathon.

ఆ – భాగం

ఈ క్రింది ప్రశ్నలకు సమాధానాలు రాయండి. (5 × 12 = 60)

9. ఈ క్రింది పద్యంలో ఒకదానికి సమగ్ర వ్యాఖ్యను రాయండి.

అ) కావున శాంతిబొందుటయు కర్జము, దా నది యట్టులుండె; శ్రీ
గావలె నంచు, బొంతము గామియు గోరెద; మెల్ల సొమ్ములుం
బోవుటయుం గులక్షయము పుట్టుటయున్ వెలిగాగ నొందుమై
నే విధి నైన జక్కబడు టెంతయు నొప్ప జుమీ జనార్దనా!

ఆ) విడువక నీవు పట్టణము వీధుల వీధుల వెట్టివాడ వై
చెడుగుల గూడి ధైర్యములు సేయ మహీ రమణుండెఱింగెనే
విడుచును సోమయాజి మును వృత్తులు చేకొను నెల్లభంగులన్
జెడుదుము నీకతంబు నను జీరయు గూడును లేక పుత్రకా

10. అర్జునుడు గురుదక్షిణ చెల్లించిన విధము వివరించండి.

లేదా

రైతు ప్రశస్తి పాఠ్యాంశ సారాంశాన్ని వివరించండి.

11. చలిచీమలు నాటక నామౌచిత్యాన్ని వివరించండి.

లేదా

చలిచీమలు నాటకంలో విశాలాక్షి పాత్రను విశ్లేషించండి.

12. చలిచీమలు నాటక కాలం నాటి సాంఘిక పరిస్థితులను తెలపండి.

లేదా

చలిచీమలు నాటకంలో సురేశ్ పాత్ర గుణగణాలను వివరించండి.

13. స్వభావోక్తి, రూపక, ఉత్ప్రేక్ష అలంకారాల లక్ష్య లక్షణ సమన్వయం చేయండి.

లేదా

ఈ క్రింది పద్య పాదాలలోని అలంకారాలను, లక్షణాలను వివరించండి.

అ) పగయు గలిగె నేని బామున్న యింటిలో నున్న యట్ల గాక యూరడిల్లి

ఆ) పరమాత్ముడవు నీవ పరమంబు నీవ పరమ విద్యయు నీవ పరికింప నెందు

ఇ) వదల లేదు మాధవ మాధవ స్మృతులను

Zoology

B.Sc. (I - IV Semesters) Syllabus (CBCS)

(w.e.f. 2016 - 2017)

Faculty of Science

PALAMURU UNIVERSITY

Mahabubnagar - 509 001, Telangana

2016

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
I - SEMESTER
Discipline Specific Course, Paper – I
[Code: BS105; Course Type DSC 2A]
Animal Diversity – Invertebrates

Periods: 60 Max. Marks: 40

UNIT – I (15 Periods)

1.1 Brief history of Invertebrates
- 1.1.1 Kingdom Animalia
- 1.1.2 Brief history of Invertebrates

1.2 Protozoa
- 1.2.1 General characters
- 1.2.2 Classification up to classes with examples
- 1.2.3 Type study - *Elphidium*
- 1.2.4 Life cycle of *Plasmodium.*
- 1.2.5 Locomotion, Reproduction and Diseases

1.3 Porifera
- 1.3.1 General characters
- 1.3.2 Classification of Porifera up to classes with examples
- 1.3.3 Type study - *Sycon*
- 1.3.4 Canal system in sponges and Spicules.

UNIT – II (15 Periods)

2.1. Cnidaria
- 2.1.1 General characters
- 2.1.2 Classification of Cnidaria up to classes with examples
- 2.1.3 Type study - *Obelia*
- 2.1.4 Polymorphism in hydrozoa
- 2.1.5 Corals and coral reef formation

2.2 Platyhelminthes
- 2.1.1 General characters
- 2.1.2 Classification of Platyhelminthes up to classes with examples
- 2.1.3 Type study- *Schistosoma*

2.3 Nemathelminthes
- 2.3.1 General characters
- 2.3.2 Classification of Nemathelminthes up to classes with examples
- 2.3.3 Type study - *Dracunculus*
- 2.3.4 Parasitic Adaptations in Helminthes

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

UNIT – III (15 Periods)

3.1 Annelida

- 3.1.1 General characters
- 3.1.2 Classification of Annelida up to classes with examples
- 3.1.3 Type study - *Hirudinaria granulosa.*
- 3.1.4 Evolutionary significance of Coelome and Coelomoducts and metamerism

3.2 Arthropoda

- 3.2.1 General characters
- 3.2.2 Classification of Arthropoda up to classes with examples
- 3.2.3 Type study - Prawn
- 3.2.4 Mouth parts of Insects
- 3.2.5 Insect metamorphosis
- 3.2.6 *Peripatus* - Structure and affinities

UNIT – IV (15 Periods)

4.1 Mollusca

- 4.1.1 General characters
- 4.1.2 Classification of Mollusca up to classes with examples
- 4.1.3 Type study - *Pila*
- 4.1.4 Pearl formation
- 4.1.5 Torsion and detorsion in gastropods

4.2 Echinodermata

- 4.2.1 General characters
- 4.2.2 Classification of Echinodermata up to classes with examples
- 4.2.3 Water vascular system in star fish
- 4.2.4 Echinoderm larvae and their significance

4.3 Hemichordata

- 4.3.1 General characters
- 4.3.2 Classification of Hemichordata up to classes with examples
- 4.3.3 *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. 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"

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
Discipline Specific Course, Paper – I
[Code: BS105; Course Type DSC 2A]
ANIMAL DIVERSITY - INVERTEBRATES

Periods: 30 Max. Marks: 40

1. Study of museum slides / specimens / models (Classification of animals up to orders)
   - *i.* Protozoa: Amoeba, *Paramoecium*, *Paramoecium Binary fission and Conjugation*, *Vorticella*, *Entamoeba histolytica*, *Plasmodium vivax*
   - *ii.* Porifera: *Sycon*, *Spongilla*, *Euspongia*, *Sycon* - T.S & L.S, Spicules, Gemmule
   - *iii.*
   - *iv.* Coelenterata: *Obelia – Colony & Medusa*, *Aurelia*, *Physalia*, *Velella*, *Corallium*, *Gorgonia*, *Pennatula*
   - v.
   - vi. Platyhelminthes: *Planaria*, *Fasciola hepatica*, *Fasciola* larval forms – Miracidium, Redia, Cercaria, *Echinococcus granulosus*, *Taenia solium*, *Schistosoma haematobium*
   - vii.
   - *viii.* Nemathelminthes: *Ascaris(Male & Female)*, *Drancunculus*, *Ancylostoma*, *Wuchereria*
   - ix.
   - x. Annelida: *Nereis*, *Aphrodite*, *Chaetopteurs*, *Hirudinaria*, Trochophore larva
   - xi.
   - *xii.* 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.
   - xiii.
   - *xiv.* Mollusca: *Chiton*, *Pila*, *Unio*, *Pteredo*, *Murex*, *Sepia*, *Loligo*, *Octopus*, *Nautilus*, Glochidium larva
   - xv.
   - *xvi.* Echinodermata: *Asterias*, *Ophiothrix*, *Echinus*, *Clypeaster*, *Cucumaria*, *Antedon*, Bipinnaria larva
   - xvii.
   - xviii. Hemichordata: *Balanoglossus*, Tornaria larva
   - xix.
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

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
Discipline Specific Course, Paper – I
[Code: BS105; Course Type DSC 2A]
ANIMAL DIVERSITY - INVERTEBRATES

Time: 2 Hrs. Max. Marks: 40

1. Identification, labeled diagram and salient features of spots: (7 Museum specimens + 2 slides)	18
2. Dissection (one) (Diagram -02 + Dissection & Display-05)	07
3. Field Visit & Note Book	04
4. Project Work	03
5. Certified practical record	03
6. Animal Album	03
7. Viva voce	02

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
II - SEMESTER
Discipline Specific Course, Paper – II
[Code: BS205; Course Type DSC 2B]
Ecology, Zoogeography and Animal Behavior

Periods: 60 Max. Marks: 40

UNIT – I (15Periods)

1.1 Ecology - I

1.1.1 Ecosystem structure and functions.
1.1.2 Types of Ecosystems –Aquatic and Terrestrial.
1.1.3 Biogeochemical cycles - Nitrogen, Carbon, Phosphorus and Water.
1.1.4 Energy flow in ecosystem.
1.1.5 Food chain, food web and ecological pyramids.
1.1.6 Animal Associations - Mutualism, commensalism, parasitism, competition, predation.

UNIT – II (15 Periods)

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.
2.1.6. Biodiversity and hotspots of Biodiversity in India.

UNIT – III (15 Periods)

3.1 Zoogeography

3.1.1 Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities
3.1.2 Wallace line, Discontinuous distribution
3.1.3. Continental Drift

UNIT – IV (15 Periods)

4.1 Animal Behaviour

4.1.1 Types of Behaviour- Innate and Acquired, Instinctive and Motivated behaviour
4.1.2 Taxes, Reflexes, Tropisms
4.1.3 Physiology and phylogeny of learning, trial and error learning, Imprinting, habituation, Classical conditioning, Instrumental conditioning
4.1.5 Social behavior, Communication, Pheromones

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

4.1.6 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 MGraw 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 Evolutionary Approach

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
B.Sc. PRACTICAL SYLLABUS FOR II SEMESTER
Discipline Specific Course, Paper – II
[Code: BS205; Course Type DSC 2B]
Ecology, Zoogeography and Animal Behavior

Periods: 30 Max. Marks: 40

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'

B.Sc. ZOOLOGY SYLLABUS UNDER CBS

B.Sc. II Year
III - SEMESTER
Core Paper – III
Animal Diversity- Vertebrates and Developmental Biology

Periods: 60 Max. Marks: 80

UNIT – I (15 Periods)

1.1. Urochordata, Cephalochordata, Cyclostomata
- 1.1.1. Salient features of Urochordata
- 1.1.2. Retrogressive metamorphosis and its significance in Urochordata
- 1.1.3. Salient features and affinities of Cephalochordata
- 1.1.4. General characters of Cyclostomata
- 1.1.5. Comparison of the *Petromyzon* and *Myxine*
- 1.1.6. General characters and classification of Chordata upto orders with examples.

1.2. Pisces
- 1.2.1. General characters of Fishes
- 1.2.2. Classification of fishes up to order level with examples
- 1.2.3. *Scoliodon* – Respiratory, Circulatory and Nervous system.
- 1.2.4. Types of Scales and types of Fins

UNIT – II (15 Periods)

2.1. Amphibia
- 2.1.1. General characters of Amphibians
- 2.1.2. Classification of Amphibians up to orders with examples.
- 2.1.3. *Rana tigrina* - Respiratory, Circulatory and Nervous system.
- 2.1.4. Parental care in amphibian; neoteny and paedogenesis.

2.2 Reptilia
- 2.2.1. General characters of Reptilia
- 2.2.2. Classification of Reptilia up to orders with examples
- 2.2.3. *Calotes* – Respiratory system, Circulatory and Nervous system.
- 2.2.4. Temporal fosse in reptiles and its evolutionary importance
- 2.2.5. Distinguished characters of Poisonous and Non poisonous snakes.
- 2.2.6. Rhynchocephalia.

UNIT – III (15 Periods)

3.1. Aves
- 3.1.1. General characters of Aves
- 3.1.2. Classification of Aves up to orders with examples.
- 3.1.3. *Columba livia* -, Digestive system, Circulatory systems, Respiratory system and Nervous system.
- 3.1.4. Migration in Birds
- 3.1.5. Flight adaptation in Birds

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

3.2. Mammalia

3.2.1. General characters of Mammalia
3.2.2. Classification of Mammalia up to orders with examples
3.2.3. Rabbit –Digestive, Respiratory, Circulatory and Nervous system.
3.2.4. Dentition in mammals.
3.2.5. Aquatic adaptations in Mammals.

UNIT – IV (15 Periods)

4.1 Developmental Biology and Embryology

4.1.1 Gametogenesis (Spermatogenesis and Oogenesis)
4.1.2 Fertilization
4.1.3 Types of eggs
4.1.4 Types of cleavages
4.1.5 Development of Frog up to formation of primary germ layers
4.1.6 Formation of Foetal membrane in chick embryo and their functions
4.1.7 Types and functions of Placenta in mammals
4.1.8 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.

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. II Year
ZOOLOGY PRACTICAL SYLLABUS FOR III SEMESTER
ZOOLOGY - CORE PAPER - III
Animal Diversity- Vertebrates and Developmental Biology

Periods: 30 Max. Marks: 25

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*, *Chemaeleon*, *Gecko*, *Uromastix*, *Vipera russelli*, *Naja*, *Bungarus*, *Enhydrina*, *Typhlops*, *Testudo*, *Trionyx*, *Crocodilus*, *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: *Ornithorhynchus*, *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

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. II Year
ZOOLOGY PRACTICAL SYLLABUS FOR III SEMESTER
ZOOLOGY - CORE PAPER - III
Animal Diversity- Vertebrates and Developmental Biology

Time: 2 Hrs. Max. Marks: 25

1. Identification, labeled diagram and salient features of spots:	08
(6 Museum specimens + 2 slides)	
2. Osteology (02 Spots)	04
3. Dissection (one) (Diagram + Dissection & Display)	05
4. Embryology (02 Spots)	04
5. Certified practical record	03
6. Animal Album	02
7. Viva voce	02

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. II Year
IV - SEMESTER
Core Paper – IV
Cell Biology, Genetics & Evolution

Periods: 60 Max. Marks: 80

UNIT – I (15 Periods)

1. Cell Biology
1.1. Cell theory, Differences of Prokaryotic and Eukaryotic cells
1.2. Ultrastructure of animal cell
1.3. Structure and functions of plasma membrane proteins.
1.4. Structure and functions of cell organelles –
Endoplasmic reticulum, Golgi body, Ribosomes, Lysosomes, centrosomes, Mitochondria and Nucleus
1.1.5 Chromosomes – Structure, types, giant chromosomes
1.1.6 Cell Division - Mitosis, Meiosis.
1.1.7. Cell cycle and its regulation.

UNIT – II (15 Periods)

2. Molecular Biology
2.1 DNA (Deoxyribo Nucleic Acid) - Structure
2.2 RNA (Ribo Nucleic Acid) - Structure, types
2.3 DNA Replication
2.4 Protein Synthesis – Transcription and Translation
2.5 Gene Expression – Genetic Code; operon concept
2.6 Molecular Biology Techniques- Polymerase Chain Reaction, Electrophoresis

UNIT – III (15 Periods)

3. Genetics
3.1 Mendals laws of Inheritance and Non-Medelian Inheritance
3.2 Linkage and Crossing over
3.3.Sex determination and sex-linked inheritance
3.4 Chromosomal Mutations- Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy.
3.5. Gene mutations- Induced versus Spontaneous mutations.
3.6. Inborn errors of metabolism.
3.7. One gene one enzyme, one gene one polypeptide theory.

UNIT – IV (15 Periods)

4. Evolution
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.
4.3. Forces of Evolution – mutation, gene flow, genetic drift, and natural selection.
4.4. Isolation – Pre-mating and post mating isolating mechanisms
4.5. Speciation: Methods of speciation - Allopatric and sympatric
4.6. 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'

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. II Year
ZOOLOGY PRACTICAL SYLLABUS FOR III SEMESTER
ZOOLOGY Core Paper – IV
Cell Biology, Genetics and Evolution

Periods: 30 Max. Marks: 25

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.

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. II Year
B.Sc. PRACTICAL MODEL PAPER FOR IV SEMESTER
ZOOLOGY - CORE PAPER - IV
Cell Biology, Genetics and Evolution

Time:2 Hrs. Max. Marks: 25

1. Identification, labeled diagram and salient features of spots: (05 spots)	10
2. Prepare and Identify Mitotic divisions with onion root tips:	04
3. One Problem from Genetics	03
4. One Problem from Evolution	03
5. Certified practical record	03
6. Album	02
7. Viva voce	02

B.Com (General)

(w.e.f. 2016–2017)

Second Year Syllabus (CBCS)

FACULTY OF COMMERCE,
PALAMURU UNIVERSITY,
MAHABUBNAGAR – 509001, T.S.

2017

DEPARTMENT OF COMMERCE, P.U.
Structure of B.Com (General) (CBCS) for Palamuru University, Mahabubnagar
(w.e.f. Academic Year 2016-17)

DEPARTMENT OF COMMERCE, P.U.

Structure of B.Com (General) (CBCS) for Palamuru University, Mahabubnagar

(w.e.f. Academic Year 2016-17)

B.COM (General) PROGRAMME

FIRST YEAR:					
SEMESTER-I:					
Sl.No.	***Code***	***Course Title***	***Course Type***	***HPW***	***Credits***
(1)	(2)	(3)	(4)	(5)	(6)
1.	BC101	A/B/C/D	AECC-1	2	2
2.	BC102	English	CC-1A	5	5
3.	BC103	Second Language	CC-2A	5	5
4.	BC104	Financial Accounting - I	DSC-1A	5	5
5.	BC105	Business Economics	DSC-2A	5	5
6.	BC106	Business Organization	DSC-3A	4	4
7.	BC107	Information Technology	DSC-4A	3T+2P	4
		Total		**31**	**30**
SEMESTER-II:					
8.	BC201	A/B/C/D	AECC-2	2	2
9.	BC202	English	CC-1B	5	5
10.	BC203	Second Language	CC-2B	5	5
11.	BC204	Financial Accounting - II	DSC-1B	5	5
12.	BC205	Managerial Economics	DSC-2B	5	5
13.	BC206	Principles of Management	DSC-3B	4	4
14.	BC207	Foreign Trade	DSC-4B	4	4
		Total		**30**	**30**
SECOND YEAR:					
SEMESTER-III:					
15.	BC301	Principles of Insurance	SEC-1	2	2
16.	BC302	English	CC-1C	5	5
17.	BC303	Second Language	CC-2C	5	5
18.	BC304	Advanced Accounting	DSC-1C	5	5
19.	BC305	Income Tax-I	DSC-2C	5	5
20.	BC306	Business Statistics-I	DSC-3C	4	4
21.	BC307	Entrepreneurial Development & Business Ethics	DSC-4C	4	4
		Total		**30**	**30**
SEMESTER-IV:					
22.	BC401	Practice of Life Insurance	SEC-2	2	2
23.	BC402	English	CC -1D	5	5
24.	BC403	Second Language	CC-2D	5	5
25.	BC404	Corporate Accounting	DSC-1D	5	5
26.	BC405	Income Tax-II	DSC-2D	5	5
27.	BC406	Business Statistics-II	DSC-3D	4	4
28.	BC407	Financial Statement Analysis	DSC-4D	4	4
		Total		**30**	**30**

THIRD YEAR:					
SEMESTER-V					
29.	BC501	Practice of General Insurance	SEC-3	2	2
30.	BC502		GE-1	2	2
31.	BC503	Cost Accounting	DSC-1E	4	4
32.	BC504	Business Law	DSC-2E	4	4
33.	BC505	Banking Theory & Practice	DSC-3E	4	4
34.	BC506	Auditing	DSC-4E	4	4
35.	**BC507**	Computerised Accounting	**DSE-1A**	**4T+2P**	**5**
36.	**BC508**	Accounting Standards	**DSE-2A**	**5**	**5**
		Total		**31**	**30**
SEMESTER-VI					
37.	BC601	Regulation of Insurance Business	SEC-4	2	2
38.	BC602		GE-2	2	2
39.	BC603	Managerial Accounting	DSC-1F	4	4
40.	BC604	Company Law	DSC-2F	4	4
41.	BC605	Financial Institutions & Markets	DSC-3F	4	4
42.	BC606	Commerce Lab	DSC-4F	2T+4P	4
43.	**BC607**	Advanced Managerial Accounting	**DSE-1B**	**5**	**5**
44.	**BC608**	Advanced Corporate Accounting	**DSE-2B**	**5**	**5**
		Total		**32**	**30**
		GRAND TOTAL		**184**	**180**

AECC: Ability **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; T=Theory; P=Practicals;*

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	AECC	2	2	4
2	SEC	4	2	8
3	CC Language	8	5	40
	DSC	**8**	**5**	**40**
		16	**4**	**64**
4	**DSE**	**4**	**5**	**20**
5	GE	2	2	4
	TOTAL	**44**		**180**
	Commerce Total	**28**		**124**

SECOND YEAR SYLLABUS

Paper : (BC 301): PRINCIPLE OF INSURANCE

Paper: BC 301 Max. Marks: 100
PPW: 2 Hrs, ***Credits : 2*** Exam Duration: 3Hrs

Objectives: *The objectives of the course are : 1) to provide a basic understanding of the Insurance Mechanism. 2) identify the relationship between Insurers and their Customers and the importance of Insurance Contacts. 3) give an overview of major Life Insurance and General Insurance Products*

UNIT I: RISK MANAGEMENT AND INSURANCE : Understanding of Risk Management – Different Types of Risks – Actual and Consequential Losses – Management of Risks – Loss Minimization Techniques – Basics, Evolution and Nature of Insurance – Concept of Pooling in Insurance – Different Classes of Insurance – Importance of Insurance – Unexpected Eventualities

UNIT II: INSURANCE BUSINESS AND MARKET : Management of Risk by Individuals – Management of Risk by Insurers – Fixing of Premiums – Reinsurance and its Importance for Insurers – Role of Insurance in Economic Development and Social Security – Contribution of Insurance to the Society – Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies – Insurance Specialists – Role of Regulators – Other Bodies Connected with Insurance

UNIT III: INSURANCE TERMINOLOGY AND INSURANCE CUSTOMERS : Common Terms in Insurance: Life and Non Life – Specific Terms in Insurance: Life and Non Life – Usage of Insurance Terms – Understanding Insurance Customers – Different Customer Needs – Importance of Customers – Customer Mindsets – Customer Satisfaction – Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior

UNIT IV: INSURANCE CONTRACT : 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

UNIT V: INSURANCE PRODUCTS : a) *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. **b)** 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. Risk Management and Insurance : Vaughan and Vaughan
2. Risk Management : A Publication of the Insurance Institute of India
3. Role of Insurance in Financial inclusion : Brinda Publishing House, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
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 : (13th Edition), George E Rejda
9. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing Cincinnati, Ohio

Suggested Websites : 1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

Paper : (BC 304) : ADVANCED ACCOUNTING

Paper: BC 304 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3 Hrs
Credits : 5

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 - Prorata 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, Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (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. Accountancy–III: Tulasian, Tata McGraw Hill Co.
6. Advanced Accountancy: Arulanandam; Himalaya.
7. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers.
8. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
9. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

Paper : (BC 305) INCOME TAX – I

Paper: BC 305 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3Hrs
Credits : 5

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 - Income Tax general rule and Exemptions to the Rule– Person – 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 – Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-II: AGRICULTURAL INCOME:

Introduction – Definition – Tests to determine Agricultural Income – Partly Agricultural and partly Non-Agricultural Income – Integration: conditions – provisions – computation of Tax on Integration process. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates.

UNIT–III: 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–IV: 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–V: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

Definition of 'Business and Profession' – Procedure for computation of Income from Business – Rules – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Valuation of Stock – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation –problems on computation of Income from Business. Income from Profession: Rules– procedure – problems on computation of Income from Profession.

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B.B. Lal, Pearson Education.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: Johar, McGrawHill Education.
6. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning.

Paper: (BC 306): BUSINESS STATISTICS-I

Paper: BC 306 Max. Marks: 100
PPW: 4Hrs Exam Duration: 3hrs
Credits : 4

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 Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata McGraw Hill
6. Fundamentals of Statistical: S. P Gupta, Sultan Chand
7. Business Statistics: J. K. Sharma, Vikas Publishers
8. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics - Theory, Methods and Applications: Sancheti D.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Statistics: Andasn,Sweenly,Williams,Cingage.

Paper : (BC 307) : ENTREPRENEURAL DEVELOPMENT & BUSINESS ETHICS

Paper: BC 307 Max. Marks: 100
PPW: 4 Hrs Exam Duration: 3Hrs
Credits : 4

Objective: *To have exposure to the e*ntrepreneurial *culture, development and business ethics to set up and manage small units.*

UNIT–I: INTRODUCTION:
Entrepreneur: Evolution-Concept - Functions - Characteristics – Importance of Entrepreneur– Types of Entrepreneurs - Entrepreneurship-Entrepreneurial Competencies-Women Entrepreneurs in India – Opportunities & Challenges-Entrepreneurship today.

UNIT–II: ENTREPRENEURIAL DEVELOPMENT:
Entrepreneurial opportunities in India-Environment Scanning– Idea Generation – Transformation of Ideas into Opportunities - Idea & opportunity assessment – Market assessment – Trend spotting – Creativity &Innovation – Innovative process – Selection of the right opportunity.

UNIT–III: PROJECT AND MSMEs:
Project: Concept -Classification - Identification - Formulation – Design - Planning and Appraisal - Social Cost-Benefit Analysis – Budget and Planning Financial Analysis &Project Financing - MSME – Government Policy and Support.

UNIT–IV: ENTTREPRENEURALDEVELOPMENT POLICIES AND PROGRAMMES:
Entrepreneurship Development Programmes – Policies of the Government – Institutions for Entrepreneurship Development Training (EDIs) in India: CED, MDI, EDII, IED, NIESBUD, EMC, STEPs, XISS, SIDO, SISIs - Role of Consultancy Organizations: IDCs, TCOs – Role of Financial Institutions and Banks.

UNIT–V: BUSINESS ETHICS:
Concept of Business Ethics-Moral Values-Utilitarianism and Universalism -Business Standards and Values - Concept of Corporate Social Responsibility

SUGGESTED READINGS:
1. Entrepreneurship Development: A.Shankaraiah et al, KalyaniPublishers.
2. Fundamentals of Entrepreneurship: K.K. Patra, Himalaya Publishing House.
3. Entrepreneurship Development:Dr.S.S.Khanka, S.Chand.
4. Entrepreneurship Development: V.Gangadhar et al, Kalyani Publishers.
5. Entrepreneurship Development & Small Business Enterprises: Poornima Charantimath, Pearson.
6. Entrepreneurship: Robert D. Hisrich, McGraw Hill
7. Entrepreneurship: Arya Kumar, Pearson
8. The Dynamics of Entrepreneurial Development & Management: Vasanth Desai, Himalaya
9. Business Ethics: Chandra Kumar Roy, Prabhat Kumar Roy, Vikas Publishing House Ltd.
10. Entrepreneurial Development and Business Ethics : Prof.Sarma V.S.Veluri, Prof.M.Yadagiri, Dr.Surender Gade,Sarita Madipelli

Paper : (BC 401) : PRACTICE OF LIFE INSURANCE

Paper: BC 401 Max. Marks: 100
PPW: 2 Hrs; Credits : 2 Exam Duration: 3 Hrs

Objectives: *The objectives of the course are : 1) to provide an insight into the different types of Life Insurance Plans. 2) enable the students to understand the importance of Nomination and Assignments 3) give an Overview of Policy Claims*

UNIT I: PRACTICE AND PLANS OF LIFE INSURANCE : a) ***Practice of Life Insurance:*** Overview of the Indian Insurance Market – Growth of Insurance Business in India – Organizational Structure of LIC – Postal Life Insurance – Organizational Structure of Postal Life Insurance – Appointment of Life Insurance Agents and their Functions – Need of an Agent in Life Insurance Selling – Appointment of Agents – Remuneration to Agents – Trends in Life Insurance Distribution Channels. **b)** ***Plans of Life Insurance:*** Types of Life Insurance Plans – Term Plan – Endowment Plan – Money Back Insurance Plan – Whole Life Insurance Plan – Unit Linked Insurance Plans (ULIPs) – Joint Life Insurance Plans – Child Insurance Plans – Rider Benefits – Industrial Life Insurance – MWP Policies – Keyman Insurance – Health Insurance and its types

UNIT II: PREMIUMS, BONUSES AND ANNUITIES : a) ***Premiums & Bonuses:*** Concept of Premium – Types of Premium – Factors considered in calculating Premium – Premium Calculations - Surrender Value and Non-forfeiture Options – Revival of Lapsed Policies and its Types – Revival of Postal Life Insurance Policies - Bonus in Policies –Types of Bonus in Life Insurance Policies. **b)** ***Annuities*****:** Understand Concept of Annuity – Types of Annuity Plans – Advantages and Disadvantages of Annuity – Annuity Vs. Life Insurance – Terminology in Annuity

UNIT III: GROUP INSURANCE AND LINKED LIFE INSURANCE POLICIES : a) ***Group Insurance:*** Importance of Group Insurance Schemes – Features of Group Insurance Schemes – Eligibility Conditions in Group Insurance – Types of Group Insurance Schemes – Group Term Insurance Scheme – Group Gratuity Scheme – Group Superannuation Scheme – Types of Group Superannuation Schemes – Group Leave Encashment Scheme – Employees Deposit – Linked Insurance Scheme – Group Insurance Scheme in Lieu of EDLI – Social Security Scheme. **b)** ***Linked Life Insurance Policies :*** Concept of Unit Linked Policies – ULIP Premium and its Break-up – Types of Funds in ULIPS – Traditional Plans Vs. ULIPS – Working Mechanism – Top-up and NAV – Features of ULIPS – Revival of ULIPS – IRDA Guidelines on ULIPS

UNIT IV: POLICY DOCUMENTS AND ASSIGNMENT, NOMINATION & SURRENDER OF POLICY : a) ***Policy Documents:*** Life Insurance Policy Application and Process – Proposal Form and Related Documents - Importance of a Policy Document – Format of a Policy Document – Policy Schedule and its Various Components – Conditions and Privileges in a Policy Document – Duplicate Policies. ***b) Assignment, Nomination & Surrender of Policy:*** Assignment of Life Insurance Policies – Conditional Assignment – Absolute Assignment – Process of Assignment – Nomination – Process of Nomination – Features of Nomination – Assignment Vs. Nomination – Surrender of Policies – Foreclosure of Insurance Policies

UNIT V: POLICY CLAIMS : Types of Policy Claims – Survival Benefits – Death Claims – Maturity Claims – Submission of Proof of Title at Claim Processing Stage – Early Claims and Non–early Claims – Documents required for Processing Early Claims – Death due to Un-natural Causes or Accidents – Nomination – Assignment – Waiver of Evidence of Title – Claims Concession Clause and Extended Claims Concession Clause – Presumption of Death – Insurance Riders – Accidental Death Benefit Rider – Permanent Death Benefit Rider – IRDA Regulations for Claim Payments

SUGGESTED READINGS : 1. Risk Management and Insurance: Vaughan and Vaughan., 2.) Risk Management : A Publication of the Insurance Institute of India., 3). Guide to Risk Management: Sagar Sanyal 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 nd Insurance: (13th Edition), George E ejda 9) . Risk Management and Insurance : Trieschman ,Gustavson and Hoyt 10) South Western College Publishing Cincinnati, Ohio, 10). Life Insurance: Vol I, II, III (LBRARO) : ICFAI Course Book. 11). Life and Health Insurance Handbook: Davis W.Gregg

Suggested Websites : www.irda.gov.in. **2)** www.polocyholder.gov.in . 3) www.irdaindia.org.in

Paper : (BC 404) : CORPORATE ACCOUNTING

Paper: BC 404 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3 Hrs
Credits : 5

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 purchase – 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 - Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCECOMPANIES 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 Fire and Marine 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
6. Advanced Accountancy: Shukla and Grewal, S.Chand& Co
7. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons
8. Corporate Accounting: Sakshi Vasudeva, Himalaya.

Paper : (BC 405) : INCOME TAX – II

Paper: BC 405 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3Hrs
Credits : 5

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: CAPITAL GAINS:
Introduction - Meaning – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – Deemed Transfer – Transfer not regarded as 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.

UNIT–II: INCOME FROM OTHER SOURCES:
General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – 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 - Problems on computation on Income from Other Sources.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:
Income of other persons included in the total income of Assessee – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income

UNIT-IV: ASSESSMENT OF INDIVIDUALS:
Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability

UNIT–V: ASSESSMENT PROCEDURE:
Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment – Self assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:
1. Income Tax Law and Practice:V.P. Gaur & D.B- Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B. Lal, Pearson Education.
4. Income Tax: M.Jeevarathinam & C. Vijay Vishnu Kumar, SCITECH Publications.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning

Paper: (BC 406) : BUSINESS STATISTICS-II

Paper: BC 406 Max. Marks: 100
PPW: 4 Hrs Exam Duration: 3hrs
Credits : 4
OBJECTIVE: *To inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye's Theorem.

UNIT-V: THEORITECAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution.
Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution.
Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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 Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata Mc Graw Hill
6. Fundamentals of Statistical: S. P Gupta , Sultan Chand
7. Business Statistics: J. K. Sharma,Vikas Publishers
8. Business Statistics: Vora, Tata Mc Graw Hill
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics-Teory, Methods and Applications: SanchetiD.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

Paper : (BC 407) : FINANCIAL STATEMENT ANALYSIS

Paper: BC 407 Max. Marks: 100
PPW: 4Hrs Exam Duration: 3 Hrs
Credits : 4

Objective: *To acquire knowledge and techniques of Financial Statements' Analysis.*

UNIT-I: INTRODUCTION:
Financial Statements: Meaning – Components: Assets – Liabilities – Equity - Income and Expenditure and their features – Constituents: Income Statement and Balance Sheet their features - Information incorporated and their Qualitative requirements - Limitations. (Theory only)

UNIT-II: TECHNIQUES OF FINANICAL STATEMENT ANALYSIS:
Meaning – Objectives - Techniques: Comparative Statement, Common Size Statement, Trend Analysis.(Including problems)

UNIT-III: RATIO ANALYSIS:
Meaning – Objectives – Classification – Advantages and Limitations – Computation of various ratios: Activity Ratios - Liquidity Ratios - Solvency Ratios - Profitability Ratios.(including problems)

UNIT-IV: FUNDS FLOW ANANLYSIS:
Concept of Fund – Meaning and Importance – Statement of Changes in Working Capital – Statement of Sources and Application of Funds – Limitations (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. Financial Statement Analysis: George Foster, Pearson
2. Financial Statement Analysis: K R Subramanyam, TMH
3. Financial Statement Analysis: George Foster, Pearson ----Repeated ---Pl. delete
4. Advanced Management Accounting: Ravi M Kishore, Taxmann
5. Management Accounting: S.P.Gupta
6. Accounting for Managerial Decisions: Shashi K Gupta, Kalyani Publishers

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B.Com (Computer Applications)

(w.e.f. 2016–2017)

Second Year Syllabus (CBCS)

FACULTY OF COMMERCE,
PALAMURU UNIVERSITY,
MAHABUBNAGAR – 509001, T.S.

2017

DEPARTMENT OF COMMERCE, P.U.

Structure of B.Com (Computer Application)(CBCS) for Palamuru University, Mahabubnagar (w.e.f. Academic Year 2016-17)

DEPARTMENT OF COMMERCE, P.U.

Structure of B.Com (Computer Applications) (CBCS) for Palamuru University, Mahabubnagar.
(w.e.f. Academic Year 2016-17)

B.COM (Computer Applications) PROGRAMME

FIRST YEAR:
SEMESTER-I

Sl.No.	*Code*	*Course Title*	*Course Type*	*HPW*	*Credits*
(1)	(2)	(3)	(4)	(5)	(6)
1.	BC101	A/B/C/D	AECC-1	2	2
2.	BC102	English	CC-1A	5	5
3.	BC103	Second Language	CC-2A	5	5
4.	BC104	Financial Accounting - I	DSC-1A	5	5
5.	BC105	Business Economics	DSC-2A	5	5
6.	BC106	Business Organization	DSC-3A	4	4
7.	BC107	Information Technology	DSC-4A	3T+2P	4
		Total		**31**	**30**
SEMESTER-II					
8.	BC201	A/B/C/D	AECC-2	2	2
9.	BC202	English	CC-1B	5	5
10.	BC203	Second Language	CC-2B	5	5
11.	BC204	Financial Accounting - II	DSC-1B	5	5
12.	BC205	Managerial Economics	DSC-2B	5	5
13.	BC206	Principles of Management	DSC-3B	4	4
14.	BC207	Relational Database Management Systems	**DSE-4B**	**3T+2P**	**4**
		Total		**31**	**30**
SECOND YEAR:					
SEMESTER-III					
15.	BC301	Principles of Insurance	SEC-1	2	2
16.	BC302	English	CC-1C	5	5
17.	BC303	Second Language	CC-2C	5	5
18.	BC304	Advanced Accounting	DSC-1C	5	5
19.	BC305	Income Tax-I	DSC-2C	5	5
20.	BC306	Business Statistics-I	DSC-3C	4	4
21.	BC307	Programming with C	**DSC-4C**	**3T+2P**	**4**
		Total		**31**	**30**
SEMESTER-IV					
22.	BC401	Practice of Life Insurance	SEC-2	2	2
23.	BC402	English	CC -1D	5	5
24.	BC403	Second Language	CC-2D	5	5
25.	BC404	Corporate Accounting	DSC-1D	5	5
26.	BC405	Income Tax-II	DSC-2D	5	5
27.	BC406	Business Statistics-II	DSC-3D	4	4
28.	BC407	Objective Oriented Programming with C++	**DSC-4D**	**3T+2P**	**4**
		Total		**31**	**30**

THIRD YEAR:					
SEMESTER-V					
29.	BC501	Practice of General Insurance	SEC-3	2	2
30.	BC502		GE-1	2	2
31.	BC503	Cost Accounting	DSC-1E	4	4
32.	BC504	Business Law	DSC-2E	4	4
33.	BC505	Banking Theory & Practice	DSC-3E	4	4
34.	BC506	Computerised Accounting	DSC-4E	3T+2P	4
35.	**BC507**	Elective – I	**DSE-1A**	**4T+2P**	**5**
36.	**BC508**	Elective – II	**DSE-2A**	**4T+2P**	**5**
		Total		**33**	**30**
SEMESTER-VI					
37.	BC601	Regulation of Insurance Business	SEC-4	2	2
38.	BC602		GE-2	2	2
39.	BC603	Managerial Accounting	DSC-1F	4	4
40.	BC604	Company Law	DSC-2F	4	4
41.	BC605	Financial Institutions & Markets	DSC-3F	4	4
42.	BC606	Commerce Lab	DSC-4F	2T+4P	4
43.	**BC607**	Elective – I	**DSE-1B**	**5**	**5**
44.	**BC608**	Elective - II	**DSE-2B**	**5**	**5**
		Total		**32**	**30**
		GRAND TOTAL		**189**	**180**

AECC: Ability **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; T=Theory; P=Practicals;*

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	AECC	2	2	4
2	SEC	4	2	8
3	CC Language	8	5	40
	DSC	**8**	**5**	**40**
		16	**4**	**64**
4	**DSE**	**4**	**5**	**20**
5	GE	2	2	4
	TOTAL	**44**		**180**
	Commerce Total	**28**		**124**

SECOND YEAR SYLLABUS

Paper : (BC 301): PRINCIPLE OF INSURANCE

Paper: BC 301 Max. Marks: 100
PPW: 2 Hrs Exam Duration: 3Hrs
Credits : 2

Objectives: *The objectives of the course are : 1) to provide a basic understanding of the Insurance Mechanism. 2) identify the relationship between Insurers and their Customers and the importance of Insurance Contacts. 3) give an overview of major Life Insurance and General Insurance Products*

UNIT I: RISK MANAGEMENT AND INSURANCE : Understanding of Risk Management – Different Types of Risks – Actual and Consequential Losses – Management of Risks – Loss Minimization Techniques – Basics, Evolution and Nature of Insurance – Concept of Pooling in Insurance – Different Classes of Insurance – Importance of Insurance – Unexpected Eventualities

UNIT II: INSURANCE BUSINESS AND MARKET : Management of Risk by Individuals – Management of Risk by Insurers – Fixing of Premiums – Reinsurance and its Importance for Insurers – Role of Insurance in Economic Development and Social Security – Contribution of Insurance to the Society – Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies – Insurance Specialists – Role of Regulators – Other Bodies Connected with Insurance

UNIT III: INSURANCE TERMINOLOGY AND INSURANCE CUSTOMERS : Common Terms in Insurance: Life and Non Life – Specific Terms in Insurance: Life and Non Life – Usage of Insurance Terms – Understanding Insurance Customers – Different Customer Needs – Importance of Customers – Customer Mindsets – Customer Satisfaction – Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior

UNIT IV: INSURANCE CONTRACT : 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

UNIT V: INSURANCE PRODUCTS : a) *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. **b)** 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. Risk Management and Insurance : Vaughan and Vaughan
2. Risk Management : A Publication of the Insurance Institute of India
3. Role of Insurance in Financial inclusion : Brinda Publishing House, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
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 : (13th Edition), George E Rejda
9. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing Cincinnati, Ohio

Suggested Websites : 1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

Paper : (BC 304) : ADVANCED ACCOUNTING

Paper:BC 304 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3 Hrs
Credits : 5

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 - Prorata 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,Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (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. Accountancy–III: Tulasian, Tata McGraw Hill Co.
6. Advanced Accountancy: Arulanandam; Himalaya.
7. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers.
8. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
9. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

Paper : (BC 305) : INCOME TAX – I

Paper: BC 305 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3Hrs
Credits : 5

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 - Income Tax general rule and Exemptions to the Rule– Person – 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 – Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-II: AGRICULTURAL INCOME:

Introduction – Definition – Tests to determine Agricultural Income – Partly Agricultural and partly Non-Agricultural Income – Integration: conditions – provisions – computation of Tax on Integration process. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates.

UNIT–III: 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–IV: 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–V: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

Definition of „Business and Profession" – Procedure for computation of Income from Business – Rules – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Valuation of Stock – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation –problems on computation of Income from Business.Income from Profession: Rules– procedure – problems on computation of Income from Profession.

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B.B. Lal, Pearson Education.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: Johar, McGrawHill Education.
6. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning.

Paper : (BC 306) : BUSINESS STATISTICS-I

Paper: BC 306 Max. Marks: 100
PPW: 4Hrs Exam Duration: 3hrs

Credits : 4

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 Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata McGraw Hill
6. Fundamentals of Statistical: S. P Gupta, Sultan Chand
7. Business Statistics: J. K. Sharma, Vikas Publishers
8. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics - Theory, Methods and Applications: Sancheti D.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Statistics: Andasn,Sweenly,Williams,Cingage.

Paper: (BC 307): PROGRAMMING WITH C

Paper: BC 307 Max. Marks: 70T + 30P
PPW: 4 (3T+2P) Exam Duration: 3 Hrs.
Credits : 4

Objective s: *To gain the skills of Structured (Procedural/Functional) Programming using C Language.*

UNIT-I: **INTRODUCTION TO C LANGUAGE, DATA TYPES AND I/O OPERATIONS:**
Introduction: Types of Languages – History of C language – Basic Structure – Creating – Compiling - Linking and Executing the C Program - Pre-processors in "C".
Types and I/O operations: Keywords & Identifiers – Constants – Variables - Scope and Life of a Variable - Data types - Storage classes - Reading a character or values - Writing a character or value - Formatted Input and Output operations.

UNIT-II: OPERATORS, EXPRESSIONS AND DECISION MAKING:
Operators: Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special operators – Expressions: Arithmetic – Evaluation - Type conversions.
Decision Making & Looping: Introduction - If statements - If-else statements - Switch statements - Conditional statements - While statements - Do statements - For Statements.

UNIT-III: ARRAYS AND STRINGS:
Arrays: Introduction - Defining an array - Initializing an array - One dimensional array – Two dimensional array - Dynamic array.
Strings: Introduction - Declaring and initializing string variables - Reading and Writing strings - String handling functions.

UNIT-IV: BUILT-IN FUNCTIONS AND USER-DEFINED FUNCTIONS:
Built–in functions: Mathematical functions - String functions - Character functions - Date functions. User defined functions: Introduction - Need for user defined functions - Elements of functions - Return values and their types - Function declaration - Function calls - Recursive functions.

UNIT-V: STRUCTURES AND POINTERS:
Structures: Introduction - Declaring structures variables - Accessing structure members - Functions and Structures - Array of structures - Enumerated Data types - Introduction to Unions. Pointers: Fundamentals - Understanding pointers - Address - Declaration of Pointers.

LAB: PROGRAMS USING C.

SUGGESTED READINGS:
1. Programming in ANSCI C: Balaguruswamy, McGraw Hill.
2. Programming in C: Ashok Kamthane, Pearson.
3. C How to Program: P.J. Deitel & H.M. Deitel, Pearson & PHI.
4. Programming in C: K.S. Kahlon, Kalyani Publishers.
5. Fundamental of C: Dr. N. Guruprasad, Himalaya Publishing House.
6. C: Learning and Building Business and System Applications: Susant Rout, PHI.
7. Mastering C: K.R. Venugopal, McGraw Hill.
8. Programming in C: J.B. Dixit, Firewal Media.
9. The C Programming Language: B.W.Kernighan & D.M.Ritehie, PHI.
10. C: The Complete Reference: H.Schildt, McGraw Hill.
11. Let Us C: Y.Kanetkar, BPB.
12. C++ Spoken Tutorials by IIT Bombay

Paper : (BC 401) : PRACTICE OF LIFE INSURANCE

Paper: BC 401 Max. Marks: 100
PPW: 2 Hrs; Credits : 2 Exam Duration: 3 Hrs

Objectives: *The objectives of the course are : 1) to provide an insight into the different types of Life Insurance Plans. 2) enable the students to understand the importance of Nomination and Assignments 3) give an Overview of Policy Claims*

UNIT I: PRACTICE AND PLANS OF LIFE INSURANCE : a) ***Practice of Life Insurance:*** Overview of the Indian Insurance Market – Growth of Insurance Business in India – Organizational Structure of LIC – Postal Life Insurance – Organizational Structure of Postal Life Insurance – Appointment of Life Insurance Agents and their Functions – Need of an Agent in Life Insurance Selling – Appointment of Agents – Remuneration to Agents – Trends in Life Insurance Distribution Channels. **b)** ***Plans of Life Insurance:*** Types of Life Insurance Plans – Term Plan – Endowment Plan – Money Back Insurance Plan – Whole Life Insurance Plan – Unit Linked Insurance Plans (ULIPs) – Joint Life Insurance Plans – Child Insurance Plans – Rider Benefits – Industrial Life Insurance – MWP Policies – Keyman Insurance – Health Insurance and its types

UNIT II: PREMIUMS, BONUSES AND ANNUITIES : a) ***Premiums & Bonuses:*** Concept of Premium – Types of Premium – Factors considered in calculating Premium – Premium Calculations - Surrender Value and Non-forfeiture Options – Revival of Lapsed Policies and its Types – Revival of Postal Life Insurance Policies - Bonus in Policies –Types of Bonus in Life Insurance Policies. **b)** ***Annuities*****:** Understand Concept of Annuity – Types of Annuity Plans – Advantages and Disadvantages of Annuity – Annuity Vs. Life Insurance – Terminology in Annuity

UNIT III: GROUP INSURANCE AND LINKED LIFE INSURANCE POLICIES : a) ***Group Insurance:*** Importance of Group Insurance Schemes – Features of Group Insurance Schemes – Eligibility Conditions in Group Insurance – Types of Group Insurance Schemes – Group Term Insurance Scheme – Group Gratuity Scheme – Group Superannuation Scheme – Types of Group Superannuation Schemes – Group Leave Encashment Scheme – Employees Deposit – Linked Insurance Scheme – Group Insurance Scheme in Lieu of EDLI – Social Security Scheme. **b)** ***Linked Life Insurance Policies :*** Concept of Unit Linked Policies – ULIP Premium and its Break-up – Types of Funds in ULIPS – Traditional Plans Vs. ULIPS – Working Mechanism – Top-up and NAV – Features of ULIPS – Revival of ULIPS – IRDA Guidelines on ULIPS

UNIT IV: POLICY DOCUMENTS AND ASSIGNMENT, NOMINATION & SURRENDER OF POLICY : a) ***Policy Documents:*** Life Insurance Policy Application and Process – Proposal Form and Related Documents - Importance of a Policy Document – Format of a Policy Document – Policy Schedule and its Various Components – Conditions and Privileges in a Policy Document – Duplicate Policies. ***b) Assignment, Nomination & Surrender of Policy:*** Assignment of Life Insurance Policies – Conditional Assignment – Absolute Assignment – Process of Assignment – Nomination – Process of Nomination – Features of Nomination – Assignment Vs. Nomination – Surrender of Policies – Foreclosure of Insurance Policies

UNIT V: POLICY CLAIMS : Types of Policy Claims – Survival Benefits – Death Claims – Maturity Claims – Submission of Proof of Title at Claim Processing Stage – Early Claims and Non–early Claims – Documents required for Processing Early Claims – Death due to Un-natural Causes or Accidents – Nomination – Assignment – Waiver of Evidence of Title – Claims Concession Clause and Extended Claims Concession Clause – Presumption of Death – Insurance Riders – Accidental Death Benefit Rider – Permanent Death Benefit Rider – IRDA Regulations for Claim Payments

SUGGESTED READINGS : 1. Risk Management and Insurance: Vaughan and Vaughan., 2.) Risk Management : A Publication of the Insurance Institute of India., 3). Guide to Risk Management: Sagar Sanyal 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 nd Insurance: (13th Edition), George E ejda 9) . Risk Management and Insurance : Trieschman ,Gustavson and Hoyt 10) South Western College Publishing Cincinnati, Ohio, 10). Life Insurance: Vol I, II, III (LBRARO) : ICFAI Course Book. 11). Life and Health Insurance Handbook: Davis W.Gregg

Suggested Websites : www.irda.gov.in. **2)** www.polocyholder.gov.in . 3) www.irdaindia.org.in

Paper : (BC 404) : CORPORATE ACCOUNTING

Paper: BC 404 Max. Marks: 100
PPW: 4 Hrs Exam Duration: 3 Hrs
Credits : 4

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 purchase – 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 - Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCECOMPANIES 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 Fire and Marine 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
6. Advanced Accountancy: Shukla and Grewal, S.Chand& Co
7. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons
8. Corporate Accounting: Sakshi Vasudeva, Himalaya.

Paper : (BC 405) : INCOME TAX – II

Paper: BC 405 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3Hrs
Credits : 5

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: CAPITAL GAINS:
Introduction - Meaning – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – Deemed Transfer – Transfer not regarded as 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.

UNIT–II: INCOME FROM OTHER SOURCES:
General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – 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 - Problems on computation on Income from Other Sources.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:
Income of other persons included in the total income of Assessee – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income

UNIT-IV: ASSESSMENT OF INDIVIDUALS:
Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability

UNIT–V: ASSESSMENT PROCEDURE:
Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment – Self assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:
1. Income Tax Law and Practice:V.P. Gaur & D.B- Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B. Lal, Pearson Education.
4. Income Tax: M.Jeevarathinam & C. Vijay Vishnu Kumar, SCITECH Publications.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning

Paper : (BC 406) : BUSINESS STATISTICS-II

Paper: BC 406 Max. Marks: 100
PPW: 5Hrs Exam Duration: 3hrs
Credit : 5

OBJECTIVE: *To inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye‟s Theorem.

UNIT-V: THEORETICAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution. Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution. Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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 Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata Mc Graw Hill
6. Fundamentals of Statistical: S. P Gupta , Sultan Chand
7. Business Statistics: J. K. Sharma,Vikas Publishers
8. Business Statistics: Vora, Tata Mc Graw Hill
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics-Teory, Methods and Applications: SanchetiD.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

Paper: (BC 407): OBJECT ORIENTED PROGRAMMING IN C++

Paper: BC 407 Max. Marks: 70T + 30P
PPW: 4 (3T+2P) Exam Duration: 3 Hrs.
Credits : 4

Objective: *To gain skills of Object Oriented Programming using C++ Language.*

UNIT-I: INTRODUCTION:
Object Oriented Programming: Concepts – Benefits – Languages - Structured vs. Object Oriented Programming. C++: Genesis - Structure of a program – Tokens - Data Types – Operators - Control Structures - C vs C++ - Functions.

UNIT-II: CLASSES, OBJECTS, CONSTRUCTORS AND DESTRUCTORS: Encapsulation - Hiding - Abstract data types - Object & Classes – Attributes - Methods - C++ class declaration - State identity and behaviour of an object. Purpose of Constructors - Default Constructor - Parameterized Constructors - Copy Constructor - Instantiation of objects - Default parameter value - Object types - C++ garbage collection - Dynamic memory allocation – Meta class / Abstract classes.

UNIT-III: OVERLOADING, CONVERSIONS, DERIVED CLASSES AND INHERITANCE:
Function and Operator Overloading - Overloading Unary and Binary Operators - Data and Type Conversions - Derived Classes - Concept of Reusability - Visibility modes - Types of Inheritance - Single and Multiple Inheritance - Multilevel Inheritance.

UNIT-IV: POLYMORPHISM, VIRTUAL FUNCTION, STREAMS AND FILES:
Polymorphism - Virtual - Classes - Pointer to Derived class - Virtual functions - Rules for Virtual function - Pure Virtual functions - Stream Classes - Types of I/O - Formatting Outputs - File Pointers – Buffer - C++ Stream - Unformatted console I/O operations – Functions: get( ) - put( ) – formatted console I /O operations - IOS class format functions - Manipulators.

UNIT–V: EXCEPTION HANDLING AND DATA STRUCTURES IN C++:
Exceptions in C++ Programs - Try and Catch Expressions - Exceptions with arguments. Data Structures: Introduction - Linked list - Stacks - Queues.

SUGGESTED READINGS:

1. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
2. C++ Programming-A Practical Approach: Madhusudan Mothe, Pearson.
3. Object Oriented Programming Using C++: Chadha & Chadha, Kalyani.
4. Programming in C++: A. N. Kamthane, Pearson.
5. The Complete Reference C++: H. Schildt, McGraw Hill.
6. C++:How to Program: Deitel & Deitel, PHI.
7. Mastering C++: KR.Venugopal & R.Buyya, McGraw Hill.
8. Schaum"s Outlines: Programming with C++: by John R Hubbard.
9. Object Oriented Programming using C++: Somashekara, PHI.
10. C++ Spoken Tutorials by IIT Bombay.

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B.Com (Computers)

(w.e.f. 2016–2017)

Second Year Syllabus (CBCS)

FACULTY OF COMMERCE,
PALAMURU UNIVERSITY,
MAHABUBNAGAR – 509001, T.S.

2017

DEPARTMENT OF COMMERCE, P.U.

Structure of B.Com (Computers) (CBCS) for Palamuru University, Mahabubnagar
(w.e.f. Academic Year 2016-17)

DEPARTMENT OF COMMERCE, P.U.

Structure of B.Com (Computers) (CBCS) for Palamuru University, Mahabubnagar.

(w.e.f. Academic Year 2016-17)

B.COM (Computers) PROGRAMME

FIRST YEAR: ***SEMESTER-I***					
Sl.No.	***Code***	***Course Title***	***Course Type***	***HPW***	***Credits***
(1)	(2)	(3)	(4)	(5)	(6)
1.	BC101	A/B/C/D	AECC-1	2	2
2.	BC102	English	CC-1A	5	5
3.	BC103	Second Language	CC-2A	5	5
4.	BC104	Financial Accounting - I	DSC-1A	5	5
5.	BC105	Business Economics	DSC-2A	5	5
6.	BC106	Business Organization	DSC-3A	4	4
7.	BC107	Information Technology	DSC-4A	3T+2P	4
		Total		**31**	**30**
SEMESTER-II					
8.	BC201	A/B/C/D	AECC-2	2	2
9.	BC202	English	CC-1B	5	5
10.	BC203	Second Language	CC-2B	5	5
11.	BC204	Financial Accounting - II	DSC-1B	5	5
12.	BC205	Managerial Economics	DSC-2B	5	5
13.	BC206	Principles of Management	DSC-3B	4	4
14.	BC207	Management Information System	DSC-4B	3T+2P	4
		Total		**31**	**30**
SECOND YEAR: ***SEMESTER-III***					
15.	BC301	Principles of Insurance	SEC-1	2	2
16.	BC302	English	CC-1C	5	5
17.	BC303	Second Language	CC-2C	5	5
18.	BC304	Advanced Accounting	DSC-1C	5	5
19.	BC305	Income Tax-I	DSC-2C	5	5
20.	BC306	Business Statistics-I	DSC-3C	4	4
21.	BC307	Programming with C	DSC-4C	3T+2P	4
		Total		**31**	**30**
SEMESTER-IV					
22.	BC401	Practice of Life Insurance	SEC-2	2	2
23.	BC402	English	CC -1D	5	5
24.	BC403	Second Language	CC-2D	5	5
25.	BC404	Corporate Accounting	DSC-1D	5	5
26.	BC405	Income Tax-II	DSC-2D	5	5
27.	BC406	Business Statistics-II	DSC-3D	4	4
28.	BC407	Objective Oriented Programming with C++	**DSE-4D**	**3T+2P**	**4**
		Total		**31**	**30**

THIRD YEAR:					
SEMESTER-V					
29.	BC501	Practice of General Insurance	SEC-3	2	2
30.	BC502		GE-1	2	2
31.	BC503	Cost Accounting	DSC-1E	4	4
32.	BC504	Business Law	DSC-2E	4	4
33.	BC505	Banking Theory & Practice	DSC-3E	4	4
34.	BC506	Auditing	DSC-4E	4	4
35.	**BC507**	Computerised Accounting	**DSE-1A**	**4T+2P**	**5**
36.	**BC508**	E-Commerce	**DSE-2A**	**4T+2P**	**5**
		Total		**32**	**30**
SEMESTER-VI					
37.	BC601	Regulation of Insurance Business	SEC-4	2	2
38.	BC602		GE-2	2	2
39.	BC603	Managerial Accounting	DSC-1F	4	4
40.	BC604	Company Law	DSC-2F	4	4
41.	BC605	Financial Institutions & Markets	DSC-3F	4	4
42.	BC606	Commerce Lab	DSC-4F	2T+4P	4
43.	**BC607**	Web Technologies	**DSE-1B**	**4T+2P**	**5**
44.	**BC608**	Relational Database Management Systems	**DSE-2B**	**4T+2P**	**5**
		Total		**34**	**30**
		GRAND TOTAL		**190**	**180**

AECC: Ability **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; T=Theory; P=Practicals;*

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	AECC	2	2	4
2	SEC	4	2	8
3	CC Language	8	5	40
	DSC	**8**	**5**	**40**
		16	**4**	**64**
4	**DSE**	**4**	**5**	**20**
5	GE	2	2	4
	TOTAL	**44**		**180**
	Commerce Total	**28**		**124**

SECOND YEAR SYLLABUS

Paper : (BC 301): PRINCIPLE OF INSURANCE

Paper: BC 301 Max. Marks: 100
PPW: 2 Hrs Exam Duration: 3Hrs
Credits : 2

Objectives: *The objectives of the course are : 1) to provide a basic understanding of the Insurance Mechanism. 2) identify the relationship between Insurers and their Customers and the importance of Insurance Contacts. 3) give an overview of major Life Insurance and General Insurance Products*

UNIT I: RISK MANAGEMENT AND INSURANCE : Understanding of Risk Management – Different Types of Risks – Actual and Consequential Losses – Management of Risks – Loss Minimization Techniques – Basics, Evolution and Nature of Insurance – Concept of Pooling in Insurance – Different Classes of Insurance – Importance of Insurance – Unexpected Eventualities

UNIT II: INSURANCE BUSINESS AND MARKET : Management of Risk by Individuals – Management of Risk by Insurers – Fixing of Premiums – Reinsurance and its Importance for Insurers – Role of Insurance in Economic Development and Social Security – Contribution of Insurance to the Society – Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies – Insurance Specialists – Role of Regulators – Other Bodies Connected with Insurance

UNIT III: INSURANCE TERMINOLOGY AND INSURANCE CUSTOMERS : Common Terms in Insurance: Life and Non Life – Specific Terms in Insurance: Life and Non Life – Usage of Insurance Terms – Understanding Insurance Customers – Different Customer Needs – Importance of Customers – Customer Mindsets – Customer Satisfaction – Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior

UNIT IV: INSURANCE CONTRACT : 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

UNIT V: INSURANCE PRODUCTS : a) *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. **b)** 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. Risk Management and Insurance : Vaughan and Vaughan
2. Risk Management : A Publication of the Insurance Institute of India
3. Role of Insurance in Financial inclusion : Brinda Publishing House, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
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 : (13th Edition), George E Rejda
9. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing Cincinnati, Ohio

Suggested Websites : 1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

Paper: (BC 304) ADVANCED ACCOUNTING

Paper:BC 304 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3 Hrs
Credits : 5

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 - Prorata 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,Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (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. Accountancy–III: Tulasian, Tata McGraw Hill Co.
6. Advanced Accountancy: Arulanandam; Himalaya.
7. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers.
8. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
9. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

Paper: (BC 305): INCOME TAX – I

Paper: BC 305 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3Hrs
Credits : 5

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 - Income Tax general rule and Exemptions to the Rule– Person – 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 – Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-II: AGRICULTURAL INCOME:

Introduction – Definition – Tests to determine Agricultural Income – Partly Agricultural and partly Non-Agricultural Income – Integration: conditions – provisions – computation of Tax on Integration process. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates.

UNIT–III: 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–IV: 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–V: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

Definition of „Business and Profession" – Procedure for computation of Income from Business – Rules – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Valuation of Stock – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation –problems on computation of Income from Business. Income from Profession: Rules– procedure – problems on computation of Income from Profession.

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B.B. Lal, Pearson Education.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: Johar, McGrawHill Education.
6. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning.

Paper: (BC 306): BUSINESS STATISTICS-I

Paper: BC 306 Max. Marks: 100
PPW: 4Hrs Exam Duration: 3hrs
Credits :4

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 Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata McGraw Hill
6. Fundamentals of Statistical: S. P Gupta, Sultan Chand
7. Business Statistics: J. K. Sharma, Vikas Publishers
8. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics - Theory, Methods and Applications: Sancheti D.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Statistics: Andasn,Sweenly,Williams,Cingage.

Paper: (BC 307): PROGRAMMING WITH C

Paper: BC 307 Max. Marks: 70T + 30P
PPW: 4 (3T+2P) Exam Duration: 3 Hrs.
Credits : 4
Objectives: *To gain the skills of Structured (Procedural/Functional) Programming using C Language.*

UNIT-I: **INTRODUCTION TO C LANGUAGE, DATA TYPES AND I/O OPERATIONS:**
Introduction: Types of Languages – History of C language – Basic Structure – Creating – Compiling - Linking and Executing the C Program - Pre-processors in "C".
Types and I/O operations: Keywords & Identifiers – Constants – Variables - Scope and Life of a Variable - Data types - Storage classes - Reading a character or values - Writing a character or value - Formatted Input and Output operations.

UNIT-II: OPERATORS, EXPRESSIONS AND DECISION MAKING:
Operators: Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special operators – Expressions: Arithmetic – Evaluation - Type conversions.
Decision Making & Looping: Introduction - If statements - If-else statements - Switch statements - Conditional statements - While statements - Do statements - For Statements.

UNIT-III: ARRAYS AND STRINGS:
Arrays: Introduction - Defining an array - Initializing an array - One dimensional array – Two dimensional array - Dynamic array.
Strings: Introduction - Declaring and initializing string variables - Reading and Writing strings - String handling functions.

UNIT-IV: BUILT-IN FUNCTIONS AND USER-DEFINED FUNCTIONS:
Built–in functions: Mathematical functions - String functions - Character functions - Date functions. User defined functions: Introduction - Need for user defined functions - Elements of functions - Return values and their types - Function declaration - Function calls - Recursive functions.

UNIT-V: STRUCTURES AND POINTERS:
Structures: Introduction - Declaring structures variables - Accessing structure members - Functions and Structures - Array of structures - Enumerated Data types - Introduction to Unions. Pointers: Fundamentals - Understanding pointers - Address - Declaration of Pointers.

LAB: PROGRAMS USING C.

SUGGESTED READINGS:
1. Programming in ANSCI C: Balaguruswamy, McGraw Hill.
2. Programming in C: Ashok Kamthane, Pearson.
3. C How to Program: P.J. Deitel & H.M. Deitel, Pearson & PHI.
4. Programming in C: K.S. Kahlon, Kalyani Publishers.
5. Fundamental of C: Dr. N. Guruprasad, Himalaya Publishing House.
6. C: Learning and Building Business and System Applications: Susant Rout, PHI.
7. Mastering C: K.R. Venugopal, McGraw Hill.
8. Programming in C: J.B. Dixit, Firewal Media.
9. The C Programming Language: B.W.Kernighan & D.M.Ritehie, PHI.
10. C: The Complete Reference: H.Schildt, McGraw Hill.
11. Let Us C: Y.Kanetkar, BPB.
12. C++ Spoken Tutorials by IIT Bombay

Paper : (BC 401) : PRACTICE OF LIFE INSURANCE

Paper: BC 401 Max. Marks: 100
PPW: 2 Hrs; Credits : 2 Exam Duration: 3 Hrs

Objectives: *The objectives of the course are : 1) to provide an insight into the different types of Life Insurance Plans. 2) enable the students to understand the importance of Nomination and Assignments 3) give an Overview of Policy Claims*

UNIT I: PRACTICE AND PLANS OF LIFE INSURANCE : a) ***Practice of Life Insurance:*** Overview of the Indian Insurance Market – Growth of Insurance Business in India – Organizational Structure of LIC – Postal Life Insurance – Organizational Structure of Postal Life Insurance – Appointment of Life Insurance Agents and their Functions – Need of an Agent in Life Insurance Selling – Appointment of Agents – Remuneration to Agents – Trends in Life Insurance Distribution Channels. **b)** ***Plans of Life Insurance:*** Types of Life Insurance Plans – Term Plan – Endowment Plan – Money Back Insurance Plan – Whole Life Insurance Plan – Unit Linked Insurance Plans (ULIPs) – Joint Life Insurance Plans – Child Insurance Plans – Rider Benefits – Industrial Life Insurance – MWP Policies – Keyman Insurance – Health Insurance and its types

UNIT II: PREMIUMS, BONUSES AND ANNUITIES : a) ***Premiums & Bonuses:*** Concept of Premium – Types of Premium – Factors considered in calculating Premium – Premium Calculations - Surrender Value and Non-forfeiture Options – Revival of Lapsed Policies and its Types – Revival of Postal Life Insurance Policies - Bonus in Policies –Types of Bonus in Life Insurance Policies. **b)** ***Annuities*****:** Understand Concept of Annuity – Types of Annuity Plans – Advantages and Disadvantages of Annuity – Annuity Vs. Life Insurance – Terminology in Annuity

UNIT III: GROUP INSURANCE AND LINKED LIFE INSURANCE POLICIES : a) ***Group Insurance:*** Importance of Group Insurance Schemes – Features of Group Insurance Schemes – Eligibility Conditions in Group Insurance – Types of Group Insurance Schemes – Group Term Insurance Scheme – Group Gratuity Scheme – Group Superannuation Scheme – Types of Group Superannuation Schemes – Group Leave Encashment Scheme – Employees Deposit – Linked Insurance Scheme – Group Insurance Scheme in Lieu of EDLI – Social Security Scheme. **b)** ***Linked Life Insurance Policies :*** Concept of Unit Linked Policies – ULIP Premium and its Break-up – Types of Funds in ULIPS – Traditional Plans Vs. ULIPS – Working Mechanism – Top-up and NAV – Features of ULIPS – Revival of ULIPS – IRDA Guidelines on ULIPS

UNIT IV: POLICY DOCUMENTS AND ASSIGNMENT, NOMINATION & SURRENDER OF POLICY : a) ***Policy Documents:*** Life Insurance Policy Application and Process – Proposal Form and Related Documents - Importance of a Policy Document – Format of a Policy Document – Policy Schedule and its Various Components – Conditions and Privileges in a Policy Document – Duplicate Policies. ***b) Assignment, Nomination & Surrender of Policy:*** Assignment of Life Insurance Policies – Conditional Assignment – Absolute Assignment – Process of Assignment – Nomination – Process of Nomination – Features of Nomination – Assignment Vs. Nomination – Surrender of Policies – Foreclosure of Insurance Policies

UNIT V: POLICY CLAIMS : Types of Policy Claims – Survival Benefits – Death Claims – Maturity Claims – Submission of Proof of Title at Claim Processing Stage – Early Claims and Non–early Claims – Documents required for Processing Early Claims – Death due to Un-natural Causes or Accidents – Nomination – Assignment – Waiver of Evidence of Title – Claims Concession Clause and Extended Claims Concession Clause – Presumption of Death – Insurance Riders – Accidental Death Benefit Rider – Permanent Death Benefit Rider – IRDA Regulations for Claim Payments

SUGGESTED READINGS : 1. Risk Management and Insurance: Vaughan and Vaughan., 2.) Risk Management : A Publication of the Insurance Institute of India., 3). Guide to Risk Management: Sagar Sanyal 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 nd Insurance: (13th Edition), George E ejda 9) . Risk Management and Insurance : Trieschman ,Gustavson and Hoyt 10) South Western College Publishing Cincinnati, Ohio, 10). Life Insurance: Vol I, II, III (LBRARO) : ICFAI Course Book. 11). Life and Health Insurance Handbook: Davis W.Gregg

Suggested Websites : www.irda.gov.in. **2)** www.polocyholder.gov.in . 3) www.irdaindia.org.in

Paper: (BC 404): CORPORATE ACCOUNTING

Paper: BC 404 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3 Hrs
Credit : 5

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 purchase – 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 - Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCECOMPANIES 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 Fire and Marine 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
6. Advanced Accountancy: Shukla and Grewal, S.Chand& Co
7. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons
8. Corporate Accounting: Sakshi Vasudeva, Himalaya.

Paper: (BC 405): INCOME TAX – II

Paper: BC 405 Max. Marks: 100
PPW: 5 Hrs Exam Duration: 3Hrs
Credit :5

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: CAPITAL GAINS:
Introduction - Meaning – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – Deemed Transfer – Transfer not regarded as 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.

UNIT–II: INCOME FROM OTHER SOURCES:
General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – 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 - Problems on computation on Income from Other Sources.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:
Income of other persons included in the total income of Assessee – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income

UNIT-IV: ASSESSMENT OF INDIVIDUALS:
Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability

UNIT–V: ASSESSMENT PROCEDURE:
Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment – Self assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:
1. Income Tax Law and Practice:V.P. Gaur & D.B- Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B. Lal, Pearson Education.
4. Income Tax: M.Jeevarathinam & C. Vijay Vishnu Kumar, SCITECH Publications.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning

Paper: (BC 406): BUSINESS STATISTICS-II

Paper: BC 406 Max. Marks: 100
PPW: 4Hrs Exam Duration: 3hrs
Credit: 4

OBJECTIVE: *To inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye‟s Theorem.

UNIT-V: THEORITECAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution. Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution. Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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 Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata Mc Graw Hill
6. Fundamentals of Statistical: S. P Gupta , Sultan Chand
7. Business Statistics: J. K. Sharma,Vikas Publishers
8. Business Statistics: Vora, Tata Mc Graw Hill
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics-Teory, Methods and Applications: SanchetiD.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

Paper: (BC 407): OBJECT ORIENTED PROGRAMMING IN C++

Paper: BC 407 Max. Marks: 70T + 30P
PPW: 4 (3T+2P) Exam Duration: 3 Hrs.
Credits : 4

Objective: *To gain skills of Object Oriented Programming using C++ Language.*

UNIT-I: INTRODUCTION:
Object Oriented Programming: Concepts – Benefits – Languages - Structured vs. Object Oriented Programming. C++: Genesis - Structure of a program – Tokens - Data Types – Operators - Control Structures - C vs C++ - Functions.

UNIT-II: CLASSES, OBJECTS, CONSTRUCTORS AND DESTRUCTORS: Encapsulation - Hiding - Abstract data types - Object & Classes – Attributes - Methods - C++ class declaration - State identity and behaviour of an object. Purpose of Constructors - Default Constructor - Parameterized Constructors - Copy Constructor - Instantiation of objects - Default parameter value - Object types - C++ garbage collection - Dynamic memory allocation – Meta class / Abstract classes.

UNIT-III: OVERLOADING, CONVERSIONS, DERIVED CLASSES AND INHERITANCE:
Function and Operator Overloading - Overloading Unary and Binary Operators - Data and Type Conversions - Derived Classes - Concept of Reusability - Visibility modes - Types of Inheritance - Single and Multiple Inheritance - Multilevel Inheritance.

UNIT-IV: POLYMORPHISM, VIRTUAL FUNCTION, STREAMS AND FILES:
Polymorphism - Virtual - Classes - Pointer to Derived class - Virtual functions - Rules for Virtual function - Pure Virtual functions - Stream Classes - Types of I/O - Formatting Outputs - File Pointers – Buffer - C++ Stream - Unformatted console I/O operations – Functions: get( ) - put( ) – formatted console I /O operations - IOS class format functions - Manipulators.

UNIT–V: EXCEPTION HANDLING AND DATA STRUCTURES IN C++:
Exceptions in C++ Programs - Try and Catch Expressions - Exceptions with arguments. Data Structures: Introduction - Linked list - Stacks - Queues.

SUGGESTED READINGS:
1. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
2. C++ Programming-A Practical Approach: Madhusudan Mothe, Pearson.
3. Object Oriented Programming Using C++: Chadha & Chadha, Kalyani.
4. Programming in C++: A. N. Kamthane, Pearson.
5. The Complete Reference C++: H. Schildt, McGraw Hill.
6. C++:How to Program: Deitel & Deitel, PHI.
7. Mastering C++: KR.Venugopal & R.Buyya, McGraw Hill.
8. Schaum‟s Outlines: Programming with C++: by John R Hubbard.
9. Object Oriented Programming using C++: Somashekara, PHI.
10. C++ Spoken Tutorials by IIT Bombay.

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Paper AECC2 (a): BASIC COMPUTER SKILLS

(For students of Computer Science and Computer Applications)

Hours Per Week: 2 **Credits**: 2
Exam Hours: 1 ½ **Marks:** 40U+10I

Objective: to impart a basic level understanding of working of a computer and its usage.

UNIT I: UNDERSTANDING OF COMPUTER AND WORD PROCESSING:

Knowing computer: What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

Operating Computer using GUI Based Operating System: What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.

Understanding Word Processing: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.

UNIT II: SPREAD SHEET, PRESENTATION SOFTWARE & INTRODUCTION TO INTERNET, WWW AND WEB BROWSERS:

Using Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.

Basics of presentation software: Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation / handouts.

Introduction to Internet, WWW and Web Browsers:

Introduction to Internet: Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting.

World Wide Web: Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.

Web Browsing: Software, Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

SUGGESTED READINGS:

1. Introduction to Computers, Peter Norton, McGrawHill , 2012.
2. Using Information Technology, Brian K williams, StaceyC.Sawyer, Tata McGrawHill.

Web Resources:

1. https://online.stanford.edu/courses/soe-ycscs101-sp-computer-science-101
2.https://www.extension.harvard.edu/open-learning-initiative/intensive-introduction- computer-science.

B.Com. (Computer Applications)
Syllabus (CBCS)
(w.e.f. 2019–2020)

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FACULTY OF COMMERCE
PALAMURU UNIVERSITY
MAHABUBNAGAR-509001 T.S.

2019

B.COM (Computer Applications)
CBCS COURSE STRUCTURE
w.e.f. 2019-20

Sl.No.	*Code*	*Course Title*	*HPW*	*Credits*	*Exam Hrs*	*Marks*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
		SEMESTER – I				
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	**a)** Environmental Science/ **b)** Basic Computer Skills	2	2	1 ½ hrs	40U+10I
4.	DSC101	Financial Accounting–I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Fundamentals of Information Technology	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**27**	**25**		
		SEMESTER – II				
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	**a)** Basic Computer Skills/ **b)** Environmental Science	2	2	1 ½ hrs	40U+10I
10.	DSC201	Financial Accounting–II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Programming with C & C++	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**27**	**25**		
		SEMESTER – III				
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	**a)** Principles of Insurance/ **b)** Foundation of Digital Marketing/ **c)** Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	**a)** Practice of Life Insurance/ **b)** Web Design & Analytics/ **c)** Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Relational Database Management System	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**27**	**25**		
		SEMESTER – IV				
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	**a)** Practice of General Insurance/ **b)** Social Media Marketing **c)** Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	**a)** Regulation of Insurance Business/ **b)** Search Engine Optimization & Online Advertising c)Data Visualisation & Storytelling	2	2	1 ½ hrs	40U+10I

24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
26.	DSC403	Web Technologies	3T+4P	5	1 ½ hrs	50T+35P+ 15I
		Total	**27**	**25**		
		SEMESTER – V				
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	a) Business Economics / b) Advanced Aspects of Income Tax	4	4	3 hrs	80U+20I
30.	DSE501	**a)** Cost Accounting/ **b)** Financial Planning & Performance/ **c)** International Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	**a)** Computerized Accounting/ **b)** Financial Decision Making-I/ **c)** International Tax &Regulation	3T+4P/ 5	5	3 hrs	50T+35P + 15I/ 80U+20I
32.	DSE503	**a)** Management Information Systems/ **b)** Ecommerce/**c)** Mobile Applications	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**29/27**	**25**		
		SEMESTER - VI				
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15VV
36.	DSE601	**a)** Cost Control and Management Accounting/ **b)** Financial control/ **c)** International Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	**a)** Theory and Practice of GST/ **b)** Financial Decision Making-II / **c)** International Auditing	3T+4P/ 5	5	3 hrs	50T+35P + 15I/ 80U+20I
38.	DSE603	**a)** Multimedia Systems/ **b)** Cyber Security/**c)** Data Analytics	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**31/29**	**25**		
		GRAND TOTAL	**168/164**	**150**		

ELS: English Language Skill**; SLS**: Second Language Skill; **AEC: A**bility **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; **T**: **T**heory; **P**: **P**ractical**; I**: Internal Exam **U: U**niversity Exam: **PR**: **P**roject **R**eport; **VV**: **V**iva-**V**oce Examination.*

Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
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**
CREDITS UNDER NON-CGPA		**NSS/NCC/Sports/Extra Curricular**	**Up to 6 (2 in each year)**	
		Summer Internship	**Up to 4 (2 in each after I & II years)**	

Paper AEC1 (a): BASIC COMPUTER SKILLS

Hours Per Week: 2 **Credits**: 2
Exam Hours: 1 ½ **Marks:** 40U+10I

Objective: to impart a basic level understanding of working of a computer and its usage.

UNIT I: UNDERSTANDING OF COMPUTER AND WORD PROCESSING:

Knowing computer: What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

Operating Computer using GUI Based Operating System: What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.

Understanding Word Processing: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.

UNIT II: SPREAD SHEET, PRESENTATION SOFTWARE & INTRODUCTION TO INTERNET, WWW AND WEB BROWSERS:

Using Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.

Basics of presentation software: Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation / handouts.

Introduction to Internet, WWW and Web Browsers:

Introduction to Internet: Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting.

World Wide Web: Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.

Web Browsing: Software, Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

SUGGESTED READINGS:

1. Introduction to Computers, Peter Norton, McGraw Hill, 2012.
2. Using Information Technology, Brian K Williams, Stacey C. Sawyer, Tata McGraw Hill.

Web Resources:

1. https://online.stanford.edu/courses/soe-ycscs101-sp-computer-science-101
2. https://www.extension.harvard.edu/open-learning-initiative/intensive-introduction-computer-science.

Paper DSC 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 – List of Accounting Standards issued by ASB -– Accounting System- 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. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Introduction to Accountancy: T.S.Grewal, S.Chand and Co.
6. Advanced Accountancy-I: S.N.Maheshwari & V.L.Maheswari, Vikas.
7. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
8. Financial Accounting: JawaharLal, Himalaya Publishing House.

Paper DSC 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 Organisation& 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: Niranjan Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr.NeeruVasihth, Tax Mann Publications

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, MultiTasking, 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

Paper DSC 201: FINANCIAL ACCOUNTING-II

Objective: *To acquire accounting knowledge of bills of exchange and other business accounting methods.*

UNIT-I: BILLS OF EXCHANGE:
Bills of Exchange - Definition- Distinction between Promissory note and Bills of exchange- Accounting treatment of Trade bills: Books of Drawer and Acceptor- Honour and Dishonour of Bills- Renewal of bills- Retiring of bills under rebate- Accommodation bills. (Including problems)

UNIT-II: CONSIGNMENT ACCOUNTS:
Consignment – Meaning – Features– Proforma invoice - Account sales – Del credere commission-Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock –Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price. (Including problems)

UNIT-III: JOINT VENTURE ACCOUNTS:
Joint Venture – Meaning –Features-Difference between Joint Venture and Consignment-Accounting Procedure-Methods of Keeping Records for Joint Venture Accounts-Method of Recording in co-ventures books-Separate Set of Books Method- Joint Bank Account-Memorandum Joint Venture Account (Including problems)

UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS:
Single Entry System – Meaning -Features–Difference between Single Entry and Double Entry systems -Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems)

UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:
Non- Profit Organization – Meaning – Features – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
3. Accountancy–I: Tulasian, Tata McGraw Hill Co.
4. Accountancy–I: S.P. Jain & K.L Narang, Kalyani.
5. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
6. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.

Paper DSC 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 - Significance of Information Technology Act.

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) Business Laws – Dr. B. K. Hussain, Nagalakshmi - PBP
5) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
6) Company Law and Practice: GK Kapoor& Sanjay Dhamija, Taxmann Publication.
7) Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
8) Corporate Law: PPS Gogna, S Chand.
9) Business Law: D.S. Vital, S Chand
10) Company Law: Bagrial AK, Vikas Publishing House.

Paper DSC 203: PROGRAMMING WITH C & C++

Hours Per Week: 7 (3T+4P) Credits: 5
Exam Hours: 1 ½ Marks: 50U+35P+15I

Objective: To understand the fundamental concepts of programming in C and Object Oriented Programming using C++.

UNIT-I: **INTRODUCTION TO C LANGUAGE, VARIABLES, DATA TYPES AND OPERATORS**

Introduction: Types of Languages- History of C language – Basic Structure –Programming Rules – Flow charts-algorithms–Commonly used library functions - Executing the C Program - Pre-processors in "C"- Keywords & Identifiers – Constants – **Variables:** Rules for defining variables - Scope and Life of a Variable–- **Data types** - Type Conversion - Formatted Input and Output operations. **Operators:** Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special - Bitwise - Increment / Decrement operator.

UNIT-II: WORKING WITH CONTROL STATEMENTS, LOOPS

Conditional statements: Introduction - If statements - If-else statements – nested if-else – break statement-continue statement-go to statement -Switch statements. **Looping statements:** Introduction-While statements – Do-while statements - For Statements-nested loop statements.

UNIT-III: FUNCTIONS, ARRAYS AND STRINGS

Functions: Definition and declaration of functions- Function proto type-return statement- types of functions-formatted and unformatted functions. **Built in functions:** Mathematical functions - String functions - Character functions - Date functions. **User defined functions:** Introduction - Need for user defined functions - Elements of functions – Function call – call by value and call by reference - Recursive functions. **Arrays:** Introduction - Defining an array - Initializing an array –characteristics of an array-One dimensional array – Two dimensional array – Multi dimensional array. **Strings:** Introduction - Declaring and initializing string - Reading and Writing strings - String standard functions.

UNIT-IV: POINTERS, STRUCTURES AND UNIONS

Pointers: Features of pointers- Declaration of Pointers-arithmetic operations with pointers

Structures: Features of Structures - Declaring and initialization of Structures –Structure within Structure-Array of Structures- Enumerated data type -**Unions**-Definition and advantages of Unions comparison between Structure & Unions.

UNIT-V: OBJECT ORIENTED CONCEPTS USING C++

Object Oriented Programming: Introduction to Object Oriented Programming - Structure of C++ – Simple program of C++– Storage Classes-Similarities and Differences between C & C++ - Data Members-Member Functions - Object Oriented Concepts-Class-Object-Inheritance-Polymorphism-Encapsulation-Abstraction.

SUGGESTED READINGS:

1. Programming with C& C++ :IndrakantiSekhar, V.V.R.Raman&V.N.Battu, Himalaya Publishers.
2. Programming in ANSI C: Balagurusamy, McGraw Hill.
3. Mastering C: K.R. Venugopal, McGraw Hill.
4. C: The Complete Reference: H.Schildt, McGraw Hill.
5. Let Us C: Y.Kanetkar, BPB.
6. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
7. Mastering C++: KR.Venugopal&R.Buyya, McGraw Hill.
8. Schaum□s Outlines: Programming with C++: by John R Hubbard.
9. Let Us C++: Y.Kanetkar, BPB.

Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objective: *To make students to learn the Principles of Insurance.*

UNIT I: RISK MANAGEMENT AND INSURANCE & 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 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 : SagarSanyal
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
8. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
9. Principles of Risk Management and Insurance: George E Rejda (13th Edition)
10. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing, Cincinnati, Ohio

Suggested Websites:

1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

Paper SEC1 (b): FOUNDATION OF DIGITAL MARKETING

Objective: *To make students to learn 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.

UNIT II: OPTIMIZING MARKETING EMAILS, MOBILE MARKETING FOUNDATIONS AND CONTENT MARKETING FOUNDATIONS:

Email marketing tools and setup – Email marketing segmentation, personalization and mobile friendly design – Content marketing foundations – Blogs for content marketing – Content marketing for staying relevant – Newsletters for content marketing – Mobile marketing foundations.

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.KUsha Rani - PBP
4. Digital Marketing by VandanaAhuja, Oxford
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Digital Marketing for Dummies by Ryan Deiss and Russ Henneberry

Paper SEC1 (c) FUNDAMENTALS OF BUSINESS ANALYTICS

Objective: *To make students to understand the 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

Paper SEC2 (a): PRACTICE OF LIFE INSURANCE

Objectives: *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.

Paper SEC2 (b): WEB DESIGN AND ANALYTICS

Objective: *To make students to understand the 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 – Pptimization 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 VandanaAhuja, 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 – AvinashKaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

Paper SEC2 (c): APPLICATION OF BUSINESS ANALYTICS

Objective: *To make students to understand the Analytics of 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 RStudio 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

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, Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (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.
9. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
10. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

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
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics - Theory, Methods and Applications: Sancheti D.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Statistics: Andasn, Sweenly, Williams, Cingage.

Paper DSC 303: RELATIONAL DATABASE MANAGEMENT SYSTEM

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 – The Keys - 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, McGraw Hill.; 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: ParteekBhaia, Kalyani Publishers.7) Database Management System: NirupmaPathak, Himalaya. 8) Database Management Systems: Pannerselvam, PHI.9) Relational DatabaseManagement System: Srivastava&Srivastava, New Age 10) PHPMySQL Spoken Tutorials by IIT Bombay. 11) OracleDatabase: A Beginner's Guide: I.Abramson, McGraw Hill.

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.

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 VandanaAhuja, 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

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; TeoLachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

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 ASSAINGMENT, 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.

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 VandanaAhuja, 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

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 – Tree maps – 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; TeoLachev; 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 NussbaumerKnaflic; Wiley

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 – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – 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 - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, crown 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. Singhania & Dr.Kapil Singhania, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGraw Hill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning.
8. Direct Tax Law and Practice: Ahuja Girish

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

Paper DSC 402: BUSINESS STATISTICS - II

Objective: *To inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye's Theorem.

UNIT-V: THEORITECAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution.
Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution.
Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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: 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: Vora, Tata McGraw Hill
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics-Teory, Methods and Applications: SanchetiD.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

Paper DSC 403: WEB TECHNOLOGIES

Hours Per Week:7(3T+4P **Credits**: 5
Exam Hours:1½ **Marks:** 50U+35P+15I

Objective: *To gain skills of usage of Web Technologies to design Web pages.*

UNIT-I: INTRODUCTION:

Introduction to web technology – HTML – types of HTML tags-basic Structure of HTML – Web design principles – HTML attributes – styles – Hypertext - Formatting text – Forms & formulating instructions & formulation elements – Commenting code – Back grounds – Images-Hyperlinks – Lists –Tables – Frames

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages – technologies: Introduction to Dynamic HTML programing - Cascading style sheets (CSS) – types and advantages of CSS – CSS basic syntax and structure - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT&:

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 - Eventhandling.

UNIT-IV: EVENTS AND EVENT HANDLERS:

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 - Onsubmit - Onunload.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML:

Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet – Hyperlinks in XML Document Object Model - XML Query Language.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT- SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:

1. Web Technology: Indrakanti Sekhar, V.N. Battu, Himalaya Publishers.
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
6. Internet and Web Technologies: Raj Kamal, McGrawHill.
7. Web Technology: A Developer's Perspective: Gopalan&Sivaselvan,PHI.
8. Internet Technology and Web Page Design: R.Singh&M.Sonia,Kalyani.
9. Web Technology and Design by Xavier, New Age InternationalPub.

Paper GE: a) 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 - 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 Elasticity 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: VanithAgrawal, 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
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

Paper GE: b) ADVANCED ASPECTS OF INCOME TAX

Objective: *To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from certain heads and other provisions relating to clubbing, aggregation of income and assessment procedure.*

UNIT–I: PROFITS AND GAINS OF BUSINESS OR PROFESSION:
Valuation of Stock Depreciation: Meaning – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation.

UNIT-II: INCOME FROM OTHER SOURCES:
Winnings from lotteries Puzzles, crown world puzzles, Races Problems on computation on Income from Other Sources. Treatment of Agricultural Income. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates. Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:
Income of other persons included in the total income of Assesse – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income.

UNIT-IV: ASSESSMENT OF INDIVIDUALS:
Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability.

UNIT–V: ASSESSMENT PROCEDURE:
Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment: Self-assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:
1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania& Dr. KapilSinghania, Taxmann
3. Income Tax: M. Jeevarathinam& C. Vijay Vishnu Kumar, SCITECH Publications.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: B. Lal, Pearson Education.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran&Thothadri, PHI Learnin

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.

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.

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.

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.

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.

SUGGESTED READINGS:

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: PrashantaAthma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI
6. Introduction to Cost Accounting: Tulsian, S.Chand
7. Cost Accounting: Horngren, Pearson
8. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.

Paper DSE 501 (b): FINANCIAL PLANNING & PERFORMANCE

Objective: *To make students to understand the Financial planning & Performance.*

UNIT I: STRATEGIC PLANNING:
Strategic planning: Analysis of external and internal factors affecting strategy - Long-term mission and goals - Alignment of tactics with long-term strategic goals - Strategic planning models and analytical techniques - Characteristics of successful strategic planning process -
Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Top-level planning and analysis: Pro forma income - 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

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 CMA excel 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.

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr Rammohan Bhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18.

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 a 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. Aakash Business Tools: Spoken Tutorial Project IIT Bombay
5. Mastering Tally: Dinesh Maidasani, Firewal Media
6. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
7. Computerised Accounting and Business Systems: Kalyani Publications
8. Manuals of Respective Accounting Packages
9. Tally ERP 9: J.S. Arora, Kalyani Publications.

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 - Special issues: Impact of foreign operations - Effects of changing prices and inflation - Off-balance sheet financing - 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: Financial markets and regulation - Market efficiency - Financial institutions - Initial and secondary public offerings - Dividend policy and share repurchases - 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 - Tax implications of transfer pricing

SUGGESTED READINGS:

1. Wiley CMA excel 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
6. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall

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
6. Federal Income Taxation (Concepts and Insights), Marvin Chirelstein and Lawrence Zelenak, Foundation Press

Paper DSE 503 (a) : MANAGEMENT INFORMATION SYSTEMS

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.

Paper DSE 503 (b): E-COMMERCE

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. E-Commerce: An Indian Perspective: P.T. Joseph, S.J, PHI
4. Electronic Commerce, Framework Technologies & Applications: Bharat Bhasker, McGraw Hill
5. Introduction to E-Commerce: Jeffrey F Rayport, Bernard J. Jaworski: Tata McGraw Hill
6. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
7. E-Commerce & Computerized Accounting: Rajinder Singh, Er. KaisarRasheed, Kalyani
8. E-Commerce & Mobile Commerce Technologies: Pandey, SaurabhShukla, S. Chand
9. E-Business 2.0, Roadmap for Success: Ravi Kalakota, Marcia Robinson, Pearson
10. Electronic Commerce: Pete Loshin / John Vacca, Firewall Media
11. E-Commerce, Strategy, Technologies and Applications: David Whiteley, Tata Mcgraw Hill

Paper DSE 503 (c): MOBILE 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 SeekBar, 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

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, Geocoding 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-ViewModel 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 Resources:

Google Developer Training, "Android Developer Fundamentals Course – Concept Reference", Google Developer Training Team, 2017. https://www.gitbook.com/book/google-developer-training/android-developer fundamentals-course-concepts/details (Download pdf file from the above link)

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). concepts only Contents of a Research Report.

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. Research Methodology: Dr Vijay Upagade& Dr ArvindShende, S. Chand Publications
6. Research Methodology: Ranjit Kumar, Pearson Publication
7. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
8. Research Methodology: Sashi.K Gupta, PraneethRangi, 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, analyze the data, draw conclusions and make recommendations.

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: D**ata Analysis and interpretation:** this chapter should present the data analysis and inferences.
Chapter-IV: **Summary and Conclusions**: 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 be 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 center 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.

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.

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.

UNIT-III: TECHNIQUES OF FINANICAL 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.

UNIT-IV: FUNDS FLOW ANANLYSIS:
Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds.

UNIT-V: CASH FLOW ANALYSIS (AS-3):
Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement.

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

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 - Plant-wide versus departmental overhead -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. Intermediate Accounting, 11th edition; Nikolai, Loren A., Bazley John D., and Jones, Jefferson P., South-Western Cengage Learning
4. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
5. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr Rammohan Bhave and Dr Mrs Anjali Rammohan Bhave, CNBC TV 18

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.

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 - Income tax considerations - 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
5. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall
6. Enterprise Risk Management - Integrated Framework; COSO, The Committee of Sponsoring Organizations of the Treadway Commission, 2017

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 Oversights 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. Wiley Practitioner's Guide to GAAS: Covering all SAS, SSAE's , SSARS, PCAOB, Auditing Standards, and Interpretations, Joanne M. Flood, Wiley
4. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning
5. Principles of Auditing & Other Assurance Services, Ray Whittington and Kurt Pany, McGraw Hill
6. Auditing & Assurance Services: A Systematic Approach, William F Messier Jr, Steven M. Glover and Douglas F. Prawitt, McGraw Hill.

Paper DSE 603(a): MULTIMEDIA SYSTEMS

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,*
2. PHI PTR Innovative Technology Series.
3. John F.KoegelBufford, *Multimedia System,* Addison Wesley, 1994.
4. Mark Elsom – Cook, *Principles of Interactive Multimedia,* Tata Mc-Graw Hill, 2001.
5. Judith Jefcoate, *Multimedia in Practice: Technology and Application,* PHI 1998.

Paper DSE 603(b): CYBER SECURITY

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
4. FaiyazAhamed, Cyber Law and Information Security, DreamTech Press, 2013
5. PankajAgarwal, Information Security and Cyber Laws, Acme Learning, 2013
6. Manjotkaur, Essentials of E-Business and Cyber laws, Kalyani Publishers.

Paper DSE 603(c): DATA ANALYTICS

Hours Per Week: 7 (3T+4P) **Credits**: 5
Exam Hours: 1 ½ **Marks:** 50U+35P+15I

Objective: *To l*earn 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, Statistical 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 item sets – 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. Anand Rajaraman 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 analystics, John Wiley & sons, 2012.
4. Glenn J. Myatt, Making Sense of Data, John Wiley & Sons, 2007 Pete Warden, Big Data Glossary, O.Reilly, 2011.
5. Jiawei Han, Micheline Kamber "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.

B.Com (Computer Applications)
Syllabus (CBCS)
(w.e.f. 2019–2020)

FACULTY OF COMMERCE
PALAMURU UNIVERSITY
MAHABUBNAGAR - 509 001 T.S.

2019

B.COM (Computer Applications)
CBCS COURSE STRUCTURE
w.e.f. 2018-'19

Sl.No.	*Code*	*Course Title*	*HPW*	*Credits*	*Exam Hrs*	*Marks*
(1)	(2)	(3)	(5)	(6)	(7)	(8)
		SEMESTER – I				
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	**a)** Environmental Science/ **b)** Basic Computer Skills	2	2	1 ½ hrs	40U+10I
4.	DSC101	Financial Accounting–I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Fundamentals of Information Technology	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**27**	**25**		
		SEMESTER – II				
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	**a)** Basic Computer Skills/ **b)**Environmental Science	2	2	1 ½ hrs	40U+10I
10.	DSC201	Financial Accounting–II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Programming with C & C++	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**27**	**25**		
		SEMESTER – III				
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	**a)** Principles of Insurance/ **b)** Foundation of Digital Marketing/ **c)**Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	**a)** Practice of Life Insurance/ **b)** Web Design & Analytics/ **c)** Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Relational Database Management System	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**27**	**25**		
		SEMESTER – IV				
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	**a)** Practice of General Insurance/ **b)** Social Media Marketing **c)** Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	**a)** Regulation of Insurance Business/ **b)** Search Engine Optimization & Online Advertising **c)** Data Visualisation & Story telling	2	2	1 ½ hrs	40U+10I

24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
26.	DSC403	Web Technologies	3T+4P	5	1 ½ hrs	50T+35P+ 15I
		Total	**27**	**25**		
		SEMESTER – V				
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	a)Business Economics / b) Advanced Aspects of Income Tax	4	4	3 hrs	80U+20I
30.	DSE501	**a)** Cost Accounting/ **b)** Financial Planning & Performance/ **c)** International Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	**a)** Computerized Accounting/ **b)** Financial Decision Making-I/ **c)** International Tax &Regulation	3T+4P/ 5	5	3 hrs	50T+35P + 15I/ 80U+20I
32.	DSE503	**a)** Management Information Systems/ **b)** Ecommerce/**c)** Mobile Applications	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**29/27**	**25**		
		SEMESTER - VI				
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15VV
36.	DSE601	**a)** Cost Control and Management Accounting/ **b)** Financial control/ **c)** International Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	**a)** Theory and Practice of GST/ **b)** Financial Decision Making-II / **c)** International Auditing	3T+4P/ 5	5	3 hrs	50T+35P + 15I/ 80U+20I
38.	DSE603	**a)** Multimedia Systems/ **b)** Cyber Security/**c)** Data Analytics	3T+4P	5	1 ½ hrs	50T+35P + 15I
		Total	**31/29**	**25**		
		GRAND TOTAL	**168/164**	**150**		

ELS: English Language Skill**; SLS**: Second Language Skill; **AEC: A**bility **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; **T**: **T**heory; **P**: **P**ractical**; I**: Internal Exam **U: U**niversity Exam: **PR**: **P**roject **R**eport; **VV**: **V**iva-**V**oce Examination.*

Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
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**
CREDITS UNDER NON-CGPA		**NSS/NCC/Sports/Extra Curricular**	**Up to 6 (2 in each year)**	
		Summer Internship	**Up to 4 (2 in each after I & II years)**	

Paper AEC1 (a): BASIC COMPUTER SKILLS

Hours Per Week: 2 **Credits**: 2
Exam Hours: 1 ½ **Marks:** 40U+10I

Objective: to impart a basic level understanding of working of a computer and its usage.

UNIT I: UNDERSTANDING OF COMPUTER AND WORD PROCESSING:

Knowing computer: What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

Operating Computer using GUI Based Operating System: What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.

Understanding Word Processing: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.

UNIT II: SPREAD SHEET, PRESENTATION SOFTWARE & INTRODUCTION TO INTERNET, WWW AND WEB BROWSERS:

Using Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.

Basics of presentation software: Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation / handouts.

Introduction to Internet, WWW and Web Browsers:

Introduction to Internet: Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting.

World Wide Web: Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.

Web Browsing: Software, Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

SUGGESTED READINGS:

1. Introduction to Computers, Peter Norton, McGraw Hill , 2012.
2. Using Information Technology, Brian K Williams, Stacey C. Sawyer, Tata McGraw Hill.

Web Resources:

1. https://online.stanford.edu/courses/soe-ycscs101-sp-computer-science-101
2.https://www.extension.harvard.edu/open-learning-initiative/intensive-introduction- computer-science.

Paper DSC 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 – List of Accounting Standards issued by ASB -– Accounting System- 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. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Introduction to Accountancy: T.S.Grewal, S.Chand and Co.
6. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
7. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
8. Financial Accounting: JawaharLal, Himalaya Publishing House.

Paper DSC 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 Organisation& 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: Niranjan Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr.NeeruVasihth, Tax Mann Publications.

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

Paper DSC 201: FINANCIAL ACCOUNTING-II

Objective: *To acquire accounting knowledge of bills of exchange and other business accounting methods.*

UNIT-I: BILLS OF EXCHANGE:
Bills of Exchange - Definition- Distinction between Promissory note and Bills of exchange- Accounting treatment of Trade bills: Books of Drawer and Acceptor- Honour and Dishonour of Bills- Renewal of bills- Retiring of bills under rebate- Accommodation bills.(Including problems)

UNIT-II: CONSIGNMENT ACCOUNTS:
Consignment – Meaning – Features– Proforma invoice - Account sales – Del credere commission-Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock –Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price. (Including problems)

UNIT-III: JOINT VENTURE ACCOUNTS:
Joint Venture – Meaning –Features-Difference between Joint Venture and Consignment-Accounting Procedure-Methods of Keeping Records for Joint Venture Accounts-Method of Recording in co-ventures books -Separate Set of Books Method- Joint Bank Account-Memorandum Joint Venture Account (Including problems)

UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS:
Single Entry System – Meaning -Features–Difference between Single Entry and Double Entry systems -Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems)

UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:
Non- Profit Organization – Meaning – Features – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta,Sultan Chand & Sons.
3. Accountancy–I: Tulasian, Tata McGraw Hill Co.
4. Accountancy–I: S.P. Jain & K.L Narang, Kalyani.
5. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
6. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.

Paper DSC 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 - Significance of Information Technology Act.

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. Business Laws – Dr. B. K. Hussain, Nagalakshmi - PBP
5. Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
6. Company Law and Practice: GK Kapoor& Sanjay Dhamija, Taxmann Publication.
7. Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
8. Corporate Law: PPS Gogna, S Chand.
9. Business Law: D.S. Vital, S Chand
10. Company Law: Bagrial AK, Vikas Publishing House.

Paper DSC 203:PROGRAMMING WITH C & C++

Hours Per Week: 7 (3T+4P) Credits: 5
Exam Hours: 1 ½ Marks: 50U+35P+15I

Objective:To understand the fundamental concepts of programming in C and Object Oriented Programming using C++.

UNIT-I: **INTRODUCTION TO C LANGUAGE, VARIABLES, DATA TYPES AND OPERATORS**

Introduction: Types of Languages- History of C language – Basic Structure –Programming Rules – Flow charts-algorithms–Commonly used library functions - Executing the C Program - Pre-processors in "C"- Keywords & Identifiers – Constants – **Variables:** Rules for defining variables - Scope and Life of a Variable–- **Data Types** - Type Conversion - Formatted Input and Output operations. **Operators:** Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special - Bitwise - Increment / Decrement operator.

UNIT-II: WORKING WITH CONTROL STATEMENTS, LOOPS

Conditional statements: Introduction - If statements - If-else statements – nested if-else – break statement-continue statement-go to Statement-Switch statements. **Looping statements:** Introduction-While statements – Do-while statements - For Statements-nested loop statements.

UNIT-III: FUNCTIONS, ARRAYS AND STRINGS

Functions: Definition and declaration of functions- Function proto type-return statement- types of functions-formatted and unformatted functions. **Built in functions:** Mathematical functions - String functions - Character functions - Date functions. **User defined functions:** Introduction - Need for user defined functions - Elements of functions – Function call – call by value and call by reference - Recursive functions. **Arrays:** Introduction - Defining an array - Initializing an array –characteristics of an array-One dimensional array – Two dimensional array – Multi dimensional array. **Strings:** Introduction - Declaring and initializing string - Reading and Writing strings - String standard functions.

UNIT-IV: POINTERS, STRUCTURES AND UNIONS

Pointers: Features of pointers- Declaration of Pointers-arithmetic operations with pointers

Structures: Features of Structures - Declaring and initialization of Structures –Structure within Structure-Array of Structures- Enumerated data type -**Unions**-Definition and advantages of Unions comparison between Structure & Unions.

UNIT-V: OBJECT ORIENTED CONCEPTS USING C++

Object Oriented Programming: Introduction to Object Oriented Programming - Structure of C++ – Simple program of C++– Storage Classes-Similarities and Differences between C & C++ - Data Members-Member Functions - Object Oriented Concepts-Class-Object-Inheritance-Polymorphism-Encapsulation-Abstraction.

SUGGESTED READINGS:

1. Programming with C& C++ :IndrakantiSekhar, V.V.R.Raman&V.N.Battu, Himalaya Publishers.
2. Programming in ANSI C: Balagurusamy, McGraw Hill.
3. Mastering C: K.R. Venugopal, McGraw Hill.
4. C: The Complete Reference: H.Schildt, McGraw Hill.
5. Let Us C: Y.Kanetkar, BPB.
6. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
7. Mastering C++: KR.Venugopal&R.Buyya, McGraw Hill.
8. Schaum"s Outlines: Programming with C++: by John R Hubbard.
9. Let Us C++: Y.Kanetkar, BPB.

Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objective: *To make students to learn the Principles of Insurance.*

UNIT I: RISK MANAGEMENT AND INSURANCE & 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 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 : SagarSanyal
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
8. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
9. Principles of Risk Management and Insurance: George E Rejda (13th Edition)
10. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing, Cincinnati, Ohio

Suggested Websites:

1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

Paper SEC1 (b): FOUNDATION OF DIGITAL MARKETING

Objective: *To make students to learn 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.

UNIT II: OPTIMIZING MARKETING EMAILS, MOBILE MARKETING FOUNDATIONS AND CONTENT MARKETING FOUNDATIONS:

Email marketing tools and setup – Email marketing segmentation, personalization and mobile friendly design – Content marketing foundations – Blogs for content marketing – Content marketing for staying relevant – Newsletters for content marketing – Mobile marketing foundations.

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.KUsha 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

Paper SEC1 (c) FUNDAMENTALS OF BUSINESS ANALYTICS

Objective: *To make students to understand the 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

Paper SEC2 (a): PRACTICE OF LIFE INSURANCE

Objectives: *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.

Paper SEC2 (b): WEB DESIGN AND ANALYTICS

Objective: *To make students to understand the 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 – AvinashKaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

Paper SEC2 (c): APPLICATION OF BUSINESS ANALYTICS

Objective: *To make students to understand the Analytics of 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 - Treemap 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 RStudio 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

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, Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (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.
9. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
10. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

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: Meso kurtosis, 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
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics - Theory, Methods and Applications: Sancheti D.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Statistics: Andasn,Sweenly,Williams,Cingage.

Paper DSC 303: RELATIONAL DATABASE MANAGEMENT SYSTEM

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 – The Keys - 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 - DataDefinition 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, McGraw Hill.; 4) Modern Database Management: J.A.Hoffer,V.Rames&H.Topi, Pearson.; 5) Database System Concepts: Silberschatz, Korth & Sudarshan, McGraw Hill. 6) Simplified Approach to DBMS: Parteek Bhaia Kalyani Publishers. 7) Database Management System: Nirupma Pathak, Himalaya. 8) Database Management Systems: Pannerselvam, PHI. 9) Relational DatabaseManagement System: Srivastava&Srivastava, New Age 10) PHPMySQL Spoken Tutorials by IIT Bombay. 11) OracleDatabase: A Beginner's Guide: I.Abramson, McGraw Hill.

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.

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 VandanaAhuja, 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

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; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; TeoLachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

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 ASSAINGMENT, 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.

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 VandanaAhuja, 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

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; TeoLachev; 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

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 – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – 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 - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, crown 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. Singhania&Dr.KapilSinghania, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran&Thothadri, PHI Learning.
8. Direct Tax Law and Practice : AhujaGirish

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: ChandanSengupta, Wiley

Paper DSC 402: BUSINESS STATISTICS - II

Objective: *To inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye's Theorem.

UNIT-V: THEORITECAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution.
Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution.
Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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: 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: Vora, Tata McGraw Hill
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics-Teory, Methods and Applications: SanchetiD.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

Paper DSC 403: WEB TECHNOLOGIES

Hours Per Week:7(3T+4P **Credits:** 5
Exam Hours:1½ **Marks:** 50U+35P+15I

Objective: *To gain skills of usage of Web Technologies to design Web pages.*

UNIT-I: INTRODUCTION:

Introduction to web technology – HTML – types of HTML tags-basic Structure of HTML – Web design principles – HTML attributes – styles – Hypertext - Formatting text – Forms & formulating instructions & formulation elements – Commenting code – Back grounds – Images-Hyperlinks – Lists –Tables – Frames

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages – technologies: Introduction to Dynamic HTML programing - Cascading style sheets (CSS) – types and advantages of CSS – CSS basic syntax and structure - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT&:

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 - Eventhandling.

UNIT-IV: EVENTS AND EVENT HANDLERS:

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 - Onsubmit - Onunload.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML:

Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet – Hyperlinks in XML Document Object Model - XML Query Language.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT- SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:

1. Web Technology: IndrakantiSekhar, V.N. Battu, Himalaya Publishers.
2. Internet & World Wide Web How to Program: Deitel&Deitel,Pearson.
3. Web programming: ChrisBates.
4. HTML & XML An Introduction NIIT,PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro,Pearson
6. Internet and Web Technologies: Raj Kamal, McGrawHill.
7. Web Technology: A Developer's Perspective: Gopalan&Sivaselvan,PHI.
8. Internet Technology and Web Page Design: R.Singh&M.Sonia,Kalyani.
9. Web Technology and Design by Xavier, New Age InternationalPub.

Paper GE: a) 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 - 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 Elasticity 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: VanithAgrawal, 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
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

Paper GE: b) ADVANCED ASPECTS OF INCOME TAX

Objective: *To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from certain heads and other provisions relating to clubbing, aggregation of income and assessment procedure.*

UNIT–I: PROFITS AND GAINS OF BUSINESS OR PROFESSION:
Valuation of Stock Depreciation: Meaning – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation.

UNIT-II: INCOME FROM OTHER SOURCES:
Winnings from lotteries Puzzles, crown world puzzles, Races Problems on computation on Income from Other Sources. Treatment of Agricultural Income. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates. Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:
Income of other persons included in the total income of Assesse – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income.

UNIT-IV: ASSESSMENT OF INDIVIDUALS:
Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability.

UNIT–V: ASSESSMENT PROCEDURE:
Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment: Self-assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:
1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania& Dr. KapilSinghania, Taxmann
3. Income Tax: M. Jeevarathinam& C. Vijay Vishnu Kumar, SCITECH Publications.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: B. Lal, Pearson Education.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran&Thothadri, PHI Learnin

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.

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.

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.

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.

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.

SUGGESTED READINGS:

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: PrashantaAthma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI
6. Introduction to Cost Accounting: Tulsian, S.Chand
7. Cost Accounting: Horngren, Pearson
8. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.

Paper DSE 501 (b) : FINANCIAL PLANNING & PERFORMANCE

Objective: *To make students to understand the Financial planning & Performance.*

UNIT I: STRATEGIC PLANNING:
Strategic planning: Analysis of external and internal factors affecting strategy - Long-term mission and goals - Alignment of tactics with long-term strategic goals - Strategic planning models and analytical techniques - Characteristics of successful strategic planning process -
Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Top-level planning and analysis: Pro forma income - 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

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.

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr RammohanBhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18.

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 a 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: GarimaAgarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Aakash Business Tools: Spoken Tutorial Project IIT Bombay
5. Mastering Tally: Dinesh Maidasani, Firewal Media
6. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
7. Computerised Accounting and Business Systems: Kalyani Publications
8. Manuals of Respective Accounting Packages
9. Tally ERP 9: J.S. Arora, Kalyani Publications.

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 - Special issues: Impact of foreign operations - Effects of changing prices and inflation - Off-balance sheet financing - 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: Financial markets and regulation - Market efficiency - Financial institutions - Initial and secondarypublic offerings - Dividend policy and share repurchases - 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 - Tax implications of transfer pricing

SUGGESTED READINGS:

1. Wiley CMA Excel 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,andHanekom, 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
6. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall

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
6. Federal Income Taxation (Concepts and Insights), Marvin Chirelstein and Lawrence Zelenak, Foundation Press

Paper DSE 503 (a): MANAGEMENT INFORMATION SYSTEMS

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.

Paper DSE 503 (b): E-COMMERCE

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. E-Commerce: An Indian Perspective: P.T. Joseph, S.J, PHI
4. Electronic Commerce, Framework Technologies & Applications: Bharat Bhasker, McGraw Hill
5. Introduction To E-Commerce: Jeffrey F Rayport, Bernard J. Jaworski: Tata McGraw Hill
6. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
7. E-Commerce & Computerized Accounting: Rajinder Singh, Er. KaisarRasheed, Kalyani
8. E-Commerce & Mobile Commerce Technologies: Pandey, SaurabhShukla, S. Chand
9. E-Business 2.0, Roadmap For Success: Ravi Kalakota, Marcia Robinson, Pearson
10. Electronic Commerce: Pete Loshin / John Vacca, Firewall Media
11. E-Commerce, Strategy, Technologies And Applications : David Whiteley, Tata Mcgraw Hill

Paper DSE 503 (c) : MOBILE 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 TextView, 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 SeekBar, Working with Menus using views, Gallery, Image Switcher, GridView, and ImageView 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

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, Geocoding 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)

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). Concepts only Contents of a Research Report.

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. Research Methodology: Dr Vijay Upagade& Dr ArvindShende, S. Chand Publications
6. Research Methodology: Ranjit Kumar, Pearson Publication
7. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
8. Research Methodology: Sashi.K Gupta, PraneethRangi, 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.

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: D**ata Analysis and interpretation:** this chapter should present the data analysis and inferences.
Chapter-IV: **Summary and Conclusions**: 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.

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.

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.

UNIT-III: TECHNIQUES OF FINANICAL 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.

UNIT-IV: FUNDS FLOW ANANLYSIS:
Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds.

UNIT-V: CASH FLOW ANALYSIS (AS-3):
Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement.

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

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 - Plant-wide versus departmental overhead -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 CMA Excel Learning System, Part 1: Planning, Performance & Analytics
2. Intermediate Accounting, 17th edition; Kieso, Donald E., Weygandt, Jerry J., and Warfield, Terry D.; Wiley
3. Intermediate Accounting, 11th edition; Nikolai, Loren A., Bazley John D., and Jones, Jefferson P., South-Western Cengage Learning
4. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
5. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr Rammohan Bhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18

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.

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 - Income tax considerations - 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
5. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall
6. Enterprise Risk Management - Integrated Framework; COSO, The Committee of Sponsoring Organizations of the Treadway Commission, 2017

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 Oversights 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. Wiley Practitioner's Guide to GAAS: Covering all SAS, SSAE's , SSARS, PCAOB, Auditing Standards, and Interpretations, Joanne M. Flood, Wiley
4. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning
5. Principles of Auditing & Other Assurance Services, Ray Whittington and Kurt Pany, McGraw Hill
6. Auditing & Assurance Services: A Systematic Approach, William F Messier Jr, Steven M. Glover and Douglas F. Prawitt, McGraw Hill.

Paper DSE 603(a): MULTIMEDIA SYSTEMS

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, Klara Hahrstedt, *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.

Paper DSE 603(b) : CYBER SECURITY

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
4. FaiyazAhamed, Cyber Law and Information Security, DreamTech Press, 2013
5. PankajAgarwal, Information Security and Cyber Laws, Acme Learning, 2013
6. Manjotkaur, Essentials of E-Business and Cyber laws, Kalyani Publishers.

Paper DSE 603(c) : DATA ANALYTICS

Hours Per Week: 7 (3T+4P) **Credits**: 5
Exam Hours: 1 ½ **Marks:** 50U+35P+15I

Objective: *To l*earn 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 item sets – 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 analystics, John Wiley & sons, 2012.
4. Glenn J. Myatt, Making Sense of Data, John Wiley & Sons, 2007 Pete Warden, Big Data Glossary, O‟Reilly, 2011.
5. Jiawei Han, Micheline Kamber “Data Mining Concepts and Techniques”, Second Edition, Elsevier, Reprinted 2008.

B.Com.

Syllabus (CBCS)

(w.e.f. 2019–2020)

FACULTY OF COMMERCE
PALAMURU UNIVERSITY
MAHABUBNAGAR-509001
T.S.

2019

B.COM.
CBCS COURSE STRUCTURE
w.e.f. 2019-20

Sl.No.	*Code*	*Course Title*	*HPW*	*Credits*	*Exam Hrs*	*Marks*
(1)	(2)	(3)	(5)	(6)	(7)	(8)
		SEMESTER – I				
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	**a)** Environmental Science/ **b)** Basic Computer Skills	2	2		
4.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Foreign Trade	5	5	3 hrs	80U+20I
		Total	**25**	**25**		
		SEMESTER – II				
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	**a)** Basic Computer Skills / **b)** Environmental Science	2	2		
10.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Banking and Financial Services	5	5	3 hrs	80U+20I
		Total	**25**	**25**		
		SEMESTER – III				
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	**a)** Principles of Insurance/ **b)** Foundation of Digital Marketing/ **c)** Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	**a)** Practice of Life Insurance/ **b)** Web Design & Analytics/ **c)** Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Financial Institutions and Markets	5	5	3 hrs	80U+20I
		Total	**25**	**25**		
		SEMESTER – IV				
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	**a)** Practice of General Insurance/ **b)** Social Media Marketing **c)** Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	**a)** Regulation of Insurance Business/ **b)** Search Engine Optimization & Online Advertising **c)** Data Visualisation & Storytelling	2	2	1 ½ hrs	40U+10I
24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
26.	DSC403	Corporate Accounting	5	5	3 hrs	80U+20I
		Total	**25**	**25**		

		SEMESTER – V				
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	Business Economics	4	4	3 hrs	80U+20I
30.	DSE501	**a)** Cost Accounting/ **b)** Financial Planning & Performance/ **c)** International Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	**a)** Computerized Accounting/ **b)** Financial Decision Making-I/ **c)** International Tax & Regulation	3T+4P/5	5	3 hrs	50T+35P + 15I/ 80U+20I
32.	DSE503	**a)** Auditing/ **b)** Advanced Corporate Accounting/ **c)** Financial Management	5	5	3 hrs	80U+20I
		Total	**27/25**	**25**		
		SEMESTER – VI				
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15V V
36.	DSE601	**a)** Cost Control and Management Accounting/ **b)** Financial control/ **c)** International Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	**a)** Theory and Practice of GST/ **b)** Financial Decision Making-II / **c)** International Auditing	3T+4P/5	5	3 hrs	50T+35P + 15I/ 80U+20I
38.	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: A**bility **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; **T**: **T**heory; **P**: **P**ractical**; I**: Internal Exam **U: U**niversity Exam: **PR**: **P**roject **R**eport; **VV**: **V**iva-**V**oce Examination.*

Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
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	**38**		**150**
	Commerce	**24**		**106**
CREDITS UNDER NON-CGPA		**NSS/NCC/Sports/Extra Curricular**	**Up to 6 (2 in each year)**	
		Summer Internship	**Up to 4 (2 in each after I & II years)**	

Paper DSC 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 – List of Accounting Standards issued by ASB - Accounting System - 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. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Introduction to Accountancy: T.S.Grewal, S.Chand and Co.
6. Advanced Accountancy-I: S.N.Maheshwari& V.L.Maheswari, Vikas.
7. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
8. Financial Accounting: Jawahar Lal, Himalaya Publishing House.

Paper DSC 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 Organisation& 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: Niranjan Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr. NeeruVasihth, Tax Mann Publications.

Paper DSC 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 & Rimi Mitra, Himalaya Publishers
3. Foreign Trade –Dr Srinivasa Narayana,Jyoti Mehra – PBP
4. International Economics: SSM Desai & Nirmal Bhalerao, Himalaya Publishers.
5. International Business Environment & Foreign Exchange Economies: Singh & S. Srivastava,
6. Foreign Trade and Foreign Exchange: O.P Agarwal & B.K.Chaudri, Himalaya Publishers
7. International Financial Markets & Foreign Exchange: Shashi K.Gupta & Praneet Rangi, Kalyani
8. International Economics: Theory & Practice: Paul R. Krugman, Pearson Publishers.

Paper DSC 201: FINANCIAL ACCOUNTING-II

Objective: *To acquire Accounting knowledge of bills of exchange and other business accounting methods.*

UNIT-I: BILLS OF EXCHANGE:
Bills of Exchange – Definition - Distinction between Promissory note and Bills of exchange - Accounting treatment of Trade bills: Books of Drawer and Acceptor- Honour and Dishonour of Bills - Renewal of bills - Retiring of bills under rebate - Accommodation bills (Including problems)

UNIT-II: CONSIGNMENT ACCOUNTS:
Consignment - Meaning – Features - Proforma invoice - Account sales - Del credere commission-Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock -Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price (Including problems)

UNIT-III: JOINT VENTURE ACCOUNTS:
Joint Venture - Meaning – Features - Difference between Joint Venture and Consignment - Accounting Procedure - Methods of Keeping Records for Joint Venture Accounts - Method of Recording in co-ventures books - Separate Set of Books Method - Joint Bank Account - Memorandum Joint Venture Account (Including problems)

UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS:
Single Entry System - Meaning – Features - Difference between Single Entry and Double Entry systems - Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems)

UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:
Non- Profit Organization - Meaning - Features - Receipts and Payments Account - Income and Expenditure Account - Balance Sheet (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta,Sultan Chand & Sons.
3. Accountancy–I: Tulasian, Tata McGraw Hill Co.
4. Accountancy–I: S.P. Jain & K.L Narang, Kalyani.
5. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
6. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.

Paper DSC 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 - Significance of Information Technology Act

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: Definition 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. Business Laws – Dr. B. K. Hussain, Nagalakshmi - PBP
5. Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
6. Company Law and Practice: GK Kapoor& Sanjay Dhamija, Taxmann Publication.
7. Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
8. Corporate Law: PPS Gogna, S Chand.
9. Business Law: D.S. Vital, S Chand
10. Company Law: Bagrial AK, Vikas Publishing House.

Paper DSC 203: BANKING AND FINANCIAL SERVICES

Objective: *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 FINANCIAL 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: FINANCIAL SERVICES:
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: Santhi Vedula & 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.

Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objectives: *To make Students to learn Principles of Insurance.*

UNIT I: RISK MANAGEMENT AND INSURANCE & 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 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
8. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
9. Principles of Risk Management and Insurance: George E Rejda (13th Edition)
10. Risk Management and Insurance : Trieschman, Gustavson and Hoyt . South Western College Publishing, Cincinnati, Ohio

Suggested Websites:

1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

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.

UNIT II: OPTIMIZING MARKETING EMAILS, MOBILE MARKETING FOUNDATIONS AND CONTENT MARKETING FOUNDATIONS:

Email marketing tools and setup - Email marketing segmentation, personalization and mobile friendly design - Content marketing foundations - Blogs for content marketing - Content marketing for staying relevant - Newsletters for content marketing - Mobile marketing foundations

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

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

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.

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

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

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, Super Profits and Capitalization Methods -Valuation of Shares: Need - Net Assets, Yield and Fair Value Methods. (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.
9. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
10. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

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 Statistics –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
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics - Theory, Methods and Applications: Sancheti D.C. & Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Statistics: Andasn, Sweenly,Williams,Cingage.

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 - MPC (Monetary Policy Committee) - Structure and Functions.

UNIT-IV: DEBT MARKET:
Evolution of Debt Markets in India - Money Market & Debt Market 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 Culture 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. Bihar S.C., Indian Financial System. International Book House Pvt. Ltd., New Delhi, India.
4. Gordon & Natarajan, Financial Markets and Services. Himalaya Publishing House, New Delhi, India.
5. Khan and Jain, Financial Services, Tata McGraw Hill, New Delhi, India.
6. Khan, M.Y., Indian Financial System -Theory and Practice. Vikas Publishing House, New Delhi, India.
7. Shashi K. Gupta & Nisha Aggarwal, Financial Services. Kalyani Publishers, New Delhi, India.
8. Vinod Kumar, Atul Gupta & Manmeet Kaur, Financial Markets, Institutions & Financial Services, Taxmann's Publications, New Delhi, India.

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.

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

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

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 ASSAINGMENT, 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.

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

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

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 – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – 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 - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, crown 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. Singhania & Dr. Kapil Singhania, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning.
8. Direct Tax Law and Practice : Ahuja Girish

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

Paper DSC 402: BUSINESS STATISTICS - II

Objective: *to inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye's Theorem.

UNIT-V: THEORITECAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution.
Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution.
Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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: Dr. OBul Reddy, Dr. D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata Mc Graw Hill
7. Fundamentals of Statistical: S. P Gupta , Sultan Chand
8. Business Statistics: J. K. Sharma,Vikas Publishers
9. Business Statistics: Vora, Tata Mc Graw Hill
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics-Teory, Methods and Applications: SanchetiD.C. & Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

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 purchase – 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 - 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 Fire and Marine 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
6. Advanced Accountancy: Shukla and Grewal, S.Chand& Co
7. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons
8. Corporate Accounting: Sakshi Vasudeva, Himalaya.

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 - 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 Elasticity 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
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

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.

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.

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.

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.

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.

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.
5. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
6. Cost Accounting: Theory and Practice: Banerjee, PHI
7. Introduction to Cost Accounting: Tulsian, S.Chand
8. Cost Accounting: Horngren, Pearson
9. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.

Paper DSE 501 (b) : FINANCIAL PLANNING & PERFORMANCE

Objective: *To make students to understand the Financial Planning & Performance.*

UNIT I: STRATEGIC PLANNING:

Strategic planning: Analysis of external and internal factors affecting strategy - Long-term mission and goals - Alignment of tactics with long-term strategic goals - Strategic planning models and analytical techniques - Characteristics of successful strategic planning process -

Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Top-level planning and analysis: Pro forma income - 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

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.

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr Rammohan Bhave and Dr Mrs Anjali Rammohan Bhave, CNBC TV 18.

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 a 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. Aakash Business Tools: Spoken Tutorial Project IIT Bombay
5. Mastering Tally: Dinesh Maidasani, Firewal Media
6. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
7. Computerised Accounting and Business Systems: Kalyani Publications
8. Manuals of Respective Accounting Packages
9. Tally ERP 9: J.S. Arora, Kalyani Publications.

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 - Special issues: Impact of foreign operations - Effects of changing prices and inflation - Off-balance sheet financing - 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: Financial markets and regulation - Market efficiency - Financial institutions - Initial and secondary public offerings - Dividend policy and share repurchases - 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 - Tax implications of transfer pricing

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
6. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall

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
6. Federal Income Taxation (Concepts and Insights), Marvin Chirelstein and Lawrence Zelenak, Foundation Press

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.

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

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: R.M. Srivastava, Himalaya Publishing House, Hyderabad.
5. Financial Management: Prasanna Chandra , McGraw Hill
6. Financial Management: Kothari, sage
7. Financial Management: Rustagi, Taxman Publications.
8. Fundamentals of Financial Management: Sharan, Pearson.
9. Financial Management: Tulsian, S. Chand.
10. Financial Management: Satish B Mathur, Trinity Press.
11. Fundamentals of Financial Management: D. Chandra Bose, PHI.

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). Concepts only Contents of a Research Report.

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. Research Methodology: Dr Vijay Upagade & Dr Arvind Shende, S. Chand Publications
6. Research Methodology: Ranjit Kumar, Pearson Publication
7. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
8. 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, analyze the data, draw conclusions and make recommendations.

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: D**ata Analysis and interpretation:** this chapter should present the data analysis and inferences.
Chapter-IV: **Summary and Conclusions**: 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.

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.

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.

UNIT-III: TECHNIQUES OF FINANICAL 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.

UNIT-IV: FUNDS FLOW ANANLYSIS:
Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds.

UNIT-V: CASH FLOW ANALYSIS (AS-3):
Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement.

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

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 - Plant-wide versus departmental overhead - 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. Intermediate Accounting, 11th edition; Nikolai, Loren A., Bazley John D., and Jones, Jefferson P., South-Western Cengage Learning
4. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
5. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr Rammohan Bhave and Dr Mrs Anjali Rammohan Bhave, CNBC TV 18

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.

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 - Income tax considerations - 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
5. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall
6. Enterprise Risk Management - Integrated Framework; COSO, The Committee of Sponsoring Organizations of the Treadway Commission, 2017

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 Oversights 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. Wiley Practitioner's Guide to GAAS: Covering all SAS, SSAE's , SSARS, PCAOB, Auditing Standards, and Interpretations, Joanne M. Flood, Wiley
4. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning
5. Principles of Auditing & Other Assurance Services, Ray Whittington and Kurt Pany, McGraw Hill
6. Auditing & Assurance Services: A Systematic Approach, William F Messier Jr, Steven M. Glover and Douglas F. Prawitt, McGraw Hill.

Paper DSE 603(a): ACCOUNTING STANDARDS

Objectives: *To make the students acquire the knowledge and application of Indian Accounting Standards.*

UNIT-I: INTRODUCITON:
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
7. Accounting Standards and Corporate Accounting Practices: Ghosh T.P, Taxman

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
7. Business Ethics -Text & Cases 2010, C.S.V. Murthy – Himalaya Publication
8. Business Ethics – Dr. Muninarayanappa, Prof. Manjula, Prof. V. Tamil Selvan, Prof. Raghavendra K.S.- Takur Publishers,2015, Bangalore
9. A Study in Business Ethics, Reprint (2008) Ritu Parna Raj, Himalaya Publishing house
10. Ethics in Business and Management Concepts (Western and Indian) & Cases (National & International), R. P. Banerjee, Himalaya Publishing House.
11. Corporate Governance (with Case Studies), Dayanand Achrekar, Surendra Publications, New Delhi.
12. Corporate Governance, Robert A G Monks, Wiley India Pvt. Ltd.

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 a 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: Masheswari, PHI.
10. Security Analysis and Portfolio Management: Dhanesh Khatri, Trinity Press.

B.Com.

Syllabus (CBCS)

(w.e.f. 2019–2020)

FACULTY OF COMMERCE
PALAMURU UNIVERSITY
MAHABUBNAGAR - 509 001 T.S.

2019

B.COM.
CBCS COURSE STRUCTURE
w.e.f. 2019-'20

Sl.No.	*Code*	*Course Title*	*HPW*	*Credits*	*Exam Hrs*	*Marks*
(1)	(2)	(3)	(5)	(6)	(7)	(8)
		SEMESTER – I				
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	**a)** Environmental Science/ **b)**Basic Computer Skills	2	2		
4.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Foreign Trade	5	5	3 hrs	80U+20I
		Total	**25**	**25**		
		SEMESTER – II				
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	**a)** Basic Computer Skills/ **b)** Environmental Science	2	2		
10.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Banking and Financial Services	5	5	3 hrs	80U+20I
		Total	**25**	**25**		
		SEMESTER – III				
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	**a)** Principles of Insurance/ **b)** Foundation of Digital Marketing/ **c)** Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	**a)** Practice of Life Insurance/ **b)** Web Design & Analytics/ **c)** Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Financial Institutions and Markets	5	5	3 hrs	80U+20I
		Total	**25**	**25**		
		SEMESTER – IV				
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	**a)** Practice of General Insurance/ **b)** Social Media Marketing **c)**Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	**a)** Regulation of Insurance Business/ **b)** Search Engine Optimization & Online Advertising **c)** Data Visualization & Story telling	2	2	1 ½ hrs	40U+10I
24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
26.	DSC403	Corporate Accounting	5	5	3 hrs	80U+20I
		Total	**25**	**25**		

		SEMESTER – V				
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	a) Business Economics/ b) Advanced Aspects of Income Tax	4	4	3 hrs	80U+20I
30.	DSE501	**a)** Cost Accounting/ **b)** Financial Planning & Performance/ **c)** International Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	**a)** Computerized Accounting/ **b)** Financial Decision Making-I/ **c)** International Tax& Regulation	3T+4P/5	5	3 hrs	50T+35P + 15I/ 80U+20I
32.	DSE503	**a)** Auditing/ **b)** Advanced Corporate Accounting/ **c)** Financial Management	5	5	3 hrs	80U+20I
		Total	**27/25**	**25**		
		SEMESTER – VI				
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15V V
36.	DSE601	**a)** Cost Control and Management Accounting/ **b)** Financial control/ **c)** International Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	**a)** Theory and Practice of GST/ **b)** Financial Decision Making-II / **c)** International Auditing	3T+4P/5	5	3 hrs	50T+35P + 15I/ 80U+20I
38.	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: A**bility **E**nhancement **C**ompulsory **C**ourse; ***SEC: S**kill **E**nhancement **C**ourse; **DSC: D**iscipline **S**pecific **C**ourse; **DSE: D**iscipline **S**pecific **E**lective; **GE: G**eneric **E**lective; **T**: **T**heory; **P**: **P**ractical**; I**: Internal Exam **U: U**niversity Exam: **PR**: **P**roject **R**eport; **VV**: **V**iva-**V**oce Examination.*

Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
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	**38**		**150**
	Commerce	**24**		**106**
CREDITS UNDER NON-CGPA		**NSS/NCC/Sports/Extra Curricular**	**Up to 6 (2 in each year)**	
		Summer Internship	**Up to 4 (2 in each after I & II years)**	

Paper DSC 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 – List of Accounting Standards issued by ASB - Accounting System- 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. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Introduction to Accountancy: T.S.Grewal, S.Chand and Co.
6. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
7. Fundamentals of Financial Accounting: Deepak Sehgil, Tax Mann Publication.
8. Financial Accounting: JawaharLal, Himalaya Publishing House.

Paper DSC 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 Organisation& 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: Niranjan Reddy & Surya Prakash, Vaagdevi publishers
12. Business Organisation and Management, Dr.NeeruVasihth, Tax Mann Publications.

Paper DSC 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. Foreign Trade –Dr SrinivasaNarayana,JyotiMehra– PBP
4. International Economics: SSMDesai&NirmalBhalerao, Himalaya Publishers.
5. International Business Environment & Foreign Exchange Economies: Singh & S. Srivastava,
6. Foreign Trade and Foreign Exchange: O.PAgarwal&B.K.Chaudri, Himalaya Publishers
7. International Financial Markets & Foreign Exchange: ShashiK.Gupta&PraneetRangi, Kalyani
8. International Economics: Theory & Practice: Paul R. Krugman, Pearson Publishers.

Paper DSC 201: FINANCIAL ACCOUNTING-II

Objective: *To acquire Accounting knowledge of bills of exchange and other business accounting methods.*

UNIT-I: BILLS OF EXCHANGE:
Bills of Exchange – Definition- Distinction between Promissory note and Bills of exchange- Accounting treatment of Trade bills: Books of Drawer and Acceptor- Honour and Dishonour of Bills- Renewal of bills- Retiring of bills under rebate- Accommodation bills(Including problems)

UNIT-II: CONSIGNMENT ACCOUNTS:
Consignment - Meaning – Features -Proforma invoice - Account sales - Delcredere Commission- Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock -Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price (Including problems)

UNIT-III: JOINT VENTURE ACCOUNTS:
Joint Venture - Meaning – Features-Difference between Joint Venture and Consignment- Accounting Procedure-Methods of Keeping Records for Joint Venture Accounts-Method of Recording in co-ventures books-Separate Set of Books Method- Joint Bank Account- Memorandum Joint Venture Account (Including problems)

UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS:
Single Entry System -Meaning – Features - Difference between Single Entry and Double Entry systems - Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems)

UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:
Non- Profit Organization - Meaning - Features - Receipts and Payments Account - Income and Expenditure Account - Balance Sheet (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta,Sultan Chand & Sons.
3. Accountancy–I: Tulasian, Tata McGraw Hill Co.
4. Accountancy–I: S.P. Jain & K.L Narang, Kalyani.
5. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
6. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.

Paper DSC 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- Significance of Information Technology Act

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: Definition 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) Business Laws – Dr. B. K. Hussain, Nagalakshmi - PBP
5) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
6) Company Law and Practice: GK Kapoor& Sanjay Dhamija, Taxmann Publication.
7) Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
8) Corporate Law: PPS Gogna, S Chand.
9) Business Law: D.S. Vital, S Chand
10) Company Law: Bagrial AK,Vikas Publishing House.

Paper DSC 203: BANKING AND FINANCIAL SERVICES

Objective: *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 FINANCIAL 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: FINANCIAL SERVICES:
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.

Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objectives: *To make Students to learn Principles of Insurance.*

UNITI: RISK MANAGEMENT AND INSURANCE & 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 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 : SagarSanyal
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
8. Life and Health Insurance : Black, JR KENNETH & Harold Skipper, Pearson
9. Principles of Risk Management and Insurance: George E Rejda (13th Edition)
10. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt . South Western College Publishing, Cincinnati, Ohio

Suggested Websites:

1) www.irda.gov.in**2)** www.polocyholder.gov.in**3)** www.irdaindia.org.in

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.

UNIT II: OPTIMIZING MARKETING EMAILS, MOBILE MARKETING FOUNDATIONS AND CONTENT MARKETING FOUNDATIONS:

Email marketing tools and setup - Email marketing segmentation, personalization and mobile friendly design- Content marketing foundations - Blogs for content marketing - Content marketing for staying relevant - Newsletters for content marketing - Mobile marketing foundations

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.KUsha Rani - PBP
4. Digital Marketing by VandanaAhuja, Oxford
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry

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

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.

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 – AvinashKaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

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 RStudio 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; BhartiMotwani; Wiley

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, Super Profits and Capitalization Methods -Valuation of Shares: Need - Net Assets, Yield and Fair Value Methods. (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.
9. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India.
10. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

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
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics - Theory, Methods and Applications: Sancheti D.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Statistics: Andasn,Sweenly,Williams,Cingage.

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 - MPC (Monetary Policy Committee) - Structure and Functions.

UNIT-IV: DEBT MARKET:
Evolution of Debt Markets in India - Money Market & Debt Market 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 Culture 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. PrashantaAthma, Financial Institutions and Markets: PBP
3. Bihar S.C., Indian Financial System. International Book House Pvt. Ltd., New Delhi, India.
4. Gordon &Natarajan, Financial Markets and Services. Himalaya Publishing House, New Delhi, India.
5. Khan and Jain, Financial Services, Tata McGraw Hill, New Delhi, India.
6. Khan, M.Y., Indian Financial System -Theory and Practice. Vikas Publishing House, New Delhi, India.
7. Shashi K. Gupta &NishaAggarwal, Financial Services. Kalyani Publishers, New Delhi, India.
8. Vinod Kumar, Atul Gupta &ManmeetKaur, Financial Markets, Institutions & Financial Services, Taxmann's Publications, New Delhi, India.

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.

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 VandanaAhuja, 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

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; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; TeoLachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

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 ASSAINGMENT, 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.

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 VandanaAhuja, 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

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; TeoLachev; 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 NussbaumerKnaflic; Wiley

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 – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – 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 - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, crown 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. Singhania&Dr.KapilSinghania, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran&Thothadri, PHI Learning.
8. Direct Tax Law and Practice : AhujaGirish

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: **INTRODUCTIONTO 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: ChandanSengupta, Wiley

Paper DSC 402: BUSINESS STATISTICS - II

Objective: *to inculcate analytical and computational ability among the students.*

UNIT-I: REGRESSION:
Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - 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) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test - Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:
Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:
Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory – Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye's Theorem.

UNIT-V: THEORITECAL DISTRIBUTIONS:
Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution.
Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution.
Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (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: 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: Vora, Tata McGraw Hill
10. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
11. Statistics-Teory, Methods and Applications: SanchetiD.C. &Kapoor V.K
12. Business Statistics: S. K. Chakravarty, New Age International Publishers
13. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

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 purchase – 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 - Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCECOMPANIES 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 Fire and Marine 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
6. Advanced Accountancy: Shukla and Grewal, S.Chand& Co
7. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons
8. Corporate Accounting: SakshiVasudeva, Himalaya.

Paper GE: a) 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 - 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 Elasticity 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: VanithAgrawal, 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
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

Paper GE: b) ADVANCED ASPECTS OF INCOME TAX

Objective: *To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from certain heads and other provisions relating to clubbing, aggregation of income and assessment procedure.*

UNIT–I: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

Valuation of Stock Depreciation: Meaning – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation.

UNIT-II: INCOME FROM OTHER SOURCES:

Winnings from lotteries Puzzles, crown world puzzles, Races Problems on computation on Income from Other Sources. Treatment of Agricultural Income. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates. Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:

Income of other persons included in the total income of Assesse – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income.

UNIT-IV: ASSESSMENT OF INDIVIDUALS:

Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability.

UNIT–V: ASSESSMENT PROCEDURE:

Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment: Self-assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania& Dr. KapilSinghania, Taxmann
3. Income Tax: M. Jeevarathinam& C. Vijay Vishnu Kumar, SCITECH Publications.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: B. Lal, Pearson Education.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran&Thothadri, PHI Learnin

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.

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.

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.

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.

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.

SUGGESTED READINGS:

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: PrashantaAthma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI
6. Introduction to Cost Accounting: Tulsian, S.Chand
7. Cost Accounting: Horngren, Pearson
8. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.

Paper DSE 501 (b): FINANCIAL PLANNING & PERFORMANCE

Objective: *To make students to understand the Financial Planning & Performance.*

UNIT I: STRATEGIC PLANNING:

Strategic planning: Analysis of external and internal factors affecting strategy - Long-term mission and goals - Alignment of tactics with long-term strategic goals - Strategic planning models and analytical techniques - Characteristics of successful strategic planning process -

Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Top-level planning and analysis: Pro forma income - 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

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.

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr RammohanBhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18.

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 a 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: GarimaAgarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Aakash Business Tools: Spoken Tutorial Project IIT Bombay
5. Mastering Tally: Dinesh Maidasani, Firewal Media
6. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
7. Computerised Accounting and Business Systems: Kalyani Publications
8. Manuals of Respective Accounting Packages
9. Tally ERP 9: J.S. Arora, Kalyani Publications.

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 - Special issues: Impact of foreign operations - Effects of changing prices and inflation - Off-balance sheet financing - 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: Financial markets and regulation - Market efficiency - Financial institutions - Initial and secondary public offerings - Dividend policy and share repurchases - 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 - Tax implications of transfer pricing

SUGGESTED READINGS:

1. Wiley CMA Excel 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,andHanekom, 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
6. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall

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
6. Federal Income Taxation (Concepts and Insights), Marvin Chirelstein and Lawrence Zelenak, Foundation Press

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: ArunaJha, Taxmann Publications**.**
6. Auditing Principles, Practices & Problems: JagdishPrakash, Kalyani Publishers.
7. Auditing and Assurance: Ainapure&Ainapure, PHI Learning.
8. Principles and Practice of Auditing: DinkarPagare, Sultan Chand & Sons.
9. Fundamentals of Auditing: Kamal Gupta and Ashok Arora, Tata McGraw-Hill
10. A Hand Book of Practical Auditing: B.N. Tandonetal., S. Chand.

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.RadhaSwamy, 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, SahityaBhavan
6. Corporate Accounting: PrashantaAthma, Himalaya Publishers.
7. Advanced Accounting (Vol. II): Chandra Bose, PHI

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: R.M. Srivastava, Himalaya Publishing House, Hyderabad.
5. Financial Management: Prasanna Chandra,McGraw Hill
6. Financial Management: Kothari, sage
7. Financial Management: Rustagi, Taxman Publications.
8. Fundamentals of Financial Management: Sharan,Pearson.
9. Financial Management: Tulsian, S. Chand.
10. Financial Management: Satish B Mathur, Trinity Press.
11. Fundamentals of Financial Management: D. Chandra Bose, PHI.

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). Concepts only Contents of a Research Report.

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. Research Methodology: Dr Vijay Upagade& Dr ArvindShende, S. Chand Publications
6. Research Methodology: Ranjit Kumar, Pearson Publication
7. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
8. Research Methodology: Sashi.K Gupta, PraneethRangi, 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.

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: D**ata Analysis and interpretation:** this chapter should present the data analysis and inferences.
Chapter-IV: **Summary and Conclusions**: 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.

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.

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.

UNIT-III: TECHNIQUES OF FINANICAL 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.

UNIT-IV: FUNDS FLOW ANANLYSIS:
Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds.

UNIT-V: CASH FLOW ANALYSIS (AS-3):
Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement.

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

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 - Plant-wide versus departmental overhead -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 transactioncontrols - 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. Intermediate Accounting, 11th edition; Nikolai, Loren A., Bazley John D., and Jones, Jefferson P., South-Western Cengage Learning
4. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
5. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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
6. Wiley GAAP: Interpretation and Application of Generally Accepted Principles, Barry J. Epstein and Ralph Nach, Wiley
7. IFRS Simplified with Practical Illustration Part 1 & 2, Mr RammohanBhave and Dr Mrs Anjali RammohanBhave, CNBC TV 18

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.

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 - Income tax considerations - 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
5. Fundamentals of Financial Management, 13th edition; Van Horn, James, C., and Wachowicz, John M. Jr.; FT / Prentice Hall
6. Enterprise Risk Management - Integrated Framework; COSO, The Committee of Sponsoring Organizations of the Treadway Commission, 2017

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 Oversights 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. Wiley Practitioner's Guide to GAAS: Covering all SAS, SSAE's , SSARS, PCAOB, Auditing Standards, and Interpretations, Joanne M. Flood, Wiley
4. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning
5. Principles of Auditing & Other Assurance Services, Ray Whittington and Kurt Pany, McGraw Hill
6. Auditing & Assurance Services: A Systematic Approach, William F Messier Jr, Steven M. Glover and Douglas F. Prawitt, McGraw Hill.

Paper DSE 603(a): ACCOUNTING STANDARDS

Objectives: *To make the students acquire the knowledge and application of Indian Accounting Standards.*

UNIT-I: INTRODUCITON:
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
7. Accounting Standards and Corporate Accounting Practices: Ghosh T.P, Taxman

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. ViyyannaRao, 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
7. Business Ethics -Text & Cases 2010, C.S.V. Murthy – Himalaya Publication
8. Business Ethics – Dr. Muninarayanappa, Prof. Manjula, Prof. V. Tamil Selvan, Prof. Raghavendra K.S.- Takur Publishers,2015, Bangalore
9. A Study in Business Ethics, Reprint (2008) RituParna Raj, Himalaya Publishing house
10. Ethics in Business and Management Concepts (Western and Indian) & Cases (National & International), R. P. Banerjee, Himalaya Publishing House.
11. Corporate Governance (with Case Studies), DayanandAchrekar, Surendra Publications, New Delhi.
12. Corporate Governance, Robert A G Monks, Wiley India Pvt. Ltd.

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 a 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, PrashantaAthma: Kalyani Publications.
8. Security Analysis and Portfolio Management: MadhumatiRanganathan, Pearson.
9. Investment Management: Masheswari, PHI.
10. Security Analysis and Portfolio Management: DhaneshKhatri, Trinity Press.

PALAMURU UNIVERSITY

FACULTY OF SCIENCE

B.Sc (Computer Applications)

CBCS Pattern with Effect from the Academic Year 2019-2020

Code	Course Title	Course Type	HpW	Credits
	SEMESTER – I			
BS106	Programming in C	DSC–3A	4T+3P=7	4 + 1 =5
	SEMESTER – II			
BS206	Programming in C++	DSC–3B	4T+3P=7	4 + 1 =5
	AECC			
BS107	Fundamentals of Computers	AECC	2T	2
	SEMESTER –III			
BS301	Python – 1	SEC–1	2T	2
BS302	Sci Lab – 1	SEC–2	2T	2
BS306	Relational Data Base Management Systems	DSC–3C	4T+3P=7	4 + 1 =5
	SEMESTER –IV			
BS401	Python – 2	SEC–3	2T	2
BS402	Sci Lab – 2	SEC–4	2T	2
BS406	Multi Media Systems	DSC–3D	4T+3P=7	4 + 1 =5
	SEMESTER – V			
BS501	Information Technologies	GE	4T	4
BS505	Programming in Java	DSE–3E	4T+3P=7	4 + 1 =5
	SEMESTER – VI			
BS605	Web Technologies	DSE–3F	4T+3P=7	4 + 1 =5
	Project/Optional			
BS601	Information Security and Cyber Laws	PO	3T+3P=6	3 + 1 =4
			Total Number of Credits	48

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (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), Strategyfor 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, conditionaloperator, 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 toFunctions, Score of Variables, Storage Classes, Inline Functions, and Recursion.
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers andStrings, 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: PradipDey, ManasGhosh, 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

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc (Computer Applications)
SEMESTER – I

Programming in 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.
- 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.

FACULTY OF SCIENCE
B.Sc. (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, ControlStructures, Arrays, Strings, Pointers, Searching and Sorting Arrays.
Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables asParameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Unit – II
Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOPLanguages, 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, Constructorsand Destructors in Base and Derived Classes, Redefining Base Class Functions, Polymorphism and VirtualMember 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. BjarneStroustrup, The C++ Programming Language
6. SouravSahay, Object Oriented Programming with C++TEXT BOOK:

FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – II

Programming in 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.
- 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.

FACULTY OF SCIENCE
B.Sc. Computer Applications
Semester-I
AECC
Fundamentals of Computers

Theory **2Hours/Week** **2Credits**

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, 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 Book: ReemaThareja, Fundamentals of Computers.

References:

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

FACULTY OF SCIENCE
B.Sc. Computer Applications
SEMESTER – III
Python – I
(SEC – I)

Theory **2Hours/Week** **2Credits**

Unit – I

Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output.

Decision Structures and Boolean Logic: if, if-else, if- elif -else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables.

Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.

Unit – II

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- Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions inModules.

File and Exceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

Text Tony Gaddis, *Starting Out With Python(3e)*

References

1. Kenneth A. Lambert, *Fundamentals ofPython*
2. Clinton W. Brownley, *Foundations for Analytics withPython*
3. JamesPayne,*BeginningPythonusingPython2.6andPython3*
4. Charles Dierach, *Introduction to Computer Science usingPython*
5. PaulGries,*PracticalProgramming:AnIntroductiontoComputerScienceusingPython3*

FACULTY OF SCIENCE
B.Sc. Computer Applications
SEMESTER – III
Sci Lab – I
(SEC – II)

Theory **2Hours/Week** **2Credits**

Unit – I

Introduction to Scilab – what is scilab, downloading & installing scilab, a quick taste of scilab.The Scilab Environment – manipulating the command line, working directory, comments, variables in memory, recording sessions, the scilab menu bar, demos.

Scalars & Vectors – introduction, initializing vectors in scilab, mathematical operations on vectors, relational operations on vectors, logical operations on vectors, built-in logical functions.

Unit – II

Elementary mathematical functions mathematical functions on scalars, complex numbers, trigonometric functions.
Matrices – introduction, arithmetic operators for matrices, basic matrix processing. Polynomials – introduction, creating polynomials, basic polynomial commands.

Text Book:

Er. HemaRamachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB

References:

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

FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – III
Relational Data base Management Systems

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

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, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalisation, 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.

Relational Data base Management Systems Lab B.Sc. (Computer Applications) SEMESTER – III

10

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.

FACULTY OF SCIENCE
B.Sc. Computer Applications
SEMESTER – IV
Python – II
(SEC – III)

Theory **2Hours/Week** **2Credits**

Unit – I

Lists and Tuples: Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, List Methods and Useful Built-in Functions, Copying Lists, Processing Lists, Two-Dimensional Lists, Tuples.
Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings.
Dictionaries and Sets: Dictionaries, Sets, Serializing Objects.
Recursion: Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms.

Unit – II

Object-Oriented Programming: Procedural and Object-Oriented Programming, Classes, Working with Instances, Techniques for Designing Classes, Inheritance, Polymorphism.
GUI Programming: Graphical User Interfaces, Using the tkinter Module, Display text with Label Widgets, Organizing Widgets with Frames, Button Widgets and Info Dialog Boxes, Getting Input with Entry Widget, Using Labels as Output Fields, Radio Buttons, Check Buttons.

Text Tony Gaddis, *Starting Out With Python(3e)*

References

1. Kenneth A. Lambert, *Fundamentals ofPython*
2. Clinton W. Brownley, *Foundations for Analytics withPython*
3. JamesPayne,*BeginningPythonusingPython2.6andPython3*
4. Charles Dierach, *Introduction to Computer Science usingPython*
5. PaulGries,*PracticalProgramming:AnIntroductiontoComputerScienceusingPython3*

FACULTY OF SCIENCE
B.Sc. Computer Applications
SEMESTER – IV
Sci Lab – II
(SEC – 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. HemaRamachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB
2. Sci lab a Beginners Apporach by Anil kumarVarma

References:

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

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Applications)
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

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Applications)
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, color 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 color 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).

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – V

GE Information Technologies BS501

Theory 4Hours/Week 4 credits

Unit – I

Information Technology Basics – introduction, Need for Information Storage and Processing, Information Technology Components , Role of information Technology, Information Technology and the Internet .

Emerging Trends in IT - Introduction , Electronic Commerce (E-Commerce), Electronic Data Interchange(EDI),

Smart Cards , Mobile Communication, Internet Protocol TV.

Unit – II

Computer Software: Introduction, Classification of Computer Software, System Software, Applications Software, Firmware, Middleware, Acquiring Computer Software.
Operating Systems: Introduction, Evolution of OS, Process Management, Memory Management, File Management, Device Management, Security Management, Command Interpreter, Windows, Linux.

Unit – III

Introduction to Algorithms and Programming Languages: Algorithm, Control Structures, Flowcharts, Pseudo code, Programming Languages, Generations of Programming Languages.
Database Systems: File Oriented Approach, Database Oriented Approach, Database Views, Three-Schema Architecture, Database Models, Components of DBMS, Introduction of SQL Queries.

Unit – IV

Computer Networks: Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.
The Internet: Internet Services, Types of Internet Connections, Internet Security.
Emerging Computer Technologies: Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, On0demand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

Text

Wiley India Editorial Team,Fundamentals of Information Technology

ReemaThareja, *Fundamentals ofComputers*

Reference s

P. K. sinha, *ComputerFundamentals*

Anita Goel, *ComputerFundamentals*

V. Rajaraman, *Fundamentals of Computers*

E. Balagurusamy, *Fundamentals of Computers*

J. Glenn Brookshear, Dennis Brylow, *Computer Science An Overview*

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – V

Programming in Java

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

Unit - I

Introduction: Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Structure of Java Program, Type Casting, Conditional Statements, Loops, Classes, Objects, Class Declaration, Creating Objects.

Unit - II

Method Declaration and Invocation, Method Overloading, 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, StringBuffer 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 Streams, 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 (Graphics Class).
Event Handling: Introduction, Types of Events, Example.
AWT: Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts.
Swings: Introduction, Differences between Swing and AWT, JFrame, JApplet, JPanel, Components in Swings, Layout Managers, JTable.

Text Book:

1. SachinMalhotra, SaurabhChoudhary, 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. Horsttnann, Core Java Volume I –Fundamentals (10e)

FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – V
Programming in Java

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.

1. Write a program to find the largest of n natural numbers.
2. Write a program to find whether a given number is prime or not.
3. Write a menu driven program for following:
   a. Display a Fibonacci series
   b. Compute Factorial of a number
4. Write a program to check whether a given number is odd or even.
5. Write a program to check whether a given string is palindrome or not.
6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
7. Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
8. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
9. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
10. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
11. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
12. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
13. Write a java program to draw a line between two coordinates in a window.
14. Write a java program to display the following graphics in an applet window.
    a. Rectangles b. Circles
    c. Ellipses d. Arcs e. Polygons
15. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage () prints the information about the error occurring causes.
16. Write a program for the following string operations:
    a. Compare two strings b. concatenate two strings c. Compute length of a string

FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – VI
Web Technologies

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

Unit – I

Introduction To XHTML– Introduction, first HTML, Headings, Linking, Images, special characters and horizontal rules, Lists, Tables, Frames, Forms, internal linking, meta Elements.
Cascading Style Sheets – Introduction, Inline Styles, Embedded Style Sheets, Conflicting Styles, Linking external sheets, position Elements, box model and text flow, media types, building a CSS drop-down menu, user style sheets, CSS3.

Unit – II

Introduction To Java Scripting- introduction, simple program, prompt dialog and alert boxes, memory concepts, operators(arithmetic, relational, assignment, increment and decrement, logical), decision making, control structures, if… else statement, while, counter-controlled repetitions, switch statement, do… while statement, break and continue statements.

Unit – III

Functions – program modules in JavaScript, programmer–defined functions, functions definition, scope rules, global functions, Recursion. Arrays- introduction, declaring and allocating arrays, references and reference parameters, passing arrays to functions. Multidimensional arrays, Events – registering event handling, event onload, onmouseover, onmouseout, onfocus, onblur, onsubmit, onreset, event bubbling, more events.

Unit – IV

Java Script Objects – introduction to object technology, Math Object, String Object, Date Object, Boolean and Number Object, document and window Objects, using cookies.
XML - Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

Text Book:

1. Internet & World Wide Web: HOW TO PROGRAM- H. M. Deitel, P.J. Deitel, -Fourth Edition- Pearson edition.

FACULTY OF SCIENCE
B.Sc. (Computer Applications)
SEMESTER – VI
Web Technologies 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.

1. Write a HTML program using basic text formatting tags, <p>, <br>, <pre>.
2. Write a HTML program by using text formatting tags.
3. Write a HTML program using presentational element tags <b>, <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
4. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
5. Write a HTML program using different list types.
6. Create a HTML page that displays ingredients and instructions to prepare a recipe.
7. Write a HTML program using grouping elements and .
8. Write a HTML Menu page for Example cafe site.
9. Write a HTML program using images, audios, videos.
10. Write a HTML program to create your time table.
11. 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.
12. Write a HTML program to create frames and links between frames.
13. Write a HTML program to create different types of style sheets.
14. Write a HTML program to create CSS on links, lists, tables and generated content.
15. Write a HTML program to create your college web site using multi column layouts.
16. Write a HTML program to create your college web site using for mobile device.
17. Write a HTML program to create login form and verify username and password.
18. Write a JavaScript program to calculate area of rectangle using function.
19. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
20. Write a JavaScript program using switch case?
21. Write a JavaScript program to print multiplication table of given number using loop.
22. Write a JavaScript programs using any 5 events.
23. Write a JavaScript program using JavaScript built in objects.
24. Write a JavaScript program to create registration Form with Validations.
25. Write a XML Program to represent Student Data using DTD.
26. Write a XML Program to represent Data using XML Schema Definition.

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. Computer Applications
SEMESTER – VI

Information Security and Cyber Laws

(Project/Optional)

Theory	3 Hours/Week	3 Credit	Internal marks = 15
Practical	3 Hours/Week	1 Credit	External Marks = 60

Unit – I

Introduction to Information System and Security: Computer Networks, Internet, Protocol, Network Core, Information System, Types of IS, Information Security, Need for Information Security, Information Assurance, Cyber security, Tools of the attacker, Scanning and spoofing, password cracking, malicious software, session hijacking.

Unit – II

Introduction to Cryptography and Applications: Introduction to Application Security, Data Security Considerations, Security Technologies, Important terms, Threat, Flaw, vulnerability, Attack, Cipher, Private Key Cryptography, Substitution Cipher (Ceaser), Transposition (Rail-Fence),Security Threats to E-Commerce, E-Cash and Electronic Payment System, Credit/Debit/Smart Cards, forensics, Digital Signature

Unit – III

Introduction to Security Policies and Cyber Laws: Need for an Information Security Policy, Information Security Standards – ISO, Introducing Various Security Policies and Their Review Process, Introduction to Indian Cyber law, Objective and Scope of the IT Act, 2008 , Intellectual Property Issues, Overview of Intellectual-Property- Related Legislation in India, Patent, Copyright, Software License

Text Book:

1. Introduction to Information Security and Cyber laws by SuryaPrakashTripathi
2. Dr. Surya Prakash T, Ritendra G, Praveen Kumar S, KLSI, Introduction to information security and cyber laws (Dreamtech Publication)
3. S. Anderson, Ross, Security Engineering
4. G.R.F. Snyder, T. Pardoe, Network Security
5. Mark Stamp, Information Security: Principles and Practice
6. Basta, W.Halton, Computer Security: Concepts, Issues and Implementation
7. Mark S. Merkow, Jim Breithaupt, Information Security: Principles and Practice

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
B.Sc. Computer Applications
SEMESTER – VI

Information Security and Cyber Laws Lab

(Project/Optional)

Project **3 Hours/Week** **1 CreditsMarks: 25**

- In the external lab examination student has to execute the project with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
2. Use of Password cracking tools: John the Ripper, Ophcrack.
3. Verify the strength of passwords using these tools.
4. Perform encryption and decryption of Caesar cipher. Write a script for performing theseoperations.
5. Perform encryption and decryption of a Rail fence cipher. Write a script for performingthese operations.
6. Demonstrate sending of a protected word document.
7. Demonstrate sending of a digitally signed document.
8. Demonstrate sending of a protected worksheet.

FACULTY OF SCIENCE

UG (B.Sc.) Scheme of Examinations

B.Sc. (Computer Applications)

(CBCS 2019-2020)

Elaborations

Paper	Credits	Theory Exam		Practical Exam
		University Exam	Internal Exam	
DSC	4+1	80 Marks	20 Marks	25 Marks
DSE	4+1	80 Marks	20 Marks	25 Marks
SEC	2	40 Marks	10 Marks	No Practical
GE	4	80 Marks	20 Marks	No Practical
AECC	2	40 Marks	10 Marks	No Practical
P/O	3+1	60 Marks	15 Marks	25 Practical

DSC – Discipline specific core course

DSE – Discipline specific elective course

SEC – Skill enhancementcourse

GE – GenericElective

AECC - Ability Enhancement Compulsory

P/O -Project/Optional

Model Question Paper

3 Hours Max Marks -80 Credits -4

PART -AAnswer 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

FACULTY OF SCIENCE
B.Sc. (Computer Applications)

Internal Exam (Theory)

Time:1Hr. **Maximum marks:20**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 markseach.
- Average of the scores of two exams should be taken intoaccount.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of half markeach,
  - 10 FIBs (Fill in the Blanks) of half markeach
  - 5 SAQs (short answered questions) of one markeach
  - Totaling 15marks.
  - 5 marks meant for assignment.

FACULTY OF SCIENCE
B.Sc. (Computer Applications)

Practical Question Paper

3 HoursMax Marks -25 Credits -1

Answer any Two 6 X 2 = 12 MARKS

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

Viva - 8 Marks

Record – 5 Marks

FACULTY OF SCIENCE
B.Sc. (Computer Applications)

2 Credit (SEC) Paper

University Exam (Theory)

Time:2Hrs. **Maximum marks:40**

Section – A(4 X 4M = 16 Marks)

Answer any four of the following six questions. Each carries four marks.

Q1. From Unit 1
Q2. From Unit 1
03. From Unit 1
Q4. From Unit 2
Q5. From Unit 2
06. From Unit 2

Section – B (2 X 12M = 24 Marks)
Answer all the following two questions. Each carries fifteen marks.

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2

Internal Exam (Theory)

Time: 1/2Hr. **Maximum marks:10**

- One internal exam at the end of the semester, of half an hour duration is to be conducted carrying 10marks.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of one markeach,
    No assignment isrequired.

University Exam(Theory)

Model Question Paper for Semester VI (Project /optional)only

3 Hours Max Marks -60 Credits -3

PART –A Answer any Six questions in part –A 6X4 M = 24Marks

UNIT- I 1
2
3

UNIT- II 4
5
6

UNIT- III 7
8
9

Part – B Answer all Questions 12MX3 = 36 Marks

UNIT- I 13
Or
14

UNIT- II 15
Or
16

UNIT- III 17
Or
18

Internal Exam for Semester VI (Project /optional)(Theory)

Time:1Hr. **Maximum marks:15**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 markseach.
- Average of the scores of two exams should be taken intoaccount.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of half markeach,
  - 10 FIBs (Fill in the Blanks) of half markeach
  - 5 SAQs (short answered questions) of one markeach
  - Totaling 15marks.
  - No assignment required.

FACULTY OF SCIENCE
B.Sc. (Computer Applications)

Practical Question Paper(Project /optional)

3 Hours Max Marks -25 Credits -1

Answer any Two 6 X 2 = 12 MARKS

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

Viva - 8 Marks

Record – 5 Marks

MOOCs [Massive Online Open Courses] Free Resources

E-Learning:

- NPTEL :nptel.ac.in [Core Subjects Certification]
- C++INSTITUTE :cppinstitute.org [C++ Certification]
- ORACLEEDUCATION :education.oracle.com [Java, DBMS Certification]
- BIG DATAUNIVERSITY :bigdatauniversity.com [Big Data Certification]
- COURSERA :coursera.org [Core Subjects Certification]
- CODEACADEMY :codecademy.com [Coding Certification]
- KHANACADEMY :khanacademy.org [Core Subjects Certification]
- PIXAR INABOX :khanacademy.org/partner-content/pixar
- VIDEOLECTURES :videolectures.net
- YOUTUBEEDU :plus.google.com/+YouTubeEDU/posts
- DISNEYRESEARCH :disneyresearch.com
- ALISON :alison.com [Core SubjectsCertification]
- INTERNETARCHIVE :archive.org

Freeware:

- SCILAB : scilab.org [MatLab Equivalent]
- GEOGEBRA :geogebra.org [Software for Class Room Teaching]

Search Engine:

- WOLFRAMALPHA :wolframalpha.com [Computing Engine]
- CITESEER :citeseerx.ist.psu.edu [Searching Research Articles]
- DOAJ :doaj.org [Open Access to Journals]

With Effect from the Academic Year 2019-2020

With Effect from the Academic Year 2019-2020

Syllabus for Computer Science

Proposed scheme for **B.Sc.** Programme under **Choice Based Credit System**

Code	Course Title	Course Type	HpW	Credits
	SEMESTER – I			
BS106	Programming in C	DSC-3A	4T+3P=7	4 + 1 =5
	SEMESTER – II			
BS206	Programming in C++	DSC-3B	4T+3P=7	4 + 1 =5
	AECC			
BS107	Fundamentals of Computers	AECC	2T	2
	SEMESTER –III			
BS301	Python – 1	SEC-1	2T	2
BS302	Operating Systems – 1	SEC-2	2T	2
BS306	Data Structures using C++	DSC-3C	4T+3P=7	4 + 1 =5
	SEMESTER –IV			
BS401	Python – 2	SEC-3	2T	2
BS402	Operating Systems – 2	SEC-4	2T	2
BS406	Database Management Systems (DBMS)	DSC-3D	4T+3P=7	4 + 1 =5
	SEMESTER – V			
BS501	Information Technologies	GE	4T	4
BS505	Programming in Java	DSE-3E	4T+3P=7	4 + 1 =5
	SEMESTER – VI			
BS605	Web Technologies	DSE-3F	4T+3P=7	4 + 1 =5
	Project/Optional			
BS601	PHP with MySQL	P/O	3T+3P=6	3 + 1 =4
			Total Number of Credits	48

With Effect from the Academic Year 2019-2020

SC–3A ProgramminginC BS106

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

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, TypeConversions.

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, Score 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 PradipDey, ManasGhosh, *Computer Fundamentals and Programming in C*(2e)

Reference s

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*

With Effect from the Academic Year 2019–2020

CLab BS106

Practical 3 Hours/Week 1credit

1 Write a program to find the largest two (three) numbers using if and conditionaloperator.

2 Write a program to print the reverse of a givennumber.

3 Write a program to print the prime number from 2 to n where n is given byuser.

4 Write a program to find the roots of a quadratic equation using switchstatement.

5 Write a program to print a triangle of stars as follows (take number of lines fromuser):

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

6 Write a program to find largest and smallest elements in a given list ofnumbers.

7 Write a program to find the product of twomatrices..

8 Write a program to find the GCD of two numbers using iteration andrecursion.

9 Write a program to illustrate use of storageclasses.

10 Write a program to demonstrate the call by value and the call by referenceconcepts.

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 typeenum.

13 Write a program to demonstrate use of string functions string.h headerfile.

14 Write a program that opens a file and counts the number of characters in afile.

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.

With Effect from the Academic Year 2019-2020

DSC–3B ProgramminginC++ BS206

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

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)

Reference s
B. Lippman, *C++ Primer*
Bruce Eckel, *Thinking in C++*
K.R. Venugopal, *Mastering C++*
Herbert Schildt,*C++: The Complete Reference*
BjarneStroustrup,*The C++ Programming Language*
SouravSahay,*Object Oriented Programming with C++*

With Effect from the Academic Year 2016–2017

C++Lab BS206

Practical 2 Hours/Week 1credit

1 Write a programto.

a. Print the sum of digits of a givennumber.

b. Check whether the given number is Armstrong ornot

c. Print the prime number from 2 to n where n is natural numbergiven.

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 usingconstructors.

6 Write a program to implement copyconstructor.

7 Write a program using friend functions and friendclass.

8 Write a program to implementconstructors
- Default Constructor, Parameterized Constructor, Copy Constructor
- Define the constructor inside/outside of theclass
- 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 andobject
- Function overloading
- Operator overloading (unary/binary(+ and-))

10 Write a program to demonstrate single inheritance, multilevel inheritance and multipleinheritances.

11 Write a program to implement the overloaded constructors ininheritance.

12 Write a program to implement the polymorphism and the following concepts using class andobject.
- Virtual functions
- Pure virtualfunctions

13 Write a program to implement the virtual concepts for followingconcepts
- Constructor (notapplied)
- Destructor (applied)

14 Write a program to demonstrate static polymorphism using methodoverloading.

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
- Without template class andobject
- With template class andobject

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.

With Effect from the Academic Year 2019–2020

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AECC **Fundamentals of Computers** BS107

Theory 2 Hours/Week 2 credits

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, 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 Book:

ReemaThareja, Fundamentals of Computers.

References:

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

With Effect from the Academic Year 2019–2020

Sec-1 Python-1 BS301

Theory 2Hours/Week 2 credits

Unit – I

Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output.

Decision Structures and Boolean Logic: if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables.

Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.

Unit – II

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- Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions inModules.

File and Exceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

Text Tony Gaddis, *Starting Out With Python(3e)*

References

1. Kenneth A. Lambert, *Fundamentals ofPython*
2. Clinton W. Brownley, *Foundations for Analytics withPython*
3. JamesPayne,*BeginningPythonusingPython2.6andPython3*
4. Charles Dierach, *Introduction to Computer Science usingPython*
5. PaulGries,*PracticalProgramming:AnIntroductiontoComputerScienceusingPython3*

With Effect from the Academic Year 2019–2020

SEC–2[B]

OperatingSystems-1 BS302

Theory 2Hours/Week 2 credits

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.
Process Synchronization: Critical-Section Problem, Peterson's Solution, Synchronization, Semaphores, Monitors.

Unit – II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.
Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Text AbrahamSilberschatz,PeterBaerGalvin,GregGagne,*OperatingSystemConcepts(9e)*

Reference s
NareshChauhan, *Principles of Operating Systems*
Thomas W. Doeppner, *Operating Systems in Depth*
Andrew S. Tanenbaum, *Modern Operating Systems*
William Stallings, *Operating Systems – Internals and Design Principles*
Dhananjay M. Dhandhere, *Operating Systems – A Concept Based Approach*

With Effect from the Academic Year 2019–2020

DSC–3C DataStructures BS306

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

Unit – I

Fundamental Concepts: Introduction to Data Structures, Types of Data Structures, Introduction to Algorithm, Pseudo-code, Flow Chart, Analysis of Algorithms.

Linear Data Structure Using Arrays: 1-D Arrays, 2-D Arrays, N-D Arrays, Memory Representation and Address Calculation of 1-D, 2-D, N-D Arrays, Concept of Ordered List, String Manipulation, Pros and Cons of Arrays.

Stacks: Concept, Primitive Operations, Abstract Data Type, Representation Stacks Using Arrays, Prefix, Infix, Postfix Notations for Arithmetic Expression, Applications of Stacks– Converting Infix Expression to Postfix Expression, Evaluating the Postfix Expression, Checking Well-formed (Nested) Parenthesis, Processing of Function Calls, Reversing a String.

Unit – II

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

Queues: Concept, Primitive Operations, Abstract Data Type, Representation Queues Using Arrays, Circular Queue, Double-Ended Queue, Applications of Queues.

Linked Lists: Introduction, Concept, Terminology, Primitive Operations-creating, inserting, deleting, traversing, Representation of Linked Lists, Linked List Abstract Data Type, Linked List Variants - Singly Linked List, Doubly Linked List, Linear and Circular Linked List, Representation Stacks and Queues Using Linked Singly Lists, Application of Linked List–GarbageCollection.

Unit – III

Trees: Introduction, Representation of a General Tree, Binary Tree Introduction, Binary Tree Abstract Data Type, Implementation of Binary Trees, Binary Tree Traversals – Preorder, Inorder, Postorder Traversals, Applications of Binary Trees Briefly.

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

Hashing: Introduction, Hash Functions, Collision Resolution Strategies.

Unit – IV

Searching and Sorting: Sequential (Linear) Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort, and Comparison of Sorting Techniques.

Heaps: Concept, Implementation, Abstract Data Type, Heap Sort.

Text

Varsha H. Patil, *Data Structures UsingC++*

References

Nell Dale, *C++ Plus DataStructures*
SeymorLipschutz, *Data Structures (Revised 1e)*
Adam Drozdek, *Data Structures and Algorithms in C++*
Mark Allen Weiss, *Data structures and Algorithm Analysis in C++ (4e)*
D.S. Malik, C *++ Programming: Program Design Including Data Structures (6e)*
Michael Main, Walter Savitch, *Data Structures and Other Objects Using C++ (4e)*
Michael T. Goodrich, R. Tamassia, David M. Mount, *Data Structures and Algorithms in C++*
Yonghui Wu, Jiande Wang, *Data Structure Practice for Collegiate Programming Contests and Education*

With Effect from the Academic Year 2019–2020

DataStructuresLab BS306

Practical 2 Hours/Week 1credit

1 Write programs to implement the following using an array: a) Stack ADT b) QueueADT.

2 Write a program to convert the given infix expression to postfix expression using stack.

3 Write a program to evaluate a postfix expression usingstack.

4 Write a program to ensure the parentheses are nested correctly in an arithmeticexpression.

5 Write a program to find following usingRecursion
a) Factorial of +ve Integer b) n^{th}term of the Fibonacci Sequence c) GCD of two +veintegers

6 Write a program to create a single linked list and write functions to implement the following operations.
a) Insert an element at a specifiedposition
b) Delete a specified element in thelist
c) Search for an element and find its position in thelist
d) Sort the elements in the list ascendingorder

7 Write a program to create a double linked list and write functions to implement the following operations.
a) Insert an element at a specifiedposition
b) Delete a specified element in thelist
c) Search for an element and find its position in thelist
d) Sort the elements in the list ascendingorder

8 Write a program to create singular circular linked lists and function to implement the following operations.
a) Insert an element at a specifiedposition
b) Delete a specified element in thelist
c) Search for an element and find its position in thelist

9 Write programs to implement the following using a single linkedlist:
a) Stack ADT b) QueueADT.

10 Write a program to implement Binary search technique using Iterative method and Recursive methods.

11 Write a program for sorting the given list numbers in ascending order using the following technique: Bubble sort and Selectionsort

12 Write a program for sorting the given list numbers in ascending order using the following technique: Insertion sort and Quicksort

13 Write a program for sorting the given list numbers in ascending order using the following technique: Merge sort and Heapsort

14 Write a program to traverse a binary tree in followingway.
a) Pre-order b)In-order c)Post-order

15 Write a program to the implementation graph traversals – BFS andDFS.

16 Write a program to find the minimum spanning tree for a weighted graphusing
a) Prim'sAlgorithm b) Kruskal'sAlgorithm.

Note : Write the Pseudo Code for the above programs.

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

With Effect from the Academic Year 2019–2020

SEC-3 Python-2 BS401

Theory 2Hours/Week 2 credits

Unit – I

Lists and Tuples: Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, List Methods and Useful Built-in Functions, Copying Lists, Processing Lists, Two-Dimensional Lists, Tuples.
Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings.
Dictionaries and Sets: Dictionaries, Sets, Serializing Objects.
Recursion: Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms.

Unit – II

Object-Oriented Programming: Procedural and Object-Oriented Programming, Classes, Working with Instances, Techniques for Designing Classes, Inheritance, Polymorphism.
GUI Programming: Graphical User Interfaces, Using the tkinter Module, Display text with Label Widgets, Organizing Widgets with Frames, Button Widgets and Info Dialog Boxes, Getting Input with Entry Widget, Using Labels as Output Fields, Radio Buttons, Check Buttons.

Text Tony Gaddis, *Starting Out With Python(3e)*

References

1. Kenneth A. Lambert, *Fundamentals ofPython*
2. Clinton W. Brownley, *Foundations for Analytics withPython*
3. JamesPayne,*BeginningPythonusingPython2.6andPython3*
4. Charles Dierach, *Introduction to Computer Science usingPython*
5. PaulGries,*PracticalProgramming:AnIntroductiontoComputerScienceusingPython3*

With Effect from the Academic Year 2019–2020

SEC–4 OperatingSystems-2 BS401

Theory	3Hours/Week	2credits
Practical	2 Hours/Week	1credit

Unit – I

Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging.
Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing.
Mass-Storage Structure: Overview, Disk Scheduling, RAID Structure.
File Systems: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, Protection.

Unit – II

File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management. Recovery, Network File System.
Protection and Security: Goals of Protection, Principles of Protection, Domain of Protection,
Access Matrix, Access Control, Revocation of Access Rights, The Security Problem, Program Threats, System and Network Threats, Cryptography as a Security Tool, User Authentication, Implementing Security Defenses, Firewalling to Protect Systems and Networks, Computer-Security Classifications. Case Study: Windows 7 and Linux System.

Text AbrahamSilberschatz,PeterBaerGalvin,GregGagne,*OperatingSystemConcepts(9e)*

Reference s

NareshChauhan, *Principles of Operating Systems*
Thomas W. Doeppner, *Operating Systems in Depth*
Andrew S. Tanenbaum, *Modern Operating Systems*
William Stallings, *Operating Systems – Internals and Design Principles*
Dhananjay M. Dhandhere, *Operating Systems – A Concept Based Approach*

With Effect from the Academic Year 2019–2020

DSC–3D DatabaseManagementSystems BS406

Theory	4 Hours/Week	4 credits
Practical	2 Hours/Week	1 credit

Unit – I

Introduction to Databases: Introduction, Traditional File-Based Systems, Database Approach, Roles in the Database Environment, Advantages and Disadvantages of DBMSs, The Three-Level ANSI-SPARC Architecture, Database Languages, Data Models, Functions of a DBMS, Components of a DBMS.

Relational Model: Introduction, Terminology, Integrity Constraints, Views.

The Relational Algebra: Unary Operations, Set Operations, Join Operations, Division Operation, Aggregation and Grouping Operations.

Unit – II

SQL: Introduction, Data Manipulation–Simple Queries, Sorting Results, Using the SQL Aggregate Functions, Grouping Results, Sub-queries, ANY and ALL, Multi-table Queries, EXISTS and NOT EXIST, Combining Result Tables, Database Updates.

SQL: The ISO SQL Data Types, Integrity Enhancement Feature–Domain Constraints, Entity Integrity, Referential Integrity, General Constraints, Data Definition–Creating a Database, Creating a Table, Changing a Table Definition, Removing a Table, Creating an Index, Removing an Index, Views–Creating a View, Removing a View, View Resolution, Restrictions on Views, View Updatability, WITH CHECK OPTION, Advantages and Disadvantages of Views, View Materialization, Transactions, Discretionary Access Control–Granting Privileges to Other Users, Revoking Privileges fromUsers.

Advanced SQL: The SQL Programming Language–Declarations, Assignments, Control Statements, Exceptions, Cursors, Subprograms, Stored Procedures, Functions, and Packages, Triggers, Recursion.

Unit – III

Entity–Relationship Modeling: Entity Types, Relationship Types, Attributes, Keys, Strong and Weak Entity Types, Attributes on Relationships, Structural Constraints, Problems with ER Models–Fan Traps, Chasm Traps.

Enhanced Entity–Relationship Modeling: Specialization/Generalization, Aggregation, Composition.

Functional–Dependencies: Anomalies, Partial Functional Dependency, Transitive Functional Dependency, Multi Valued Dependency, Join Dependency.

Normalization: The Purpose of Normalization, How Normalization Supports Database Design, Data Redundancy and Update Anomalies, Functional Dependencies in brief, The Process of Normalization,1NF, 2NF, 3NF, BCNF. The Database Design Methodology for Relational Databases(Appendix–D).

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

Thomas M. Connolly, Carolyn E. Begg, *Database Systems–A Practical Approach to Design, Implementation, and Management (6e)*

Reference s

Sharon Allen, Evan Terry, *Beginning Relational Data Modeling*

Jeffrey A. Hoffer, V. Ramesh, HeikkiTopi, *Modern Database Management*

Raghu Ramakrishnan, Johannes Gehrke, *Database Management Systems*

RamezElmasri, Shamkant B. Navathe, *Fundamentals of Database Systems*

Abraham Silberschatz, Henry F. Korth, S. Sudarshan, *Database System Concepts*

C Coronel, S Morris, Peter Rob, *Database Systems: Design, Implementation, and Management*

With Effect from the Academic Year 2019–2020

Database ManagementSystemsLab BS406

Practical 2 Hours/Week 1 credit

Consider the relational schema for part of the **Dream Home** case studyis:

Branch (branchNo, street, city, postcode)
Staff (staffNo, fName, IName, position, sex, DOB, salary, branchNo)
Property For Rent (propertyNo, street, city, postcode, type, rooms, rent, ownerNo, staffNo, branchNo)
Client (clientNo, fName, IName, telNo, prefType, maxRent, eMail)
Private Owner (ownerNo, fName, IName, address, telNo, eMail, password)
Viewing (clientNo, propertyNo, viewDate, comment)
Registration (clientNo, branchNo, staffNo, dateJoined)

1. Create a database with name "DreamHome" and now create all the tables listed above withconstraints.
2. Insert a new row into the table supplying data for allcolumns.
3. Modify data in the database usingUPDATE
4. Delete data from the database usingDELETE
5. Changing a table definition usingALTER
6. Removing a table usingDROP
7. Removing rows in table usingTRUNCATE
8. Create an index and removing anindex
9. Practice other standard SQL commands for creating, modifying, displaying data oftables.
10. List full details of allstaff.
11. List all staff with a salary greater than£10000.
12. List the property numbers of all properties that have beenviewed.
13. Produce a list of salaries for all staff, showing only the staffNo, fName, IName, and salarydetails.
14. List all cities where there is either a branch office or a property forrent.
15. List all cities where there is a branch office but no properties forrent.
16. List all cities where there is both a branch office and at least one property forrent.
17. List the names and comments of all clients who have viewed a property forrent.
18. Produce a status report on propertyviewings.
19. List complete details of all staff who work at the branch inGlasgow.
20. List the addresses of all branch offices in London orGlasgow
21. List all staff with a salary between £20,000 and£30,000.
22. Identify all clients who have viewed all properties with threerooms.
23. How many properties cost more than £350 per month torent?
24. How many different properties were viewed in May2013?
25. Find the total number of Managers and the sum of theirsalaries.
26. Find the minimum, maximum, and average staffsalary.
27. Find the number of staff working in each branch and the sum of theirsalaries.
28. List all managers andsupervisors.
29. Find all owners with the string 'Glasgow' in theiraddress.
30. List the details of all viewings on property PG4 where a comment has not beensupplied.
31. Produce a list of salaries for all staff, arranged in descending order ofsalary.
32. Produce an abbreviated list of properties arranged in order of propertytype.
33. Find the number of staff working in each branch and the sum of theirsalaries.
34. For each branch office with more than one member of staff, find the number of staff working in each branch and the sum of theirsalaries.
35. List the staff who work in the branch at '163 MainSt'.
36. List all staff whose salary is greater than the average salary, and show by how much their salary is greater than theaverage.
37. List the properties that are handled by staff who work in the branch at '163 MainSt'.
38. Find all staff whose salary is larger than the salary of at least one member of staff at branchB003.
39. Find all staff whose salary is larger than the salary of every member of staff at branchB003
40. List the names of all clients who have viewed a property, along with any comments supplied.
41. For each branch office, list the staff numbers and names of staff who manage properties and the properties that theymanage.
42. For each branch, list the staff numbers and names of staff who manage properties, including the city in which the branch is located and the properties that the staffmanage.

43. Find the number of properties handled by each staff member, along with the branch number of the member ofstaff.
44. List all branch offices and any properties that are in the samecity.
45. List all properties and any branch offices that are in the samecity.
46. List the branch offices and properties that are in the same city along with any unmatched branches or properties.
47. Find all staff who work in a London branchoffice.
48. Construct a list of all cities where there is either a branch office or aproperty.
49. Construct a list of all cities where there is both a branch office and aproperty.
50. Create a view so that the manager at branch B003 can see the details only for staff who work in his or her branch office.
51. Create a view of the staff details at branch B003 that excludes salary information, so that only managers can access the salary details for staff who work at theirbranch.
52. Create a view of staff who manage properties for rent, which includes the branch number they work at, their staff number, and the number of properties theymanage.
53. Removing a view using DROPVIEW
54. Give the user with authorization identifier Manager all privileges on the Stafftable.
55. Give users Personnel and Director the privileges SELECT and UPDATE on column salary of the Stafftable.
56. Revoke the privilege SELECT on the Branch table from allusers.
57. Revoke all privileges you have given to Director on the Stafftable.
58. Demonstrate exceptions inPL/SQL
59. Demonstrate cursors inPL/SQL
60. Write PL/SQL queries to createprocedures.
61. Write PL/SQL queries to createfunctions.
62. Write PL/SQL queries to createpackage.
63. Write PL/SQL queries to createtriggers.
64. Write PL/SQL queries usingrecursion.

Consider the relational schema for part of the **Hotel** case study is:

Hotel (hotelNo, hotelName, city)
Room (roomNo, hotelNo, type, price)
Booking (hotelNo, guestNo, dateFrom, dateTo, roomNo)
Guest (guestNo, guestName, guestAddress)

65. Create a database with name “Hotel” and now create all the tables listed above withconstraints.
66. Insert a new row into the table supplying data for allcolumns.
67. Modify data in the database usingUPDATE
68. Delete data from the database usingDELETE
69. Changing a table definition usingALTER
70. Removing a table usingDROP
71. Removing rows in table usingTRUNCATE
72. Practice other standard SQL commands for creating, modifying, displaying data oftables.
73. List full details of allhotels.
74. List full details of all hotels inLondon.
75. List the names and addresses of all guests living in London, alphabetically ordered byname.
76. List all double or family rooms with a price below £40.00 per night, in ascending order ofprice.
77. List the bookings for which no dateTo has beenspecified.
78. How many hotels arethere?
79. What is the average price of aroom?
80. What is the total revenue per night from all doublerooms?
81. How many different guests have made bookings forAugust?
82. List the price and type of all rooms at the GrosvenorHotel.
83. List all guests currently staying at the GrosvenorHotel.
84. List the details of all rooms at the Grosvenor Hotel, including the name of the guest staying in theroom.
85. What is the total income from bookings for the Grosvenor Hoteltoday?
86. List the rooms that are currently unoccupied at the GrosvenorHotel.
87. What is the lost income from unoccupied rooms at the GrosvenorHotel?
88. List the number of rooms in eachhotel.
89. List the number of rooms in each hotel inLondon.
90. What is the average number of bookings for each hotel inAugust?
91. What is the most commonly booked room type for each hotel inLondon?
92. What is the lost income from unoccupied rooms at each hoteltoday?
93. Insert rows into each of thesetables.

94. Update the price of all rooms by5%.
95. Demonstrate that queries written using the UNION operator and same can be rewritten using theOR.
96. Apply the syntax for inserting data into atable.
97. Create a view containing the cheapest hotels in theworld.
98. Create the Hotel table using the integrity enhancement features ofSQL.
99. Create a database trigger for the followingsituations:
    (a) The price of all double rooms must be greater than£100.
    (b) The price of double rooms must be greater than the price of the highest singleroom.
    (c) A booking cannot be for a hotel room that is already booked for any of the specifieddates.
    (d) A guest cannot make two bookings with overlappingdates.
    (e) Maintain an audit table with the names and addresses of all guests who make bookings for hotels in London (do not store duplicate guestdetails).

Given relation schemas are

Sailors (sid : integer, sname : string, rating : integer, age : real)
Boats (bid : integer, bname : string, color : string)
Reserves (sid : integer , bid : integer, day : date)

100. Find the names and ages of allsailors.
101. Find all sailors with a rating above7.
102. Find the names of sailors who have reserved boat103.
103. Find the sids of sailors who have reserved a redboat.
104. Find the names of sailors who have reserved a redboat.
105. Find the colors of boats reserved byLubber.
106. Find the names of sailors who have reserved at least oneboat.
107. Find the names of sailors who have reserved at least twoboats.
108. Compute increments for the ratings of persons who have sailed two different boats on the sameday.
109. Find the ages of sailors whose name begins and ends with B and has at least threecharacters.
110. Find the names of sailors who have reserved a red or a greenboat.
111. Find the names of sailors who have reserved a red and a greenboat.
112. Find the sids of all sailors who have reserved red boats but not greenboats.
113. Find all sids of sailors who have a rating of 10 or have reserved boat104.
114. Find the names of sailors who have not reserved a redboat.
115. Find sailors whose rating is better than some sailor calledHoratio.
116. Find sailors whose rating is better than every sailor calledHoratio.
117. Find the names of sailors who have reserved allboats.
118. Find the names of sailors who have reserved at least twoboats.
119. Find the names of sailors who have reserved all boats calledInterlake.
120. Find sailors who have reserved all redboats.
121. Find the sailor name, boat id, and reservation date for eachreservation.
122. Find the sids of sailors with age over 20 who have not reserved a redboat.
123. Find the average age of allsailors.
124. Find the average age of sailors with a rating of10.
125. Find the name and age of the oldestsailor.
126. Count the number of different sailornames.
127. Find the names of sailors who are older than the oldest sailor with a rating of10.
128. Find the sailors with the highestrating.
129. Find the age of the youngest sailor for each ratinglevel.
130. Find age of the youngest sailor who is eligible to vote for each rating level with at least 2 suchsailors.
131. Find the average age of sailors for each rating level that has at least twosailors.
132. For each red boat, find the number of reservations for thisboat.
133. Find the average age of sailors who are of voting age (i.e., at least 18 years old) for each rating level that has at least twosailors.
134. Delete the records of sailors who have rating 8 (deleting some rows in atable).
135. Loading data which is present in the text into thetable.

Note : Recommended to use open source database software like MySQl, MongoDB, PostgreSQL, etc…
In practical examination, students have to

- Create database
- Create tables with their integrityconstraints.
- Insert the data into tables and then execute thequeries.
- Answer any **six** queries from **ten** queries given by theexaminer.

With Effect from the Academic Year 2019–2020

GE Information Technologies BS501

Theory 4Hours/Week 4 credits

Unit – I

Information Technology Basics – introduction, Need for Information Storage and Processing, Information Technology Components , Role of information Technology, Information Technology and the Internet .

Emerging Trends in IT - Introduction , Electronic Commerce (E-Commerce), Electronic Data Interchange(EDI),

Smart Cards , Mobile Communication, Internet Protocol TV.

Unit – II

Computer Software: Introduction, Classification of Computer Software, System Software, Applications Software, Firmware, Middleware, Acquiring Computer Software.
Operating Systems: Introduction, Evolution of OS, Process Management, Memory Management, File Management, Device Management, Security Management, Command Interpreter, Windows, Linux.

Unit – III

Introduction to Algorithms and Programming Languages: Algorithm, Control Structures, Flowcharts, Pseudo code, Programming Languages, Generations of Programming Languages.
Database Systems: File Oriented Approach, Database Oriented Approach, Database Views, Three-Schema Architecture, Database Models, Components of DBMS, Introduction of SQL Queries.

Unit – IV

Computer Networks: Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.
The Internet: Internet Services, Types of Internet Connections, Internet Security.
Emerging Computer Technologies: Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, On0demand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

Text

Wiley India Editorial Team,Fundamentals of Information Technology

ReemaThareja, *Fundamentals ofComputers*

Reference s

P. K. sinha, *ComputerFundamentals*
Anita Goel, *ComputerFundamentals*
V. Rajaraman, *Fundamentals of Computers*
E. Balagurusamy, *Fundamentals of Computers*
J. Glenn Brookshear, Dennis Brylow, *Computer Science An Overview*

With Effect from the Academic Year 2019–2020

DSC–3E ProgramminginJava BS505

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

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, Constructors–Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects, Class Variables & Methods-static Keyword, this Keyword.

Unit – II

One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.
Inheritance: Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keywords, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.Packages–Creating and Using Packages, Access Protection, Wrapper Classes, String Class, StringBuffer Class. Exception: Introduction, Types, Exception Handling Techniques, User-Defined Exception.

Unit – III

Multithreading: Introduction, Main Thread, Creation of New Threads – By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority, Synchronization.
Input/Output: Introduction, java.io Package, File Class, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

Unit – IV

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, DialogBox.
Database Handling Using JDBC: Introduction, Types of JDBC Drivers, Load the Driver, Establish Connection, Create Statement, Execute Query, Iterate Resultset, Scrollable Resultset, Developing a JDBS Application.

Text

SachinMalhotra, SaurabhChoudhary, *Programming in Java(2e)*

Reference s

Bruce Eckel, *Thinking in Java (4e)*
Herbert Schildt, *Java: The Complete Reference (9e)*
Y. Daniel Liang, *Introduction to Java Programming (10e)*
Paul Deitel, Harvey Deitel, *Java: How To Program (10e)*
Cay S. Horsttnann, *Core Java Volume I – Fundamentals (10e)*
C. Thomas Wu, *An introduction to object-oriented programming with Java (5e)*
Tony Gaddis, *Starting Out with Java From Control Structures Through Objects (6e)*
Jeanne Boyarsky, Scott Selikoff, *OCA: Oracle Certified Associate Java SE 8 Programmer–I Study Guide*

With Effect from the Academic Year 2019–2020

JavaLab BS505

Practical 3 Hours/Week 1credit

1	Write java programs to find the following a) largest of given three numbers b) reverses the digits of anumber c) given number is primeornot d) GCD of given twointegers
2	Write java programs that implement the following a) default constructor b) parameterized constructor c) constructor overloading
3	a) Write a java program to find the smallest of given list integers using array and scannerclass. b) Write a java program for multiplication of twomatrices.
4	a) Write a java program for demonstrating an inner classes or nestedclasses. 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, hybridinheritances.
6	Write java programs that demonstrate the use of abstract, this, super, static, finalkeywords
7	a) Write a java program for creating a package and using apackage. b) Write a java program to demonstrate the use of wrapperclasses.
8	a) Write a java program using all five keywords of exception handlingmechanism. 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 ornot. 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 thedata. b) Write a java program that reads a file name from user and displays its information.
11	a) Write a java program for controlling mainthread. 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 Runnableinterface. b) Write a java program for thread synchronization.
13	a) Write a java program to create following AWT components: Button, Checkbox, Choice, andList. b) Write java programs to create AWT application using containers and layouts.
14	a) Write java programs to create a simple Applet and create swing basedApplet. 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 andlayouts.
16	Write a java program to store and retrieve data from database usingJDBC.

Note :

Write the program using simple text editors (not IDE), compile and run from command prompt.

Encourage students to develop small java applications using IDE, like giving as assignment.

Write a small java application using some features of java.

With Effect from the Academic Year 2019–2020

DSC–3F WebTechnologies BS605

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

Unit – I

Structuring Documents for the Web: Introducing HTML and XHTML, Basic Text Formatting, Presentational Elements, Phrase Elements, Lists, Editing Text, Core Elements and Attributes, Attribute Groups
Links and Navigation: Basic Links, Creating Links with the <a> Element, Advanced E- mail Links.
Images, Audio, and Video: Adding Images Using the <img> Element, Using Images as Links Image Maps, Choosing the Right Image Format, Adding Flash, Video and Audio to your web pages.
Tables: Introducing Tables, Grouping Section of a Table, Nested Tables, Accessing Tables
Forms: Introducing Forms, Form Controls, Sending Form Data to the Server
Frames: Introducing Frameset, <frame> Element, Creating Links Between Frames, Setting a Default Target Frame Using <base> Element, Nested Framesets, Inline or Floating Frames with <iframe>.

Unit – II

Cascading Style Sheets: Introducing CSS, Where you can Add CSS Rules.
CSS Properties: Controlling Text, Text Formatting, Text Pseudo Classes, Selectors, Lengths, Introducing the Box Model.
More Cascading Style Sheets: Links, Lists, Tables, Outlines, The :focus and :activate Pseudo classes Generated Content, Miscellaneous Properties, Additional Rules, Positioning and Layout with CSS
Page Layout: Understating the Site's Audience, Page Size, Designing Pages, Coding your Design, Developing for MobileDevices.
Design Issues: Typography, Navigation, Tables, Forms.

Unit – III

Learning JavaScript: How to Add Script to Your Pages, the Document Object Model, Variables, Operators, Functions, Control Statements, Looping, Events, Built- In Objects,
Working with JavaScript: Practical Tips for Writing Scripts, Form Validation, Form Enhancements, JavaScript Libraries.
Putting Your site on the web: Meta tags, Testing your site, Talking the Leap to Live, Telling the World about your site, Understanding your visitors.

Unit – IV

XML - Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).
Ajax-Enabled Rich Internet Applications: introduction, history of Ajax, traditional web applications Vs Ajax Applications, RIAs with Ajax, Ajax example using XML HttpRequest object, XML and DOM, creating full scale Ajax-enabled application, Dojo Toolkit.

Text

Jon Duckett, *Beginning HTML, XTML, CSS andJavaScript*

Reference s

Chris Bates, *Web Programming*
M. Srinivasan, *Web Technology: Theory and Practice*
Achyut S. Godbole, AtulKahate, *Web Technologies*
Kogent Learning Solutions Inc, *Web Technologies Black Book*
Ralph Moseley and M. T. Savaliya, *Developing Web Applications*
P.J. Deitel& H.M. Deitel, *Internet and World Wide Web How to program*

With Effect from the Academic Year 2019–2020

WebTechnologiesLab BS606

Practical 2 Hours/Week 1credit

1. a. Write a HTML program using basic text formatting tags, <hn>, <p>, <br>, <pre>.
   b. Write a HTML page for Example Cafe using above text formatting tags.
2. a. WriteaHTMLprogramusingpresentationalelementtags<b>,<i>,<strike>,<sup>,<sub>, <big>, <small>,<hr>
   b. WriteaHTMLprogramusingphraseelementtags<blockquote>,<cite>,<abbr>,<acronym>, <kbd>, <address>
3. a. Write a HTML program using different listtypes.
   b. Write a HTML page that displays ingredients and instructions to prepare a recipe.
4. a. Write a HTML program using grouping elements 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 selectboxes.
7. Write a HTML program to create a frames and links betweenframes.
8. Write a HTML program to create different types of stylesheets.
9. Write a HTML program to create CSS on links, lists, tables and generatedcontent.
10. Write a HTML program to create your college web site using multi columnlayouts.
11. Write a HTML program to create your college web site using for mobiledevice.
12. Write a HTML program to create login form and verify username and password using DOM
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 currenttime.
14. a. Write a JavaScript program using switchcase?.
    b. Write a JavaScript program to print multiplication table of given number usingloop.
15. a. Write a JavaScript programs using any 5events.
    b. Write a JavaScript program using JavaScript built inobjects.
16. Write a JavaScript program to create registration form and validate all fields using formvalidation
17. Write a XML Program to represent Student Data using DTD.
18. Write a XML Program to represent Data using XML Schema Definition.

With Effect from the Academic Year 2019–2020

Project/Optional PHPwithMySQL BS606

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

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 withHTML.
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.

Unit – II

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.
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 – III

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 fromPHP.
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

Matt Doyle, *Beginning PHP 5.3* (Wrox – WileyPublishing)

Reference s

Ellie Quigley, *PHP and MySQL by Example*
Joel Murach, Ray Harris, *Murach's PHP and MySQL*
Brett McLaughlin, *PHP & MySQL: The Missing Manual*
Luke Welling, Laura Thomson, *PHP and MySQL Web Development*
W. Jason Gilmore, *Beginning PHP and MySQL From Novice to Professional*
Andrew Curioso, Ronald Bradford, Patrick Galbraith, *Expert PHP and MySQL*

With Effect from the Academic Year 2019–2020

PHP with MySQLLab BS606

Practical 3 Hours/Week 1credit

1	a) Write a PHP script to find the factorial of a givennumber. 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 ornot. 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 HTMLpage. b) Write a PHP script to create a chessboard.
4	a) Write a PHP script using built-in string function like strstr(), strops(), 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 anyposition. b) Write a PHP function to check whether all array values are strings ornot.
6	a) Write a PHP script to count number of elements in an array and display a range of arrayelements. b) Write a PHP script to sort a multi-dimensional array set by a specifickey.
7	a) Write a PHP script using a function to display the entered string inreverse. b) Write a PHP script using function for sorting words in a block of text bylength.
8	a) Write a PHP script for creating the Fibonacci sequence with recursivefunction. b) Write a PHP script using pass by value and pass by reference mechanisms in passing arguments to functions.
9	a) Write a PHP script to demonstrate the defining and using objectproperties. b) Write a PHP script to demonstrate theinheritance.
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 overridingmechanisms. b) Write a PHP script to demonstrate the use of final classes and final methods.
12	a) Write a PHP script to demonstrate the useinterfaces. b) Write a PHP script using constructors and destructors.
13	Write a PHP application to handling HTML forms with PHPscript.
14	a) Write a PHP script to create a file, write data into file and display the file'sdata. 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 databasetable. b) Write a PHP application for inserting, updating, deleting records in the database table.
16	Write a PHP application for student registrationform.

UG (B.Sc.) Scheme of Examinations

Computer Science

(CBCS 2019-2020)

Elaborations

Paper	Credits	Theory Exam		Practical Exam
		University Exam	Internal Exam	
DSC	4+1	80 Marks	20 Marks	25 Marks
DSE	4+1	80 Marks	20 Marks	25 Marks
SEC	2	40 Marks	10 Marks	No Practical
GE	4	80 Marks	20 Marks	No Practical
AECC	2	40 Marks	10 Marks	No Practical
P/O	3+1	60 Marks	15 Marks	25 Practical

DSC – Discipline specific core course
DSE – Discipline specific elective course
SEC – Skill enhancementcourse
GE – Genericelective

AECC - Ability Enhancement Compulsory

P/O -Project/Optional

4 Credit Core (DSC) Paper

University Exam (Theory)

Time:3Hrs. **Maximum marks:80**

PART -AAnswer 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

4 Credit Core (DSC) Paper

Internal Exam (Theory)

Time:1Hr. **Maximum marks:20**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 markseach.
- Average of the scores of two exams should be taken intoaccount.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of half markeach,
  - 10 FIBs (Fill in the Blanks) of half markeach
  - 5 SAQs (short answered questions) of one markeach
  - Totaling 15marks.
  - 5 marks meant forassignment.

University Exam (Practical)

Time:2Hrs. **Maximum marks:25**

- The question paper is to be typeset with **four** programs with due weightage to **all the units** from the question bank provided in thesyllabus.
- The candidates are to answer any **two** of them in the practicalexam.
- Each question has to carry **six** marks totaling **12**marks.
- Viva – **8**marks
- Record – **5**marks

2 Credit (SEC) Paper

University Exam (Theory)

Time:2Hrs. **Maximum marks:40**

Section – A(4X 4M = 16 Marks)

Answer any four of the following six questions. Each carries four marks.

Q1. From Unit 1
Q2. From Unit 1
03. From Unit 1
Q4. From Unit 2
Q5. From Unit 2
06. From Unit 2

Section – B (2 X 12M = 24Marks)

Answer all the following two questions. Each carries fifteen marks.

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2

Internal Exam (Theory)

Time: 1/2Hr. **Maximum marks:10**

- One internal exam at the end of the semester, of half an hour duration is to be conducted carrying 10marks.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of one markeach,
    No assignment isrequired.

University Exam (Theory) for Sermester VI (Project/optional) only

3 Hours Max Marks -60 Credits -3

PART -AAnswer any Six questions in part –A 6X4 M = 24 Marks

UNIT- I 1
2
3

UNIT- II 4
5
6

UNIT- III 7
8
9

Part – B **Answer all Questions 12MX3 = 36 Marks**

UNIT- I 13
Or
14

UNIT- II 15
Or
16

UNIT- III 17
Or
18

Internal Exam(Theory)for Semester VI (Project /optional)only

Time:1Hr. **Maximum marks:15**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 markseach.
- Average of the scores of two exams should be taken intoaccount.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of half markeach,
  - 10 FIBs (Fill in the Blanks) of half markeach
  - 5 SAQs (short answered questions) of one markeach
  - Totaling 15marks.
  - No assignment required.

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

Practical Question Paper(Project /optional)

3 HoursMax Marks -25 Credits -1

Answer any Two 6 X 2 = 12 MARKS

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

Viva - 8 Marks
Record – 5 Marks

MOOCs [Massive Online Open Courses] Free Resources

E-Learning:

- NPTEL :nptel.ac.in [Core Subjects Certification]
- C++INSTITUTE :cppinstitute.org [C++ Certification]
- ORACLEEDUCATION :education.oracle.com [Java, DBMS Certification]
- BIG DATAUNIVERSITY :bigdatauniversity.com [Big Data Certification]
- COURSERA :coursera.org [Core Subjects Certification]
- CODEACADEMY :codecademy.com [Coding Certification]
- KHANACADEMY :khanacademy.org [Core Subjects Certification]
- PIXAR INABOX :khanacademy.org/partner-content/pixar
- VIDEOLECTURES :videolectures.net
- YOUTUBEEDU :plus.google.com/+YouTubeEDU/posts
- DISNEYRESEARCH :disneyresearch.com
- ALISON :alison.com [Core SubjectsCertification]
- INTERNETARCHIVE :archive.org

Freeware:

- SCILAB : scilab.org [MatLab Equivalent]
- GEOGEBRA :geogebra.org [Software for Class Room Teaching]

Search Engine:

- WOLFRAMALPHA :wolframalpha.com [Computing Engine]
- CITESEER :citeseerx.ist.psu.edu [Searching Research Articles]
- DOAJ :doaj.org [Open Access to Journals]

FACULTY OF SCIENCE
BA (Computer Applications)
CBCS Pattern with Effect from the Academic Year 2019-2020

Code	Course Title	Course Type	HpW	Credits
	SEMESTER – I			
BS106	Programming in C	DSC–3A	4T+3P=7	4 + 1 =5
	SEMESTER – II			
BS206	Programming in C++	DSC–3B	4T+3P=7	4 + 1 =5
	AECC			
BS107	Fundamentals of Computers	AECC	2T	2
	SEMESTER –III			
BS301	Python – 1	SEC–1	2T	2
BS302	Sci Lab – 1	SEC–2	2T	2
BS306	Relational Data Base Management Systems	DSC–3C	4T+3P=7	4 + 1 =5
	SEMESTER –IV			
BS401	Python – 2	SEC–3	2T	2
BS402	Sci Lab – 2	SEC–4	2T	2
BS406	Multi Media Systems	DSC–3D	4T+3P=7	4 + 1 =5
	SEMESTER – V			
BS501	Information Technologies	GE	4T	4
BS505	Programming in Java	DSE–3E	4T+3P=7	4 + 1 =5
	SEMESTER – VI			
BS605	Web Technologies	DSE–3F	4T+3P=7	4 + 1 =5
	Project/Optional			
BS601	Information Security and Cyber Laws	PO	3T+3P=6	3 + 1 =4
		Total Number of Credits		48

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
BA. (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), Strategyfor 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, conditionaloperator, 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 toFunctions, Score of Variables, Storage Classes, Inline Functions, and Recursion.
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers andStrings, 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: PradipDey, ManasGhosh, 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

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – I

Programming in 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.
- 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.

PALAMURU UNIVERSITY
FACULTY OF SCIENCE
BA.(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, ControlStructures, Arrays, Strings, Pointers, Searching and Sorting Arrays.
Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables asParameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Unit – II
Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOPLanguages, 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, Constructorsand Destructors in Base and Derived Classes, Redefining Base Class Functions, Polymorphism and VirtualMember 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. BjarneStroustrup, The C++ Programming Language
6. SouravSahay, Object Oriented Programming with C++TEXT BOOK:

FACULTY OF SCIENCE
BA. (Computer Applications)
SEMESTER – II

Programming in 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.
- 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.

FACULTY OF SCIENCE
BA(Computer Applications)
Semester-I
AECC
Fundamentals of Computers

Theory **2Hours/Week** **2Credits**

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, 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 Book: ReemaThareja, Fundamentals of Computers.

References:

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

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – III
Python – I
(SEC – I)

Theory **2Hours/Week** **2Credits**

Unit – I

Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input, Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from the Keyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output.

Decision Structures and Boolean Logic: if, if-else, if- elif -else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables.

Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.

Unit – II

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- Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, Storing Functions inModules.

File and Exceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

Text Tony Gaddis, *Starting Out With Python(3e)*

References

1. Kenneth A. Lambert, *Fundamentals ofPython*
2. Clinton W. Brownley, *Foundations for Analytics withPython*
3. JamesPayne,*BeginningPythonusingPython2.6andPython3*
4. Charles Dierach, *Introduction to Computer Science usingPython*
5. PaulGries,*PracticalProgramming:AnIntroductiontoComputerScienceusingPython3*

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – III
Sci Lab – I
(SEC – II)

Theory **2Hours/Week** **2Credits**

Unit – I

Introduction to Scilab – what is scilab, downloading & installing scilab, a quick taste of scilab.The Scilab Environment – manipulating the command line, working directory, comments, variables in memory, recording sessions, the scilab menu bar, demos.

Scalars & Vectors – introduction, initializing vectors in scilab, mathematical operations on vectors, relational operations on vectors, logical operations on vectors, built-in logical functions.

Unit – II

Elementary mathematical functions mathematical functions on scalars, complex numbers, trigonometric functions.
Matrices – introduction, arithmetic operators for matrices, basic matrix processing. Polynomials – introduction, creating polynomials, basic polynomial commands.

Text Book:

Er. HemaRamachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB

References:

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

FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – III
Relational Data base Management Systems

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

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, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems – Single Valued Dependencies – Normalisation, 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.

FACULTY OF SCIENCE
BA(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.
   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.

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – IV
Python – II
(SEC – III)

Theory **2Hours/Week** **2Credits**

Unit – I

Lists and Tuples: Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, List Methods and Useful Built-in Functions, Copying Lists, Processing Lists, Two-Dimensional Lists, Tuples.
Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings.
Dictionaries and Sets: Dictionaries, Sets, Serializing Objects.
Recursion: Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms.

Unit – II

Object-Oriented Programming: Procedural and Object-Oriented Programming, Classes, Working with Instances, Techniques for Designing Classes, Inheritance, Polymorphism.
GUI Programming: Graphical User Interfaces, Using the tkinter Module, Display text with Label Widgets, Organizing Widgets with Frames, Button Widgets and Info Dialog Boxes, Getting Input with Entry Widget, Using Labels as Output Fields, Radio Buttons, Check Buttons.

Text Tony Gaddis, *Starting Out With Python(3e)*

References

1. Kenneth A. Lambert, *Fundamentals ofPython*
2. Clinton W. Brownley, *Foundations for Analytics withPython*
3. JamesPayne,*BeginningPythonusingPython2.6andPython3*
4. Charles Dierach, *Introduction to Computer Science usingPython*
5. PaulGries,*PracticalProgramming:AnIntroductiontoComputerScienceusingPython3*

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – IV
Sci Lab – II
(SEC – 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. HemaRamachandran, Dr.Achuthsankar S. Nair, Computer SCILAB–A Free Software to MATLAB
2. Sci lab a Beginners Apporach by Anil kumarVarma

References:

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

FACULTY OF SCIENCE
BA (Computer Applications)
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

FACULTY OF SCIENCE
BA (Computer Applications)
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, color 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 color 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).

FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – V

GE Information Technologies BS501

Theory 4Hours/Week 4 credits

Unit – I

Information Technology Basics – introduction, Need for Information Storage and Processing, Information Technology Components , Role of information Technology, Information Technology and the Internet .

Emerging Trends in IT - Introduction , Electronic Commerce (E-Commerce), Electronic Data Interchange(EDI),

Smart Cards , Mobile Communication, Internet Protocol TV.

Unit – II

Computer Software: Introduction, Classification of Computer Software, System Software, Applications Software, Firmware, Middleware, Acquiring Computer Software.
Operating Systems: Introduction, Evolution of OS, Process Management, Memory Management, File Management, Device Management, Security Management, Command Interpreter, Windows, Linux.

Unit – III

Introduction to Algorithms and Programming Languages: Algorithm, Control Structures, Flowcharts, Pseudo code, Programming Languages, Generations of Programming Languages.
Database Systems: File Oriented Approach, Database Oriented Approach, Database Views, Three-Schema Architecture, Database Models, Components of DBMS, Introduction of SQL Queries.

Unit – IV

Computer Networks: Introduction, Connection Media, Data Transmission Mode, Data Multiplexing, Data Switching, Network Topologies, Types of Networks, Networking Devices, OSI Model.
The Internet: Internet Services, Types of Internet Connections, Internet Security.
Emerging Computer Technologies: Distributed Networking, Peer-to-peer Computing, Grid Computing, Cloud Computing, Utility Computing, On0demand Computing, Wireless Network, Bluetooth, Artificial Intelligence.

Text

Wiley India Editorial Team,Fundamentals of Information Technology

ReemaThareja, *Fundamentals ofComputers*

Reference s

P. K. sinha, *ComputerFundamentals*

Anita Goel, *ComputerFundamentals*

V. Rajaraman, *Fundamentals of Computers*

E. Balagurusamy, *Fundamentals of Computers*

J. Glenn Brookshear, Dennis Brylow, *Computer Science An Overview*

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – V
Programming in Java

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

Unit - I
Introduction: Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Structure of Java Program, Type Casting, Conditional Statements, Loops, Classes, Objects, Class Declaration, Creating Objects.

Unit - II
Method Declaration and Invocation, Method Overloading, 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, StringBuffer 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 Streams, 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 (Graphics Class).
Event Handling: Introduction, Types of Events, Example.
AWT: Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts.
Swings: Introduction, Differences between Swing and AWT, JFrame, JApplet, JPanel, Components in Swings, Layout Managers, JTable.

Text Book:
1. SachinMalhotra, SaurabhChoudhary, 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. Horsttnann, Core Java Volume I –Fundamentals (10e)

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – V
Programming in Java

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.

1. Write a program to find the largest of n natural numbers.
2. Write a program to find whether a given number is prime or not.
3. Write a menu driven program for following:
   a. Display a Fibonacci series
   b. Compute Factorial of a number
4. Write a program to check whether a given number is odd or even.
5. Write a program to check whether a given string is palindrome or not.
6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.
7. Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
8. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
9. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
10. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
11. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
12. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
13. Write a java program to draw a line between two coordinates in a window.
14. Write a java program to display the following graphics in an applet window.
    a. Rectangles b. Circles
    c. Ellipses d. Arcs e. Polygons
15. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage () prints the information about the error occurring causes.
16. Write a program for the following string operations:
    a. Compare two strings b. concatenate two strings c. Compute length of a string

FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – VI
Web Technologies

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

Unit – I

Introduction To XHTML– Introduction, first HTML, Headings, Linking, Images, special characters and horizontal rules, Lists, Tables, Frames, Forms, internal linking, meta Elements.
Cascading Style Sheets – Introduction, Inline Styles, Embedded Style Sheets, Conflicting Styles, Linking external sheets, position Elements, box model and text flow, media types, building a CSS drop-down menu, user style sheets, CSS3.

Unit – II

Introduction To Java Scripting- introduction, simple program, prompt dialog and alert boxes, memory concepts, operators(arithmetic, relational, assignment, increment and decrement, logical), decision making, control structures, if… else statement, while, counter-controlled repetitions, switch statement, do… while statement, break and continue statements.

Unit – III

Functions – program modules in JavaScript, programmer–defined functions, functions definition, scope rules, global functions, Recursion. Arrays- introduction, declaring and allocating arrays, references and reference parameters, passing arrays to functions. Multidimensional arrays, Events – registering event handling, event onload, onmouseover, onmouseout, onfocus, onblur, onsubmit, onreset, event bubbling, more events.

Unit – IV

Java Script Objects – introduction to object technology, Math Object, String Object, Date Object, Boolean and Number Object, document and window Objects, using cookies.
XML - Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

Text Book:

1. Internet & World Wide Web: HOW TO PROGRAM- H. M. Deitel, P.J. Deitel, -Fourth Edition- Pearson edition.

FACULTY OF SCIENCE
BA(Computer Applications)
SEMESTER – VI
Web Technologies 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.

1. Write a HTML program using basic text formatting tags, <p>, <br>, <pre>.
2. Write a HTML program by using text formatting tags.
3. Write a HTML program using presentational element tags <b>, <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
4. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
5. Write a HTML program using different list types.
6. Create a HTML page that displays ingredients and instructions to prepare a recipe.
7. Write a HTML program using grouping elements and .
8. Write a HTML Menu page for Example cafe site.
9. Write a HTML program using images, audios, videos.
10. Write a HTML program to create your time table.
11. 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.
12. Write a HTML program to create frames and links between frames.
13. Write a HTML program to create different types of style sheets.
14. Write a HTML program to create CSS on links, lists, tables and generated content.
15. Write a HTML program to create your college web site using multi column layouts.
16. Write a HTML program to create your college web site using for mobile device.
17. Write a HTML program to create login form and verify username and password.
18. Write a JavaScript program to calculate area of rectangle using function.
19. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
20. Write a JavaScript program using switch case?
21. Write a JavaScript program to print multiplication table of given number using loop.
22. Write a JavaScript programs using any 5 events.
23. Write a JavaScript program using JavaScript built in objects.
24. Write a JavaScript program to create registration Form with Validations.
25. Write a XML Program to represent Student Data using DTD.
26. Write a XML Program to represent Data using XML Schema Definition.

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BA(Computer Applications)
SEMESTER – VI

Information Security and Cyber Laws

(Project/Optional)

Theory	**3 Hours/Week**	**3 Credit**	**Internal marks = 15**
Practical	**3 Hours/Week**	**1 Credit**	**External Marks = 60**

Unit – I

Introduction to Information System and Security: Computer Networks, Internet, Protocol, Network Core, Information System, Types of IS, Information Security, Need for Information Security, Information Assurance, Cyber security, Tools of the attacker, Scanning and spoofing, password cracking, malicious software, session hijacking.

Unit – II

Introduction to Cryptography and Applications: Introduction to Application Security, Data Security Considerations, Security Technologies, Important terms, Threat, Flaw, vulnerability, Attack, Cipher, Private Key Cryptography, Substitution Cipher (Ceaser), Transposition (Rail-Fence),Security Threats to E-Commerce, E-Cash and Electronic Payment System, Credit/Debit/Smart Cards, forensics, Digital Signature

Unit – III

Introduction to Security Policies and Cyber Laws: Need for an Information Security Policy, Information Security Standards – ISO, Introducing Various Security Policies and Their Review Process, Introduction to Indian Cyber law, Objective and Scope of the IT Act, 2008 , Intellectual Property Issues, Overview of Intellectual-Property- Related Legislation in India, Patent, Copyright, Software License

Text Book:

1. Introduction to Information Security and Cyber laws by SuryaPrakashTripathi
2. Dr. Surya Prakash T, Ritendra G, Praveen Kumar S, KLSI, Introduction to information security and cyber laws (Dreamtech Publication)
3. S. Anderson, Ross, Security Engineering
4. G.R.F. Snyder, T. Pardoe, Network Security
5. Mark Stamp, Information Security: Principles and Practice
6. Basta, W.Halton, Computer Security: Concepts, Issues and Implementation
7. Mark S. Merkow, Jim Breithaupt, Information Security: Principles and Practice

FACULTY OF SCIENCE
BA (Computer Applications)
SEMESTER – VI
Information Security and Cyber Laws Lab
(Project/Optional)

Project **3 Hours/Week** **1 Credits Marks: 25**

- In the external lab examination student has to execute the project with compilation and deployment steps are necessary.
- External Vice-Voce is compulsory.

1. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
2. Use of Password cracking tools: John the Ripper, Ophcrack.
3. Verify the strength of passwords using these tools.
4. Perform encryption and decryption of Caesar cipher. Write a script for performing theseoperations.
5. Perform encryption and decryption of a Rail fence cipher. Write a script for performingthese operations.
6. Demonstrate sending of a protected word document.
7. Demonstrate sending of a digitally signed document.
8. Demonstrate sending of a protected worksheet.

FACULTY OF SCIENCE

UG (BA) Scheme of Examinations

BA (Computer Applications)

(CBCS 2019-2020)

Elaborations

Paper	Credits	Theory Exam		Practical Exam
		University Exam	Internal Exam	
DSC	4+1	80 Marks	20 Marks	25 Marks
DSE	4+1	80 Marks	20 Marks	25 Marks
SEC	2	40 Marks	10 Marks	No Practical
GE	4	80 Marks	20 Marks	No Practical
AECC	2	40 Marks	10 Marks	No Practical
P/O	3+1	60 Marks	15 Marks	25 Practical

DSC – Discipline specific core course

DSE – Discipline Specific Elective Course
SEC – Skill enhancement Course
GE – Generic Elective
AECC - Ability Enhancement Compulsory
P/O -Project/Optional

FACULTY OF SCIENCE
BA(Computer Applications)

Model Question Paper

3 Hours Max Marks -80 Credits -4

PART -AAnswer 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

FACULTY OF SCIENCE
BA(Computer Applications)

Internal Exam (Theory)

Time:1Hr. **Maximum marks:20**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 markseach.
- Average of the scores of two exams should be taken intoaccount.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of half markeach,
  - 10 FIBs (Fill in the Blanks) of half markeach
  - 5 SAQs (short answered questions) of one markeach
  - Totaling 15marks.
  - 5 marks meant for assignment.

FACULTY OF SCIENCE
BA(Computer Applications)

Practical Question Paper

3 HoursMax Marks -25 Credits -1

Answer any Two 6 X 2 = 12 MARKS

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

Viva - 8 Marks

Record – 5 Marks

FACULTY OF SCIENCE
BA(Computer Applications)

2 Credit (SEC) Paper

University Exam (Theory)

Time:2Hrs. **Maximum marks:40**

Section – A(4 X 4M = 16 Marks)

Answer any four of the following six questions. Each carries four marks.

Q1. From Unit 1
Q2. From Unit 1
03. From Unit 1
Q4. From Unit 2
Q5. From Unit 2
06. From Unit 2

Section – B (2 X 12M = 24 Marks)
Answer all the following two questions. Each carries fifteen marks.

Q09. (a) or (b) from Unit 1
Q10. (a) or (b) from Unit 2

Internal Exam (Theory)

Time: 1/2Hr. **Maximum marks:10**

- One internal exam at the end of the semester, of half an hour duration is to be conducted carrying 10marks.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of one markeach,
    No assignment isrequired.

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BA(Computer Applications)

Model Question Paper for Semester VI (Project /optional)only

3 Hours Max Marks -60 Credits -3

PART -AAnswer any Six questions in part –A 6X4 M = 24Marks

UNIT- I 1
2
3

UNIT- II 4
5
6

UNIT- III 7
8
9

Part – B **Answer all Questions 12MX3 = 36 Marks**

UNIT- I 13
Or
14

UNIT- II 15
Or
16

UNIT- III 17
Or
18

Internal Examfor Semester VI (Project /optional) (Theory)

Time:1Hr. **Maximum marks:15**

- Two internal exams (one at the middle of the semester and the other at the end) of one-hour duration are to be conducted carrying 15 markseach.
- Average of the scores of two exams should be taken intoaccount.
- Following is the examinationpattern.
  - 10 MCQs (multiple choice questions) of half markeach,
  - 10 FIBs (Fill in the Blanks) of half markeach
  - 5 SAQs (short answered questions) of one markeach
  - Totaling 15marks.
  - No assignment required.

FACULTY OF SCIENCE
BA (Computer Applications)

Practical Question Paper(Project /optional)

3 Hours Max Marks -25 Credits -1

Answer any Two 6 X 2 = 12 MARKS

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

Viva - 8 Marks

Record – 5 Marks

MOOCs [Massive Online Open Courses] Free Resources

E-Learning:

- NPTEL :nptel.ac.in [Core Subjects Certification]
- C++INSTITUTE :cppinstitute.org [C++ Certification]
- ORACLEEDUCATION :education.oracle.com [Java, DBMS Certification]
- BIG DATAUNIVERSITY :bigdatauniversity.com [Big Data Certification]
- COURSERA :coursera.org [Core Subjects Certification]
- CODEACADEMY :codecademy.com [Coding Certification]
- KHANACADEMY :khanacademy.org [Core Subjects Certification]
- PIXAR INABOX :khanacademy.org/partner-content/pixar
- VIDEOLECTURES :videolectures.net
- YOUTUBEEDU :plus.google.com/+YouTubeEDU/posts
- DISNEYRESEARCH :disneyresearch.com
- ALISON :alison.com [Core SubjectsCertification]
- INTERNETARCHIVE :archive.org

Freeware:

- SCILAB : scilab.org [MatLab Equivalent]
- GEOGEBRA :geogebra.org [Software for Class Room Teaching]

Search Engine:

- WOLFRAMALPHA :wolframalpha.com [Computing Engine]
- CITESEER :citeseerx.ist.psu.edu [Searching Research Articles]
- DOAJ :doaj.org [Open Access to Journals]

B.A./B.Com./B.Sc./B.B.A. (CBCS) Syllabus 2019– 2020

COURSE NO. AECC 2

BASIC COMPUTER SKILLS

OBJECTIVE:

The objective of this courses to enable student to understand the basic computer concepts related to day to day office environment.

UNIT – I: INTRODUCTION TO COMPUTERS

Introduction to Computation and Computers, components of computer CPU, Types of Memory, Types of computers – Software, Hardware Definition- Input devices (keyboard, MICR, OCR, OMR), Graphic input devices (Mouse, Graphic Tablet, Joystick), output devices (Printers - Impact & non-impact printer)- Introduction to Software, classification of software, Evolution of operating system, functions of operating system, Types of operating system.

UNIT - II: INTRODUCTION TO INFORMATION SYSTEM, WORD PROCESSING AND PRESENTATION:

Data & information, System, types of System, information system, Types system information system – definition, Application of information system, ethical and social issues in information system.

Word Processing -Creating, editing and saving documents, formatting features of word processing, working with tables and graphs, preview & printing documents;

Presentation – Creating, Editing and Saving shade shows, Templates, Animations – Brelitin Customer made – Preparing slideshows.

SUGGESTED BOOKS :

1. Computer fundamentals, 2e, A.K.Sharma, Universiy Press.
2. Introduction to computers , Tata Mc Graw Hill, Alexis Leon & Mathews Leon
3. Introduction to information technology, 2e, John Wiley & sons, Turban, Rainer, Potter
4. Computer fundamentals, Pearson, Anita Goel
5. Fundamentals of computers, Raja Raman, PHI
6. Basics of Computer Skills, Tulasi Ram, 2019, HPH