

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A/B.COM/BBA/B.SC ENGLISH II YEAR

SEMESTER – IV

PAPER – IV: ENGLISH

Theory:

3 Hours/Week;

Credits: 3

Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence

Published by Orient BlackSwan

UNIT I: RENEWABLE AND NON-RENEWABLE RESOURCES

1. Jadav Payeng
2. “The Tame Bird was in a Cage” by Rabindranath Tagore
3. Reported Speech
4. Commonly Confused Words

UNIT II: ECOSYSTEMS AND ENVIRONMENTAL POLLUTION

1. “Climate Change and Global Warming” by Michael Shafer
2. “A Requiem for Earth” by O.N.V.Kurup
3. Conditionals
4. Suffixes

UNIT III: CONSERVATION AND BIODIVERSITY

1. “The Ungrateful Man: A Conversation between Trees ” by Swathi Shenoy
2. “The Felling of the Banyan Tree” by Dilip Chitre
3. Common Errors
4. Collocations

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. ECONOMICS II Year
SEMESTER – IV

PAPER – IV INDIAN ECONOMY
(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module I: Structure of the Indian economy:

Indian Economy at the time of Independence - Changes in the Composition of National Income and Employment - Natural Resource base - Land, Water, Forest, Mineral and Metal Resources - Population: Size, Growth and Composition and their implications for Indian economy.

Module II: Indian Agriculture:

Importance of Agriculture - Trends in Agricultural Production and Productivity. Land Reforms - Green Revolution - Agricultural Finance - Agricultural Marketing - Agricultural Price Policy - Food Security in India.

Module III: Indian Industry:

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

Module IV: NIIT AAYOG:

Evolution of Planning Commission – Failures and Demise of planning commission - Genesis of NITI Aayog: structure and composition of NIIT Aayog, Functions and objectives of NIIT Aayog, Differences between NIIT Aayog and planning commission - NIIT Aayog role in strategic planning and development.

Module-V Service Sector and Economic Reforms:

Concept, Components, Trends and Role of Service Sector - Infrastructural Development-Transport, Banking, Insurance, and Information Technology - Economic Reforms-Liberalization, Privatization, and Globalization- A critical evaluation.

References:

- | | |
|----------------------|---|
| 1. SK Misra and Puri | : Indian Economy, Himalaya Publishing House. |
| 2. Ishwar C Dhigra | : The Indian Economy: Environment and Policy,
SC Chand & Sons, New Delhi |
| 3. KPM Sundaram | : Indian Economy |
| 4. PK Dhar | : Growing Dimensions of Indian
Economy, Kalayani Publisher. |

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - IV
History of India (1858-1964 CE)
(BA 405) Discipline Specific Course - Paper – 1D
(With Effect from 2020-2021)

- 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-Religious Reform Movements - Brahma Samaj - Arya Samaj – Theosophical Society - Ramakrishna Mission - Aligarh Movement; Anti-Caste Movements - Jyotibha Phule - Narayana Guru - Periyar Ramaswamy Naicker and Dr. B.R. Ambedkar.
- Module-III: Factors for the Rise of Nationalism - Formation of Indian National Congress – Three Phases of Freedom Struggle: Moderate Phase, Extremist Phase and Gandhian Era - Non-Cooperation, Civil Disobedience and Quit India Movement; Indian National Army and Subhash Chandra Bose.
- Module-IV: Revolutionary Movement: Gadhar Party - Bhagath Singh - Chandra Sekhar Azad and Others; Left-Wing Movement - Rise of Socialist and Communist Parties - Peasant and Workers Movements.
- Module-V: Emergence of Communal Politics and Mohd. Ali Jinnah – Prelude to Partition of India - Sardar Vallabhai Patel and Integration of Princely States into Indian Union - Republic of India - Jawaharlal Nehru and His Policies.

Recommended Books:

- A.R. Desai, Social Background of Indian Nationalism, Popular Prakashan Pvt. Ltd., Mumbai, 2002.
- Bipan Chandra (et al.), India's Struggle for Independence, Penguin Books, Kolkata, 2001.
- Bipan Chandra, A History of Modern India. Kenneth Jones, Social and Religious Reform Movements in India
- R.C. Majumdar (ed.), A History and Culture of India People, Bharatiya Vidya Bhavan Series (Relevant Vols.).
- R.C. Majumdar, H.C. Raychaudhuri & K. Datta, An Advanced History of India, Macmillan, Madras, 1995.
- S. Gopal, Jawaharlal Nehru - A Biography.
- Sumit Sarkar, Modern India (1885-1947), Macmillan India Ltd., Madras, 1995.
- Tarachand, A History of the Freedom Movement in India, Four Volumes.
- V.D. Mahajan, Modern Indian History.
- Telugu:
- B. Vijaya Bharati, Mahatma Jyothirao Phule (Translation), Hyderabad Book Trust, 2004.
- Bhoopati Laxminarayana Rao, Bharatadesa Swathantra Charitra (Part-3), (Translation), Telugu Academy, 2005.
- Bipan Chandra, Adhunik Bharatadesa Charitra (Translation Sahavasi), Hyderabad Book Trust.
- J. Durga Prasad and Others, Bharatadesa Charitra (upto 1526-1964 A.D.), Telugu Academy, 2006.
- V. Rama Krishna Reddy, Bharatadesa Charitralo Mukhya Ghattalu, Telugu Academy, 2005.

Semester-IV: DSC 403: State Administration

Unit-I: State Administration: Structure and Processes

- a. Administrative History of Telangana
- b. Political Executive at State Level, Governor & Chief Minister

Unit-II: State Administrative Mechanisms

- a. State Secretariat & Directorates
- b. Local Governance & District Administration in Telangana

Unit- III: Emerging Issues

- a. Administrative Reforms: Need and Importance
- b. 2nd Administrative Reforms Commission – Features and Recommendations

Unit-IV: Technology and Integrity in Government

- a. e-Government
- b. Values and Ethics in Administration

Unit-V: Control over Administration

- a. Redressal of Citizen Grievances: Transparency, Accountability and Right to Information Act
- b. Administrative Accountability: Legislative and Judicial Control

Expected Outcomes

After study of the course, the learner should be able to:

- discern the connects and disconnects between structure, purpose and process and results in Indian Administration;
- Understand the Indian Administration role as the main instrument of State to achieve its developmental goals;
- Appreciate the varying historical, socio-economic, political and other conditioning factors that gave Indian Administration its distinct nature to the learner

References:

- Bidyut Chakravarty, Prakash Chand (2019), Indian Administration: Evolution and Practise, Sage Publications
Krishna K.Tummala (1996), Public Administration in India, Allied Publishers Limited.
Kuldeep Mathur (2019), Recasting Public Administration in India: Reform, Rhetoric, and Neoliberalism, Oxford University Press
M.Sharma (2004), Indian Administration, Anmol Publishers.
Meredith Townsend (2019), The Annals of Indian Administration, Volume-3, Creative Media Partners.
Parmar, A., A Study of Kautilya's Arthashastra, Delhi, Atma Ram & Sons, 1987
Radha Krishna Sapru (2019), Indian Administration: Foundations of Governance, Sage Publications.
Ramesh K Arora, Rajni Goyal (2018), Indian Public Administration: Institutions and Issues, New Age International Publishers.
S.R.Maheswari (2004), Indian Administration, Orient Longman Publishers Limited.
Siuli Sarkar (2018), Public Administration in India (Second Edition), PHI Learning Private Limited.
Vaman Govind Kale (2010), Indian Administration, Kessinger Publications.



KAKATIYA UNIVERSITY - WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. II YEAR SEMESTER – IV
SKILL ENHANCEMENT COURSE - III

FORMS OF JOURNALISTIC WRITING
(SEC – III Common to all Social Sciences)

Theory: 2 Hours/Week; Credits: 2 Marks: 50 (Internal: 10; External: 40)

Objectives:

- *To impart journalistic skills to the students.*
- *To enable and inspire the students to write for newspapers.*
- *To introduce different forms of writing.*

Learning Outcomes:

After completion of the course, the student will be able to:

- *Identify different types and elements of the news.*
- *Understand subjectivity and objectivity in writing.*
- *Write in different forms..*

Unit 1

News – Soft and Hard news; News Writing – Spot news/Live news, in depth, investigative, interpretative. Structure/Format – Inverted, Hour glass, Stacked; Elements – Objectivity, Fairness, Balance, Attribution, Quotations, partial quotations, full quotations, direct and indirect quotes; basics of writing for news websites, portals.

Unit 2

Subjectivity in writing – features-types (interviews, profiles, historical features, travelogues, how to do features, middles), articles, edit page articles, editorials, reviews, criticism, columns, blogs.



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Under Graduate Courses (Under CBCS 2020 – 2021 onwards)
B.A. II YEAR SEMESTER – IV
SKILL ENHANCEMENT COURSE - IV

RURAL POLITICS AND LEADERSHIP TRAINING

(SEC – III Common to all Social Sciences)

Theory: 2 Hours/Week; Credits: 2 Marks: 50 (Internal: 10; External: 40)

Syllabus

Course: Rural Politics and Leadership

Unit I:

1. Grass root Politics and Democracy
2. Rural Institutions, Governance and Politics
3. Rural Politics, Regional Politics and National Politics-Linkages

Unit II:

1. Rural Leadership – Nature and Characteristics
2. Social Bases of Rural Leadership
3. Gender and Rural Leadership
4. Rural Leadership, Regional Leadership and National Leadership: Linkages.

Suggested Readings:

1. A. R. Desai, Rural Sociology in India, Sage.
2. Lucia Michelutti, The Vernacularisation of Democracy, Routledge.
3. Ch Balaramulu, Marginalised Communities and Decentralised institutions in India, Routledge.
4. B. S Bhviskar, Two Views of Social Change in Rural India, Sage.
5. K. L. Sharma, Caste, Social Inequality and Mobility in Rural India.
6. Ram Ahuja, Social Problem in India
7. Madan, The Village in India
8. Niraja Gopal Jayal, The Oxford Companion to Politics in India, OUP
9. Chatterjee Partha, State and Politics in India, OUP.


This is for your information and necessary action

Thanking you

Yours faithfully

Copy to

1. Academic Branch


2/16/24

Prof. G. Veeranna
M.A.M.Ed.M.Phil.Ph.D
HEAD & CHAIRMEN BOS
Department of Political Science
Kakatiya University, Warangal
Telangana State - 506 009

Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC3 (a): PRACTICE OF GENERAL INSURANCE

Objective: To make the student understand general policies and accounting.

UNIT I: GENERAL INSURANCE POLICIES:

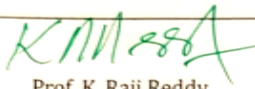
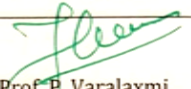







Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability, Personal Accident and Specialty Insurance, Engineering and other insurance.

UNIT II: UNDERWRITING, PREMIUMS, CLAIMS AND INSURANCE RESERVES AND ACCOUNTING:

Concept of Underwriting—Underwriting Process—Risk sharing and its methods—risk management and steps involved in it—Rating and Premiums—concept of soft and hard markets—Concept of Claim-understanding the process of claim management—claims fraud and fraud prevention—Insurance reserves and accounting—different types of reserves of insurance companies—reserving process followed by insurance companies—Insurance accounting.

SUGGESTED READINGS:

1. Practice of General Insurance - Insurance Institute of India.
2. Practice of General Insurance - D.S. Vittal-HPH.
3. Principles & Practice of Insurance- Dr. P. Periasamy - HPH.
4. Risk Management: A Publication of the Insurance Institute of India.
5. Practice of General Insurance: Dr. V. Padmavathi, Dr. V. Jayalakshmi, PBP.
6. Insurance Theory and Practice: Tripathi PHI
7. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
8. Risk Management and Insurance : Trieschman, Gustavson and Hoyt
9. South Western College Publishing Cincinnati, Ohio.

 Prof. K. Raji Reddy	 Prof. P. Varalaxmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somaiah	 Dr. S. Narayana Swamy
 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC3 (b): SOCIAL MEDIA MARKETING

Objective: To make students to understand the Social Media marketing.

UNIT I: SOCIAL MEDIA MARKETING:



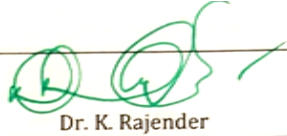





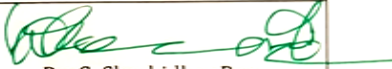
Building an online community – Understanding Social Media Marketing – Marketing and building presence on Facebook – Marketing and building presence on Twitter – Employer branding on LinkedIn

UNIT II: ONLINE ADVERTISING ON SOCIAL MEDIA:

Facebook advertising overview – How Facebook ads work – How to create Facebook ads – Additional advertising options and best practices for Facebook advertising – Marketing and monetizing on YouTube – Customize your YouTube Channel – Video optimization on YouTube – YouTube Analytics

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Tuten: Social Media Marketing, sage
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Social Media Marketing All-In-One for Dummies By Jan Zimmerman and Deborah Ng
7. Facebook Growth Hacking: How to Correctly Set Up and Maintain Your Facebook Presence and Gain Massive Amounts of Fans (Social Media Marketing) by Jeff Abston
8. Youtube Influencer: How To Become a Youtube Influencer, Why Influencer Marketing Matters, and How To Monetize Your Channel by Jeff Abston

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B.Com. IV Semester - Paper SEC-3 (c): BUSINESS INTELLIGENCE

Objective: To make students to understand the Business Intelligence.

UNIT I: BUSINESS INTELLIGENCE USING POWER BI:

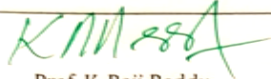
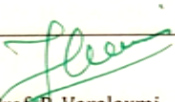







Getting data in Power BI: Overview of Power BI Desktop - Connect to data sources in Power BI Desktop - Clean and transform data with the Query Editor - advanced data import and cleaning techniques - Cleaning irregularly formatted data - Modeling the data: Manage data relationships - Create calculated columns - Optimizing data models - Create calculated measures - Create calculated tables - Explore time-based data - Exploring data: Introduction to the Power BI service - Turn business intelligence data into data insights

UNIT II: POWER BI AND EXCEL:

Using Excel data in Power BI: Uploading an Excel workbook with a simple table into Power BI - Upload workbooks created with Excel Power Pivot and Power View - Publishing and sharing: Publish Power BI Desktop reports - Print and export dashboards and reports - Manually republish and refresh data - Power BI Mobile - Create groups in Power BI - Publish to web

SUGGESTED READINGS:

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Create space Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; Teo Lachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC4 (a): REGULATION OF INSURANCE BUSINESS

Objective: To equip the students with the knowledge regarding Insurance Business Regulations.

UNIT I: INSURANCE LEGISLATION IN INDIA:


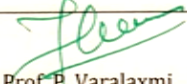


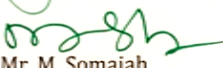




History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS-insurance repositories-TPAs—Role and duties of surveyors—Origin and development of micro-insurance—regulation of ULIPs— pension schemes—money laundering—KYC—methods of receipt of premium—Exchange control regulations relating to General and Life Insurance—IRDA Health Insurance Regulations, 2016—Health plus life combo products.

UNIT II: POLICY HOLDERS RIGHTS OF 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.

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

**B.Com. IV Semester - Paper SEC4 (b): SEARCH ENGINE OPTIMIZATION AND
ONLINE ADVERTISING**

***Objective:** To make students to understand the Search engine optimization and online advertising.*

UNIT I: SEO FOUNDATIONS AND SEO KEYWORD STRATEGY:

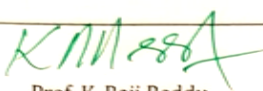
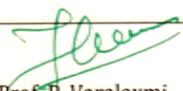





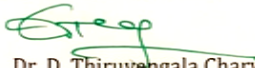
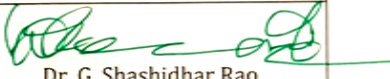
Understanding SEO – Keyword strategy – Content optimization – Long-term content planning – Link-building strategies – Measuring SEO effectiveness – SEO for Ecommerce – Local search – Mobile SEO

UNIT II: GOOGLE ADWORDS AND REMARKETING:

Pay-Per-Click Advertising – Getting started with Google Adwords – Advertising tracking – Key Google Adwords strategies – Remarketing with Google – Budget and ROI tips – B2B Remarketing Campaigns

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. SEO for Dummies, 6th Edition, by John Kent
6. SEO Fitness Workbook: 2018 Edition: The Seven Steps to Search Engine Optimization Success on Google By Jason McDonald
7. The Art of SEO: Mastering Search Engine Optimization By Eric Enge, Stephan Spencer and Jessie Stricchiola
8. Google Adwords for Beginners: A Do-It-Yourself Guide to PPC Advertising By Cory Rabazinsky, 2015

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper SEC-4 (c) DATA VISUALIZATION & STORYTELLING

Objective: To make students to understand the Data visualization & Storytelling.

UNIT I: DATA VISUALIZATION USING POWER BI:

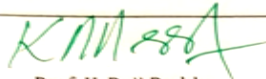
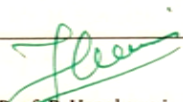





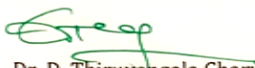
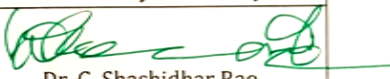
Visuals in Power BI: Bar charts – Pie charts – Treemaps – Combination charts – Slicers – Map visualizations – Matrixes and Tables – Scatter charts – Waterfall and funnel charts - Gauges and single-number cards - Modifying visuals and reports: Modify colors in charts and visuals – Add shapes, text boxes, and images to reports - Page layout and formatting - Other Data Visualization features and options: Group interactions among multiple visualizations on the same report page - Summarization and category options – Z-order - Visual hierarchies and drill-down

UNIT II: TELLING STORIES WITH DATA:

Data Storytelling: Apply storytelling principles to business analytics - Improve business analytics presentations through storytelling - Creating high-impact reports and presentations: Guidelines and best practices

SUGGESTED READINGS:

1. Introducing Microsoft Power BI; Alberto Ferrari, Marco Russo; Microsoft Press
2. Introduction to Microsoft Power Bi: Bring Your Data to Life; M.O. Cuddley; Createspace Independent Pub
3. Applied Microsoft Power BI: Bring your data to life; Teo Lachev; Prologika Press
4. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
5. Microsoft Power BI Dashboards Step by Step, Errin O'Connor, Microsoft Press
6. Storytelling with Data: A Data Visualization Guide for Business Professionals; Cole Nussbaumer Knaflic; Wiley

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 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: INCOME TAX

Objective: To acquire conceptual and legal knowledge about Income Tax provisions relating to computation of Income from different heads with reference to an Individual Assessee.

UNIT-I: INTRODUCTION:

Direct and Indirect Taxes – Canons of Taxation - Features and History of Income Tax in India – Definitions and Basic Concepts of Income Tax: Assessee – Deemed Assessee – Assessee-in-default – Assessment Year – Previous Year - Person – Agricultural Income – Heads of Income – Gross Total Income – Total Income -- Incomes Exempt from Tax. Residential Status and Scope of Total Income: Meaning of Residential Status – Conditions applicable to an Individual Assessee – Incidence of Tax – Types of Incomes (Theory only)

UNIT-II: INCOME FROM SALARIES:

Definition of Salary – Characteristics of Salary – Computation of Salary Income: Salary u/s 17(1) – Annual Accretion – Allowances – Perquisites – Profits in lieu of Salary – Deductions u/s. 16 – Problems on computation of Income from Salary

UNIT-III: INCOME FROM HOUSE PROPERTY:

Definition of House Property – Exempted House Property incomes– Annual Value – Determination of Annual Value for Let-out House and Self-occupied House – Deductions u/s.24 – Problems on computation of Income from House Property

UNIT-IV: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

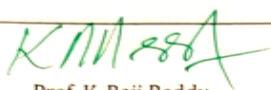
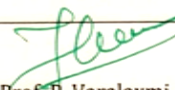





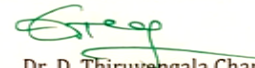
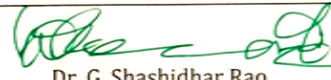
Definition of Business and Profession – Procedure for computation of Income from Business – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Problems on computation of Income from Business. Income from Profession: Rules– procedure – problems on computation of Income from Profession.

UNIT-V: CAPITAL GAINS AND INCOME FROM OTHER SOURCES:

Introduction - Meaning – Basis of charge – Short term and Long term Capital Assets – Transfer – Deemed Transfer –Determination of Cost of Acquisition – Procedure for computation of Long-term and Short-term Capital Gains/Losses – Exemptions in respect of certain Capital Gains u/s. 54 – Problems on computation of capital gains – Income from Other Sources - General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Winnings from lotteries Puzzles, cross world puzzles, Races – Interest on Securities – Gifts received by an Individual – Casual Income – Family Pension – Rent received on let out of Furniture- Plant and Machinery with/without Building – Deductions u/s. 57. (Theory only)

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Taxation: Dr. M.N. Ravi, PBP.
3. Direct Taxes Law & Practice: Dr. Vinod K. Singhanian & Dr. Kapil Singhanian, Taxmann
4. Income Tax: B.B. Lal, Pearson Education.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: EXCEL FOUNDATION

Objective: Students will learn how to start working with M S Excel right from basics to Tables, Templates and Printing of their work.

UNIT-I: INTRODUCTION TO EXCEL:

Workbooks and Worksheets, Moving Around a Worksheet, Ribbon tabs, Types of commands on the Ribbon, Using Shortcut Menus, Working with Dialogue Boxes, Task Panes, Getting started on your worksheet, Creating a chart, Printing your worksheet, Saving your worksheet, Exploring Data Types, Modifying Cell Contents, Deleting, Replacing, Editing of a cell. Some handy data entry techniques, Number Formatting.

UNIT-II: WORKSHEET OPERATIONS:

Moving and resizing windows, Switching among windows, Activating a worksheet, Adding, Deleting a worksheet, Changing a sheet tab color, Rearranging your worksheets, Hiding, un-hiding a worksheet, Worksheet View, Comparing sheets side by side, Selecting ranges, complete rows and columns, noncontiguous ranges, multi-sheet ranges, special types of cells. Copying or Moving Ranges. Paste Special dialogue box, Adding comments to cells.

UNIT-III: TABLES AND FORMATTING:

Creating a Table, Changing the Look of a Table, Navigating in a Table, Selecting parts of a Table, Adding, Deleting new rows or columns, Moving a Table, Working with the Total Row, Removing duplicate rows from a table. Sorting and filtering a table, Converting Table into Range. Formatting tools on the Home tab, Mini Toolbar, Fonts, Text Alignment, Wrapping text to fit a cell, Colors and Shading, Borders and Lines. Naming Styles.

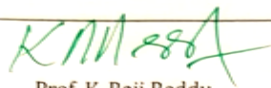
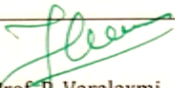


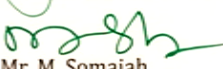


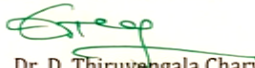

UNIT-IV: EXCEL FILES & TEMPLATES:

Creating a New Workbook, Filtering filenames, Saving and Auto Recovery, Password-Protecting a Workbook, Recovering unsaved work, Protect Workbook options, Checking Compatibility. Creating a Excel Templates, Modifying a template, Custom Excel Templates, Default Templates, Editing your Template, Resetting the default workbook, Saving your Custom Templates, Getting ideas for creating Templates.

UNIT-V: PRINTING YOUR WORK: Normal, Page Layout, Page Break View, Choosing your printer, Specifying what you want to print, Changing Page Orientation, Specifying paper size, Adjusting page margins, Inserting a page break, Removing manual page breaks, Printing Row and Column Titles, Scaling printed output, Header or Footer Options, Preventing certain cells, Objects from being printed, Creating Custom Views of your Worksheet. Creating PDF files. Introducing Excel:

SUGGESTED READINGS:

1. Excel 2013 Bible: John Walkenbach, Wiley.
2. Microsoft Excel 2013: Data Analysis and Business Modeling: Winston, PHI
3. Excel Data Analysis - Modeling and Simulation: Hector Guerrero, Springer.
4. Excel Functions and Formulas: Bernd Held, BPB Publications.
5. Financial Analysis and Modeling using Excel and VBA: Chandan Sengupta, Wiley

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Kakatiya University, Warangal

Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper DSC 402: BUSINESS STATISTICS - II

Objective: to inculcate analytical and computational ability among the students.

UNIT-I: REGRESSION:

Introduction – Definition – Types – Uses - Correlation Vs. Regression - Regression Lines– Regression Equations - Using Regression Lines for Prediction.

UNIT-II: INDEX NUMBERS:

Introduction - Uses - Types - Problems in the Construction of Index Numbers - Methods of Constructing Index Numbers - Simple and Weighted Index Number (Laspeyre - Paasche, Marshall – Edgeworth) – Quantity of Volume Index Numbers – Value Index Numbers -Tests of Consistency of Index Number: Unit Test - Time Reversal Test Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers. Consumer Price Index Number – Need – Utility – Construction – Method.

UNIT-III: TIME SERIES:

Introduction –Definition – Utility - Components – Methods-Semi Averages - Moving Averages – Least Squares Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:


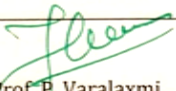


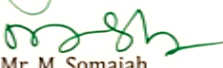



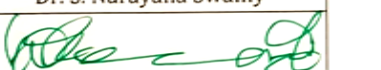
Introduction - Definition – Probability Concepts - Experiment – Types of Events - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye’s Theorem - Basics of Set Theory – Permutations & Combinations.

UNIT-V: THEORITECAL DISTRIBUTIONS:

Meaning – Importance –Types of Theoretical Distributions -Binomial Distribution: Introduction – Assumptions – Expansion – Constants -Fitting of Binomial Distribution - Poisson Distribution: Introduction – Features – Assumptions – Uses and importance – Models and Probability of Poisson Distributions – Constants - Fitting of Poisson Distribution. Normal Distribution: Concept – Properties - Importance - Central Limit Theorem - Fitting of a Normal Curve (Areas Method Only).

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson,
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Business Statistics: Theory & Application, P. N. Jani, PHI Learning
4. Business Statics – II: Obul Reddy, D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata Mc Graw Hill

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Kakatiya University, Warangal

Faculty of Commerce & Business Management,

B.Com. IV Semester - Paper DSC 403: CORPORATE ACCOUNTING

Objective: To acquire knowledge of AS-14 and preparation of accounts of banking and insurance companies.

UNIT-I: COMPANY LIQUIDATION:

Meaning – Modes - Contributory Preferential Payments – Statements of Affairs - Liquidator's Remuneration - Preparation of Liquidator's Final Statement of Account (Including problems)

UNIT-II: AMALGAMATION (AS-14):

Amalgamation: In the nature of Merger and Acquisition – Calculation of Purchase Consideration – Accounting Treatment in the books of transferor and transferee companies. (Including problems)

UNIT-III: INTERNAL RECONSTRUCTION AND ACQUISITION OF BUSINESS:

Internal Reconstruction: Accounting treatment – Preparation of final statement after reconstruction- Acquisition of business when new set of books are opened- Debtors and Creditors taken over on behalf of vendors- When same set of books are continued(Including problems)

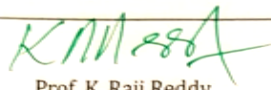
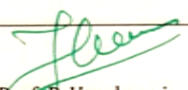







UNIT-IV: ACCOUNTS OF BANKING COMPANIES:

Books and Registers maintained – Slip system of posting – Rebate on Bills Discounted – Non-Performing Assets – Legal Provisions relating to final accounts – Preparation of Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCE COMPANIES AND INSURANCE CLAIMS: Introduction – Formats-Revenue Account–Net Revenue Account - Balance Sheet - Valuation - Balance Sheet – Net Surplus – General Insurance - Preparation of final accounts with special reference to Life Insurance - Insurance claims- Meaning – Loss of Stock and Assets – Average Clause – Treatment of Abnormal Loss - Loss of Profit. (Including problems)

SUGGESTED READINGS:

1. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
2. Accountancy–III: Tulasian, Tata McGraw Hill Co.
3. Advanced Accountancy: Arulanandam; Himalaya
4. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers
5. Advanced Accounting (Vol-II): Chandra Bose, PHI

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester -Paper DSC 403: WEB TECHNOLOGIES
(Only for B.Com (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To gain skills of usage of Web Technologies to design Web pages.

UNIT-I: INTRODUCTION:

Art of creating a web site - Markup language (HTML) – Hypertext - Formatting text - Forms & formulating instructions & formulation elements – Commenting code – Anchors - Back grounds – Images - Hyperlinks – Lists – Tables – Frames - Web design principles.

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages and dynamic web page technologies: Introduction to Dynamic HTML programming - Cascading style sheets (CSS) - Basic syntax and structure - Events handling - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT & EVENTS AND EVENT HANDLERS:

Java Script: Introduction - Client side Java script - Server side Java script - Core features - Data types and variables – Operators - Expressions and statements – Functions – Objects – Array - Date and math related objects - Document object model - Event handling.

Events And Event Handlers: General information about Events – Event – OnAbort – OnClick - Ondbl click - On drag drop – Onerror - Onfocus - Onkey Press – Onkey Up – Onload - Onmouse Down – Onmouse Move - Onmouse Out – Onmouse Over - Onmove - Onrest – Onresize - Onselect - On submit - Onunload.

UNIT-IV: HYPER TEXT PRE PROCESSOR (PHP):

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File Uploads. Connecting to database (MySQL as reference), executing simple queries, handling results, Handling sessions and cookies.

File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML) & JSP:

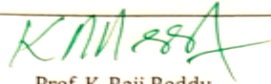
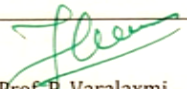







Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet - Hyperlinks in XML Document Object Model - XML Query Language.

JSP: Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT-SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:

1. Web Technology: Pradeep Kumar, HPH
2. Internet & World Wide Web How to Program: Deitel&Deitel, Pearson.
3. Web programming: Chris Bates.
4. HTML & XML An Introduction NIIT, PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson

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PAPER – IV:: WAVES AND OPTICS

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

UNIT-I:

Waves

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

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

UNIT II:

Interference

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

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

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

UNIT III:

Diffraction:

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

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

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





UNIT IV:

Polarization

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

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

Suggested books

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



PAPER – IV:: WAVES AND OPTICS
PRACTICALS

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

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

Suggested Books

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





KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2019 - 2022)

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

SEMESTER – IV

MULTI MEDIA SYSTEMS

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

Unit - I

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

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

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

Unit - II

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

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

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

Unit - III

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

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

Unit - IV

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

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

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

Text Book:

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

References:

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

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

MULTI MEDIA SYSTEMS -LAB

Practical 3 Hours/Week 1 Credit Marks: 25

Note:

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

Example programs:

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

Implement the followings using Blender -

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

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

PYTHON – II

(Skill Enhancement Course – III)

Theory

2Hours/Week

2Credits

Unit – I

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

Unit - II

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

Text Book:

Tony Gaddis, Starting Out With Python (3e)

References:

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

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

SCI LAB – II

(Skill Enhancement Course –IV)

Theory

2Hours/Week

2Credits

Unit – I

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

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

Unit – II

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

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

Text Book:

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

References:

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

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020–2021 onwards)

B.Sc. BOTANY II Year

SEMESTER – IV

CELL BIOLOGY AND PLANT PHYSIOLOGY

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

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

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

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

UNIT-II

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

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

UNIT- III

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

UNIT- IV

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

References:

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

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020–2021 onwards)

B.Sc. BOTANY II Year

SEMESTER – IV

**CELL BIOLOGY AND PLANT PHYSIOLOGY
PRACTICAL**

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

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

ALGEBRA

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

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

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

UNIT- I

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

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

UNIT- II

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

UNIT- III

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

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

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

UNIT- IV

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

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

Text:

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

References:

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

B.Sc. Geology - II Year
Semester – IV
Paper – IV- Structural Geology and Economic Geology
(4 hrs/week) (DSC-4) Credits-4 (60 hours)

Unit-I:

Definition of structural geology. aim and objectives of the structural geology; importance of study of structures, primary and secondary structures; outcrop, attitude of beds; strike, dip and apparent dip, use of clinometer. primary structures; folds – description, nomenclature of folds, recognition of folds in the field; joints – geometrical and genetic classification of joints

Unit-II:

Faults – geometrical and genetic classification of faults, recognition of faults in the field, effects of faults on the outcrops. unconformities – definition of unconformity – types of unconformities, recognition of unconformities in the field and distinguishing the faults from the unconformities. definitions of overlap, of flap, outlier, cleavage, schistosity, foliation and lineation.

Unit-III:

Definition of economic geology. mineral resources and mineral deposits. importance of economic minerals and rocks. ore minerals, gangue minerals (gangue), industrial minerals. tenor and grade; syngenetic deposits, epigenetic deposits. classification of mineral deposits – bateman's classification modified by jensen. processes of formation of mineral deposits; endogenetic and exogenetic processes.

Unit-IV:

Study of ore deposits of gold, copper, lead, zinc, aluminum, iron, manganese, chromium, uranium and thorium, with respect to their mineralogy, mode of occurrence, origin, distribution in india and uses; distribution of industrial minerals in india for the following industries; abrasives, cement, ceramic, glass, fertilizers & chemicals, insulators)

Fossil fuels: Coal- origin and types of coal – coal deposits of India.

Oil and Natural Gas: Origin, migration and entrapment – and distribution in India, use of micropaleontology in oil exploration. Atomic Minerals: uranite, pitchblende. beach sands: monazite, ilmenite, rutile and zircon. mineral resources of Telangana

B.Sc. Geology - II Year
Semester – IV
Paper – IV-Structural Geology and Economic Geology Practicals
(3 hrs/week) (DSC-4) 45 hours (credits-1)

1. Study of topographical maps.
2. Interpretation of simple geological maps with horizontal and inclined beds, unconformity, folds and faults with reference to the topography and structure, geological succession and history. Section drawing (at least 8 maps)
3. Problems dealing with true dip and apparent dip.
4. Bore-hole data thickness and width of the outcrop and dip of the beds (At least 8 problems).
5. Megascopic study, mode of occurrence, distribution in India and uses of the following economic minerals, haematite, magnetite, pyrite, pyrolusite, psilomelane, chalcopyrite, malachite, Azurite, Bauxite, chromite, galena, sphalerite, magnesite, gypsum, asbestos, graphite, zircon, fluorite, barytes, corundum, , calcite, kyanite, sillimanite, garnet and mica.

Text books:

1. Structural Geology - Marland. P.Billings.
2. Economic Mineral Deposits Bateman, A.M. and Jensen, M.L. (1990). John Wiley
3. Indian Mineral Resources – S. Krishna Swamy

Reference books:

1. An outline of structural Geology - E.S..Hills.
2. The Geology of Ore deposits. 1. Guilbert, J.M. and Park Jr., C.F. (1986) Freeman & Co.
3. Ore Geology and Industrial minerals . Evans, A.M. (1993). John Wiley
4. Ore deposits of India their distribution and processing Gokhale, K.V.G.K. and Rao, T.C. (1978), Tata-McGraw Hill, New Delhi.
5. Industrial minerals and rocks of India. Deb, S. (1980). Allied Publishers.

Practical Model Paper

**B.Sc. (CBCS) - II Year Practical Examination
GEOLOGY
Semester-IV : Paper IV
(Structural Geology and Economic Geology)
(DSC-4)**

Credits : 1

Max.Marks:25

Time: 2 Hours

- 1) Identify the given economic minerals 1-4 and write their physical properties, chemical composition, origin, occurrence, distribution in India and uses. (4x2=8 M)
- 2) Identify the given economic minerals 5-6 and write their diagnostic properties. (2x2=4 M)
- 3) From the given geological map draw a profile along x-y section and describe the topography and geology of the area. (5 M)
- 4) Solve the given geological problem. (4 M)
- 5) Record & Viva (4 M)



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

MOLECULAR BIOLOGY AND MICROBIAL GENETICS

(PAPER – IV: Discipline Specific Course)

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

UNIT – I

1. Overview of prokaryotic and eukaryotic cells, cell size and shape, Eukaryotic and prokaryotic Cell organelles, Cell division (mitosis and Meiosis)
2. Fundamentals of genetics - Mendelian laws, alleles, crossing over, and linkage. DNA and RNA as genetic materials.
3. Structure of DNA – Watson and Crick model. Extrachromosomal genetic elements – Plasmids and transposons. Replication of DNA – Semiconservative mechanism.

UNIT – II

1. Brief account on horizontal gene transfer among bacteria – transformation, transduction and conjugation.
2. Mutations – spontaneous and induced, base pair changes, frameshifts, deletions, inversions, tandem duplications, insertions. Physical and chemical mutagens.
3. Outlines of DNA damage and repair mechanisms.

UNIT – III

1. Concept of gene – Muton, recon and cistron. One gene-one enzyme, one gene-one polypeptide, one gene-one product hypotheses.
2. Types of RNA and their functions. Outlines of RNA biosynthesis in prokaryotes.
3. Genetic code. Structure of ribosomes and a brief account of protein synthesis.

UNIT – IV

1. Types of genes – structural, constitutive, regulatory. Operon concept. Regulation of gene expression in bacteria – *lac* operon.
2. Basic principles of genetic engineering - restriction endonucleases, DNA polymerases and ligases, vectors. Outlines of gene cloning methods. Genomic and cDNA libraries.
3. General account on application of genetic engineering in industry, agriculture and medicine.

References:

1. Genes XI, Author- B. Lewin.
2. Principles of Genetics, Authors- Gardner, Simmons and Snustad.
3. Concepts of Genetics, Authors- Klug and Cummings.
4. Microbial Genetics, Authors- Freifelder.
5. Genetics, Authors- Arora and Sandhu.
6. Text of Microbiology, Authors- Ananthanarayanan and Paniker.
7. S R Maloy, D Freifelder and J E Cronan. Microbial Genetics. Jones and Barlett Publishers.

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

MOLECULAR BIOLOGY AND MICROBIAL GENETICS PRACTICAL
(PAPER – IV: Discipline Specific Course)

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

1. Estimation DNA by diphenylamine (DPA) method.
2. Estimation of RNA by orcinol method
3. Study of cell division in onion root tip (mitotic divisions)
4. Isolation of DNA from bacteria.
5. Isolation of mutants of bacteria by UV exposure.
6. Problems related to Mendelian laws mono and dihybrid cross (problems)
7. Problems related to gene interactions
8. Problems related to DNA and RNA characteristics, Transcription and Translation.

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

CELL BIOLOGY, GENETICS & DEVELOPMENTAL BIOLOGY

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

UNIT – I

1.1 Cell Biology

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

UNIT – II

2.1 Molecular Biology

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

UNIT – III


3.1 Genetics


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

UNIT – IV

4.1 Developmental Biology

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


HEAD
Department Of Zoology
University College
Kakatiya University,
WARANGAL.-506009(T.S)


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

Suggested Readings:

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



HEAD
Department Of Zoology
University College
Kakatiya University,
WARANGAL.-506009(T.S)



DR. G. SHAMITHA
Chairperson
Board of Studies
Department of Zoology & Sericulture
KAKATIYA UNIVERSITY - WGL-506009

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

CELL BIOLOGY, GENETICS & DEVELOPMENTAL BIOLOGY
PRACTICAL

Instruction: 3 hrs per week

No. of Credits: 1

I. Cytology

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

II. Genetics

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

III. Embryology

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


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


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

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

Suggested manuals:

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


HEAD
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DSC-4/Paper-4: STATISTICAL INFERENCE

[4 HPW: 4 Credits: 100 Marks (External: 80, Internal: 20)]

Unit-I

Concepts of statistical hypotheses: Null and Alternative hypothesis, Critical region, two types of error, Level of significance and Power of a test, One and two tailed tests, test function (non-randomized and randomized), Statement and Proof of Neyman-Pearson's fundamental lemma for Randomized tests, Examples in case of Binomial, Poisson, Exponential and Normal distributions and their power of the test functions.

Unit-II

Large sample tests: Large sample tests for single sample mean, difference of means, single sample proportion, difference of proportions and difference of standard deviations. Fisher's Z-transformation for population correlation coefficient(s) and testing the same in case of one sample and two samples, Definition of "Order Statistics" and their distributions (statements only).

Unit-III

Tests of significance: Tests based on χ^2 distribution, χ^2 -test for specified variance, goodness of fit and test for independence of attributes (rxs, 2xk and 2x2 contingency tables). Tests of significance based on student's t distribution, t-test for single sample specified mean, difference of means for independent and related samples, sample correlation coefficient, F-test for equality of population variances.

Unit-IV

Non-parametric tests: Various non-parametric tests. their advantages and disadvantages, comparison with parametric tests, Measurement scale: nominal, ordinal, interval and ratio, Use of Central Limit Theorem in testing, one sample runs test, sign test and Wilcoxon-signed rank test (single and paired samples). Two independent sample tests: Median test, Wilcoxon-Mann-Whitney U-test, Wald Wolfowitz's runs test. Use of central limit theorem in testing.

References:

1. V. K. Kapoor and S. C. Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. Sanjay Arora and Bansilal: New Mathematical Statistics, Satya Prakashan, New Delhi
3. Hogg and Craig : Introduction to Mathematical statistics, Prentice Hall
4. Parimal Mukhopadhyay : Mathematical Statistics, New Central Book agency.



KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS AY: 2020-2021 onwards)
B.Sc. STATISTICS
II Year: Semester-IV

Practical-4: STATISTICAL INFERENCE

[3 HPW, Credits 1 and Marks 25]

Part-A (Using Calculator)

1. Large sample tests for mean(s), proportion(s), Standard deviation(s) and correlation coefficient.
2. Small sample tests for single mean and difference of means and correlation coefficient.
3. Paired t-test.
4. Small sample test for single and difference of variances.
5. χ^2 – test for goodness of fit and independence of attributes.
6. Nonparametric tests for two independent samples (Median test, Wilcoxon-Mann-Whitney U-test, Wald - Wolfowitz's runs test)

Part-B (Using MS-Excel)

7. Use of Look up and Reference functions for data analysis.
8. Creating and assigning Macros.
9. Small sample tests for mean(s), paired t-test and correlation coefficient using MS Excel.
10. Small sample test for single and difference of variances using MS Excel.
11. χ^2 – test for goodness of fit and independence of attributes using MS Excel.
12. Nonparametric tests for single and related samples (sign test and Wilcoxon signed rank test) and one sample runs test.

Note: Training shall be on establishing formulae in Excel cells and deriving the results.
The Excel output shall be exported to MS-Word for writing inferences.

Question Papers Pattern

(A) Final Examination:

KAKATIYA UNIVERSITY
B.Sc. (STATISTICS)
Theory Question Paper Pattern
Academic Years: 2019-2022

Time: 3 hours]

[Max. Marks: 80

Section - A

Answer ALL questions. All questions carry equal marks. (4Qx12m=48)

Q1. (a)

[OR] From Unit-I

Q1. (b)

Q2. (a)

[OR] From Unit-II

Q2. (b)

Q3. (a)

[OR] From Unit-III

Q3. (b)

Q4. (a)

[OR] From Unit-IV

Q4. (b)

Section - B

Answer any EIGHT questions. All questions carry equal marks. (8Qx4m=32)

Q5

Q6

Q7

} From Unit-I

Q8

Q9

Q10

} From Unit-II

Q11

Q12

Q13

} From Unit-III

Q14

Q15

Q16

} From Unit-IV

KAKATIYA UNIVERSITY
B.Sc. (STATISTICS)
Practical Question Paper Pattern
Academic Years: 2019-2022

Time: 2 hours]

[Max. Marks: 25

[Practical:15, Record:5, Viva:5]

Note: Solve any THREE problems choosing at least one from each Section

Section-A (Solve Using Calculator)

Problem. 1 }
Problem. 2 } From Part-I of Question Bank
Problem. 3 }

Section - B (Solve Using Computer Programs)

Problem. 4 }
Problem. 5 } From Part-2 of Question Bank

(B) Internal Examinations:

- 1 Two Internal exams are to be conducted and best of two internal marks is considered.
- 2 First internal exam is to be conducted after completion of Unit-I & II.
- 3 Second internal exam is to be conducted after completion of Unit-III & IV.
- 4 Internal Examination duration: 1 hr 30 min.
- 5 Internal Theory QP consists of 20 marks.
- 6 10 Short questions are to be given (5Q from each of 2 Completed units).
- 7 All TEN questions are to be answered (10QX2m=20m).

Prof A Rajendra Prasad
Chairperson, BOS in Statistics, KU

Biotechnology
B.Sc- II Year, Semester – IV
Core Course DSC-4

BIostatistics AND BIOinformatics

UNIT-I

- 1.1. Introduction to biostatistics, History and applications.
- 1.2. Concept of sampling and sampling distributions.
- 1.3. Measures of Central tendency (Mean, Median, Mode)
- 1.4. Measures of deviation (Standard deviation, Variance and Co-efficient of variation)
- 1.5. Concept of Probability, basic laws and its application to Mendelian segregation.
- 1.6. Concept of Probability distribution, Binomial and Poisson distribution, Normal distribution and their applications in biology.

UNIT-II

- 2.1 Concept of Test of hypothesis: applications of t – test statistics to biological problems/
Data – Chisquare statistics, applications in biology.
- 2.2. Simple Correlation and Regression.
- 2.3. Concept of Analysis of Variance(ANOVA) (One – Way Classification).
- 2.4. ANOVA – Two-way Classification.
- 2.5. Graphical representation of data.
- 2.6. Importance of statistics in Biology.


UNIT-III

- 3.1. Usage of MD DOS commands: Basic concepts of Internal and external commands.
- 3.2. Directory and File commands, Copying, Erasing, Renaming and Displaying files.
- 3.3. Microsoft word: Concept of toolbar, Character, Paragraph and document formatting.
- 3.4. Drawing tool bar, header, footer, document editing, page set up, short cut keys, text and Graphics.
- 3.5. Microsoft Power Point: Slide presentation, slide layout and design, custom animation, Image importing, slide transition.
- 3.6. MS Excel –Applications, Fuctions, charts, pivot tables, validations, formatting of spread Sheet.

UNIT-IV

- 4.1. Introduction to Bioinformatics, History and emergence.
- 4.2. Biological databases (Nucleic acids and Protein)
- 4.3. Introduction to genomics and proteomics.
- 4.4. Biochips.
- 4.5. Data retrieval tools (BLAST, PubMed).
- 4.6. Applications of Bioinformatics.




Chair Person
Board of Studies in Biotechnology
Kakatiya University
Warangal - 506 009 (A.P.) INDIA



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

Unit-I (Inorganic Chemistry) 15h (1 h/week)
S4-I-1: Coordination Compounds –II 11 h

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

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

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

S4-I-2: Bioinorganic Chemistry 4 h

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

Semester-IV

Unit - II (Organic Chemistry) 15h(1 hr/week)
S4-O-1: Carbohydrates 6 h

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

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

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

S4-O-2: Amino acids and proteins

5 h

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

S4-O-3: Heterocyclic Compounds

4 h

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

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

Unit III (Physical Chemistry)

15h (1 hr/week)

S4-P-1: Chemical Kinetics

11 h

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

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

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

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

S4-P-2: Photochemistry

4 h

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

Unit III (General Chemistry)

15h (1 hr/week)

S4-G-1: Theories of bonding in metals

4 h

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

S4-G-2: Carbanions-II

5 h

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

S4-G-3: Colloids & Surface Chemistry

6 h

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

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

References

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

Unit- I

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

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Unit- II

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

Unit III

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

Unit IV

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

Laboratory Course

Paper IV-

Qualitative Analysis of Organic Compounds:

45hrs (3 h/week)

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

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KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020-2021 onwards)

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

SEMESTER – IV

MULTI MEDIA SYSTEMS

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

Unit - I

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

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

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

Unit - II

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

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

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

Unit - III

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

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

Unit - IV

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

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

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

Text Book:

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

References:

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

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020- 2021 onwards)

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

SEMESTER – IV

MULTI MEDIA SYSTEMS -LAB

Practical

3 Hours/Week

1 Credit Marks: 25

Note:

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

Example programs:

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

Implement the followings using Blender -

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

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.Sc. Computer Science II Year

SEMESTER – IV

DATA BASE MANAGEMENT SYSTEMS

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

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

Unit - I

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

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

Unit - II

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

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

Unit - III

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

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

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

Unit - IV

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

Text book:

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

KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.Sc. Computer Science II Year

SEMESTER – IV

DATA BASE MANAGEMENT SYSTEMS - LAB

Practical

3 Hours/Week

1 Credit

Marks: 25

Note:

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

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

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

IssuedBooks (Accession number, Borrower)

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

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

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

Paper Details (Paper code, Name of the Paper)

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

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

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

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

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

BicycleModel(ModelNo, Manufacturer, Style) Service

(StartDate, BicycleID, EndDate)

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

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

Employee (Person_Name, Street, City)

Works (Person_Name, Company_Name, Salary)

Company (Company_Name, City)

Manages (Person_Name, Manager_Name)

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

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

Suppliers (SNo, Sname, Status, SCity)

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

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

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

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

KAKATIYA UNIVERSITY, WARANGAL
B.Sc. Programme
Under CBCS System wef A.Y: 2020-21
Second Year :: Semester - IV
BS-402/ SEC-4 (Common to all Science Courses)

Remedial Methods of Pollution - Drinking Water & Soil Fertility

[2HPW, #Credits: 2, Marks:50 (Internal:10, External:40)]

(Taught by: Chemistry Department)

UNIT I: Remedial Methods for Pollution:

Prevention and control of air pollution: Ozone hole - Causes and harm due to ozone depletion, Effect of CFC's in Ozone depletion and their replacements, Global Warming and Green-house effect, Precaution measures to control global warming, Deleterious effect of pollutants, Endangered monuments, Acid rain, Precautions to protect monuments, Sources of Radiation pollution, Chernobyl accident and its consequences. Radiation effect by usage of cell phones and protection tips, Deleterious effects of cell phone towers and health hazards.

Sources of water pollution: (i) Pollution due to pesticides and inorganic chemicals, (ii) Thermal pollution (iii) Ground water pollution (iv) Eutrophication.

Methods for control of water pollution and water recycling: Dumping of plastics in rivers and oceans and their effect on aquatic life, Determination of (i) Dissolved oxygen and (ii) Chemical Oxygen demand in polluted water, Illustration through charts (or) demonstration of experiments,

Sources of soil pollution: (i) Plastic bags (ii) Industrial and (iii) Agricultural sources, Control of soil pollution, Environmental laws in India, Environmental benefits of planting trees.

UNIT II: Drinking Water and Soil Fertility Standards and Analysis:

Water quality and common treatments for private drinking water systems, Drinking Water Standards: 1. Primary drinking water standards: Inorganics, Organics and Volatile Organic Chemicals, 2. Secondary drinking water standards: Inorganics and Physical Problems, Water testing, Mineral analysis, Microbiological tests, Pesticide and Other Organic Chemical Tests, Principle involved in Water Treatment Techniques: (i) Reverse Osmosis (ii) Disinfection methods such as Chlorination, Ultraviolet light, ozonation etc... (iii) Chemical oxidation and iv) Ion exchange (water softeners). Visit to nearby drinking water plants and interaction at sites.

Introduction to Soil Chemistry: Basic Concepts. Effect of P^H on nutrient availability, Macronutrients and their effect on plants, Carbon, Hydrogen, Oxygen, Nitrogen and Phosphorus, other macronutrients, Calcium, Magnesium and Sulfur, Micronutrients and their effect on plants, Boron ($B_4O_7^{2-}$), Copper (Cu^{2+}), Iron (Fe^{2+} , Fe^{3+}), Manganese (Mn^{2+}), Molybdenum (MoO_4^{2-}), Zinc (Zn^{2+}), Cobalt (Co^{2+}), Chlorine (Cl^-) and others. Determination of soil nitrogen by Kjeldahl method, Illustration through charts and demonstration of experiment, Visit to nearby agricultural farms and interaction with farmers, Discussion with farmers on the use of 'Soil Analysis Kits'.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

B.Sc. Programme under CBCS

With effect from the A.Y: 2019

Skill Enhancement Course- III

II Year

(Common to all Science Courses)

SEMESTER – IV

Fundamentals of Python

Theory:

2 Hours/Week;

Credits: 2

Marks: 50 (Internal: 10; External: 40)

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. 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,

Unit – II

Tuples- operations on tuples, Strings: Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings. Dictionaries and Sets: Dictionaries, Sets- operations on sets and Dictionaries. 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 in Modules. File and Exceptions: Introduction to File Input and Output, Using Loops to Process Files, Processing Records, Exceptions.

Text Book:

Tony Gaddis, Starting Out With Python (3e)

References:

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



KAKATIYA UNIVERSITY WARANGAL
Under Graduate Courses (Under CBCS AY: 2021-2022 on words)
B.Sc. DATA SCIENCE
II Year: Semester-IV

Paper – IV: Machine Learning

[4 HPW:: 4 Credits :: 100 Marks (External:80, Internal:20)]

Objectives: The main objective of this course is to teach the principles and foundations of machine learning algorithms

Outcomes:

At the end of the course the student will be able to understand

- Basics of Machine Learning and its limitations
- Machine Learning Algorithms: supervised, unsupervised, bio-inspired
- Probabilistic Modeling and Association Rule Mining

Unit-I

Introduction: What does it mean to learn, Some canonical Learning Problems, The Decision Tree Model of Learning, Formalizing the Learning Problem ID3 Algorithm [Reference1, 2]

Limits of Learning: Data Generating Distributions, Inductive Bias, Not Everything is learnable, Under fitting and Overfitting, Separation of training and test Data, Models, parameters and Hyperparameters, Real World Applications of Machine Learning **Geometry and Nearest Neighbours:** From Data to Feature Vectors, k-Nearest Neighbours, Decision Boundaries, k-means Clustering, High Dimensions [Reference 1]

Unit-II

The Perceptron: Bio-inspired Learning, The Perceptron Algorithm, Geometric Interpretation, Interpreting Perceptron Weights, Perceptron Convergence and Linear Separability, Improved Generalization, Limitations of the Perceptron

Practical Issues: Importance of Good Features, Irrelevant and Redundant Features, Feature Pruning and Normalization, Combinatorial Feature Explosion, Evaluating Model Performance, Cross Validation, Hypothesis Testing and Statistical Significance, Debugging Learning Algorithms, Bias Variance tradeoff

Linear Models: The Optimization Framework for Linear Models, Convex Surrogate Loss Functions, Weight Regularization, Optimization and Gradient Descent, Support Vector Machines [Reference 1]

Unit-III

Probabilistic Modelling: Classification by Density Estimation, Statistical Estimation, Naïve Bayes Models, Prediction [Reference 1]

Neural Networks: Bio-inspired Multi-Layer Networks, The Back-propagation Algorithm, Initialization and Convergence of Neural Networks, Beyond two layers, Breadth vs Depth, Basis Functions [Reference 1]

Unit IV

Unsupervised Learning: Clustering Introduction, Similarity and Distance Measures, Agglomerative Algorithms, Divisive Clustering, Minimum Spanning Tree [Reference 2]

Association Rules: Introduction, large Itemsets, Apriori Algorithm [Reference 2]

References:

1. A Course in Machine Learning (CIML). Hal Daume III, 2017 (freely available online) <http://ciml.info/>
2. Data Mining: Introductory and Advanced Topics. Margaret H Dunham, Pearson Education, 2003

Suggested Reading:

3. Hands on Machine Learning with SciKit-Learn, Keras and Tensor Flow. AurélienGéron. O'Reily, 2019
4. Machine Learning with Python Cookbook. Chris Albo, O'Reily, 2018
5. Introduction to Machine Learning with Python: A guide. Andreas C Miller, Sarah Guido. O'Reily, 2017



Practical- 4: Machine Learning (Lab)

[3 HPW:: 1 Credit :: 25 Marks]

Objective:

The main objective of this laboratory is to put into practice the various machine learning algorithms for data analysis using Python and Weka.

ML Toolkits

Students are expected to learn

1. Scikit-learn(<https://scikit-learn.org/>) an open source machine learning Python library that supports supervised and unsupervised learning. It also provides various tools for model fitting, data preprocessing, model selection and evaluation, and many other utilities.
2. Weka (<http://www.cs.waikato.ac.nz/ml/weka/>) is another widely used ML toolkit.

Datasets

1. The sklearn datasets package embeds small toy datasets. It includes utilities to load these datasets. It also includes methods to load and fetch popular reference datasets and features some artificial data generators. Students are expected to study and make use of these datasets
2. Weka also has provides various data sets.

References:

1. Scikit-learn user guide. https://scikit-learn.org/stable/_downloads/scikit-learn-docs.pdf
2. [Ian Witten](#), [Eibe Frank](#), and [Mark Hall](#), [Chris Pal](#). DATA MINING: Practical Machine Learning Tools and Techniques, 4th Edition. Morgan Kaufmann.

Exercises

1. Write a Python program using Scikit-learn to split the iris dataset into 70% train data and 30% test data. Out of total 150 records, the training set will contain 120 records and the test set contains 30 of those records. Print both datasets
2. Write Python program to use sklearn's Decision Tree Classifier to build a decision tree for the sklearn's datasets. Implement functions to find the importance of a split (entropy, information gain, gini measure)
3. Write a Python program to implement your own version of the K-means algorithm. Then apply it to different datasets and evaluate the performance.
4. Design a perceptron classifier to classify handwritten numerical digits (0-9). Implement using scikit or Weka.
5. Write a Python program to classify text as spam or not spam using the Naïve Bayes Classifier
6. Use WEKA and experiment with the following classifiers: Association Rule Mining (Apriori), Agglomerative and Divisive Clustering.

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A/B.COM/BBA/B.SC ENGLISH II YEAR

SEMESTER – IV

PAPER – IV: ENGLISH

Theory:

3 Hours/Week;

Credits: 3

Marks: 100 (Internal: 20; External: 80)

Prescribed Textbook entitled: English for Excellence

Published by Orient BlackSwan

UNIT I: RENEWABLE AND NON-RENEWABLE RESOURCES

1. Jadav Payeng
2. “The Tame Bird was in a Cage” by Rabindranath Tagore
3. Reported Speech
4. Commonly Confused Words

UNIT II: ECOSYSTEMS AND ENVIRONMENTAL POLLUTION

1. “Climate Change and Global Warming” by Michael Shafer
2. “A Requiem for Earth” by O.N.V.Kurup
3. Conditionals
4. Suffixes

UNIT III: CONSERVATION AND BIODIVERSITY

1. “The Ungrateful Man: A Conversation between Trees ” by Swathi Shenoy
2. “The Felling of the Banyan Tree” by Dilip Chitre
3. Common Errors
4. Collocations