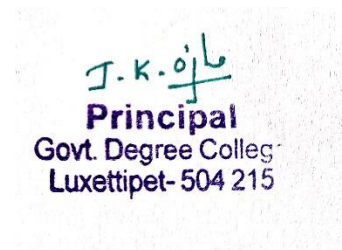


GOVERNMENT DEGREE COLLEGE, LUXETTIPET

DEPARTMENT OF COMPUTERS

B.A

SYLLABUS



B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

I Semester, DSC 1A

Computer Fundamentals

Unit – I

Introduction to Computer : Introduction, Digital and Analog Computers, Characteristics of Computer, History of Computer, Generations of Computer, Classification of Computer, The Computer System, Application of Computers.

The Computer System Hardware: Introduction, Central Processing Unit, Memory Unit, Instruction Format, Instruction Set, Instruction Cycle, Microprocessor, Interconnecting the Units of a Computer, Performance of a Computer, Inside a Computer Cabinet

Computer Memory : Introduction, Memory Representation, Memory Hierarchy, CPU Registers, Cache Memory, Primary Memory, Secondary Memory, Access Types of Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk, Magneto-Optical Disk, Using the Computer Memory.

Unit – II

Input and Output Devices: Introduction, Input-Output Unit, Input Devices, Human Data Entry Devices, Source Data Entry Devices, Output Devices, I/O Port, Working of I/O System.

Data Representation : Introduction, Number System, Conversion from Decimal to Binary, Octal, Hexadecimal, Conversion of Binary, Octal, Hexadecimal to Decimal , Conversion of Binary to Octal, Hexadecimal, Conversion of Octal, Hexadecimal to Binary, Binary Arithmetic, Signed and Unsigned Numbers, Binary Data Representation, Binary Coding Schemes, Logic Gates.

Interaction of User and Computer: Introduction, Types of Software, System Software, Application Software, Software Acquisition.

Unit – III

Operating System : Introduction, Objectives of Operating System, Types of OS, Functions of OS, Process Management, Memory Management, File Management, Device Management, Protection and Security, User Interface, Examples of Operating Systems.

Computer Programming Fundamentals: Introduction, Program Development Life Cycle, Algorithm, Control Structures, Flowchart, Pseudo Code, Programming Paradigms.

The Internet and Internet Services: Introduction, History of Internet, Internetworking Protocol, the Internet Architecture, Managing the Internet, Connecting to Internet, Internet Connections, Internet Address, Internet Services, Uses of Internet.

Unit IV

Information Systems : Introduction, Data, Information and Knowledge, Characteristics of Information, Information System (IS), Computer-Based Information System (CBIS), Need for Efficient Information System, Categories of Information System, Operations Support System, Management Support System, Specialized Information System, Careers in Information Systems.

Computer Security: Introduction, Security Threat and Security Attack, Malicious

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Software, Hacking, Security Services, Security Mechanisms, Cryptography, Digital Signature, Firewall, Users Identification and Authentication, Other Security Measures, Security Awareness, Security Policy.

Emerging Computer Technologies: Distributed Networking, Peer-to-Peer Computing, Grid Computing, Cloud Computing, Utility Computing, On-demand Computing, Wireless Network, Bluetooth, and Artificial Intelligence.

Text Books:

1. A. Goel, Computer Fundamentals, Pearson Education, 2010.
2. Reema Thareja, Fundamentals of Computers, Oxford 2015.

References:

1. Spoken Tutorial on “Linux (Ubuntu), LibreOffice (Writer, Calc, Impress), Firefox”, as E-resource for Learning. <http://spoken-tutorial.org>

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Practical: Computer Fundamentals

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

The practical assignment must include connecting parts of a computer and assembling it to an extent, media formatting and installation of some software.

Practical exercises based on Open Office tools using document preparation and spreadsheet handling packages.

Text Editor

1. Prepare a grocery list having four columns (Serial number, The name of the product, quantity and price) for the month of April, 06.
 - Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
 - The headings of the columns should be in 12-point and bold.
 - The rest of the document should be in 10-point Times New Roman.
 - Leave a gap of 12-points after the title.
2. Create a telephone directory.
 - The heading should be 16-point Arial Font in bold
 - The rest of the document should use 10-point font size
 - Other headings should use 10-point Courier New Font.
 - The footer should show the page number as well as the date last updated.
3. Design a time-table form for your college.
 - The first line should mention the name of the college in 16-point Arial Font and should be bold.
 - The second line should give the course name/teacher's name and the department in 14-point Arial.
 - Leave a gap of 12-points.
 - The rest of the document should use 10-point Times New Roman font.
 - The footer should contain your specifications as the designer and date of creation.
4. BPB Publications plans to release a new book designed as per your syllabus. Design the first page of the book as per the given specifications.

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

- The title of the book should appear in bold using 20-point Arial font.
 - The name of the author and his qualifications should be in the center of the page in 16-point Arial font.
 - At the bottom of the document should be the name of the publisher and address in 16-point Times New Roman.
 - The details of the offices of the publisher (only location) should appear in the footer.
5. Create the following one page documents.
- a. Compose a note inviting friends to a get-together at your house, including a list of things to bring with them.
 - b. Design a certificate in landscape orientation with a border around the document.
 - c. Design a Garage Sale sign.
 - d. Make a sign outlining your rules for your bedroom at home, using a numbered list.
6. Create the following documents:
- A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.
 - Use a newsletter format to promote upcoming projects or events in your classroom or college.
 - Convert following text to a table, using comma as delimiter
 - Type the following as shown (do not bold).

Color, Style, Item

Blue, A980, Van

8Red, X023, Car

Green, YL724, Truck

Name, Age, Sex

Bob, 23, M

Linda, 46, F

Tom, 29, M

7. Enter the following data into a table given on the next page.

| Salesperson | Dolls | Trucks | Puzzles |
|----------------|-------|--------|---------|
| Kennedy, Sally | 1327 | 1423 | 1193 |
| White, Pete | 1421 | 3863 | 2934 |
| Pillar, James | 5214 | 3247 | 5467 |

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

| | | | |
|-----------------|------|------|------|
| York, George | 2190 | 1278 | 1928 |
| Banks, Jennifer | 1201 | 2528 | 1203 |
| Atwater, Kelly | 4098 | 3079 | 2067 |

Add a column Region (values: S, N, N,S,S,S) between the Salesperson and Dolls columns to the given table Sort your table data by Region and within Region by Salesperson in ascending order:

In this exercise, you will add a new row to your table, place the word "Total" at the bottom of the Salesperson column, and sum the Dolls, Trucks, and Puzzles columns.

8. Wrapping of text around the image.
9. Create your resume by incorporating most of the options learned till now.
- 10.** Following features of menu option must be covered

| | |
|--------|---------------|
| FILE | Complete menu |
| EDIT | Complete menu |
| VIEW | Complete menu |
| INSERT | Complete menu |
| FORMAT | Complete menu |
| TABLE | Complete menu |
| WINDOW | Complete menu |
| HELP | Complete menu |

TOOLS All options except Online collaboration, Tools on Macro, Templates

Spreadsheet

1. Enter the Following data in Excel Sheet

| REGIONAL SALES PROJECTION | | | | | | | |
|---------------------------|------|------|------|------|-----------|------|--------|
| State | Qtr1 | Qtr2 | Qtr3 | QTR4 | Qtr Total | Rate | Amount |
| Delhi | 2020 | 2400 | 2100 | 3000 | | 15 | |
| Punjab | | 1100 | 1300 | 1500 | 1400 | | 20 |
| U.P. | 3000 | 3200 | 2600 | 2800 | | 17 | |
| Harayana | 1800 | 2000 | 2200 | 2700 | | 15 | |
| Rajasthan | 2100 | 2000 | 1800 | 2200 | | 20 | |
| TOTAL | | | | | | | |
| AVERAGE | | | | | | | |

(a) Apply Formatting as follow:

- I. Title in TIMES NEW ROMAN

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

- ii. Font Size - 14
- iii. Remaining text - ARIAL, Font Size -10
- iv. State names and Qtr. Heading Bold, Italic with Gray Fill Color.
- v. Numbers in two decimal places.
- vi. Qtr. Heading in center Alignment.
- Vii. Apply Border to whole data.

- (b) Calculate State and Qtr. Total
- (c) Calculate Average for each quarter
- (d) Calculate Amount = Rate * Total.

2. Given the following worksheet

| | A | B | C | D |
|---|----------|------------|----------|----------|
| 1 | Roll No. | Name | Marks | Grade |
| 2 | 1001 | Sachin | 99 | |
| 3 | 1002 | Sehwag | 65 | |
| 4 | 1003 | Rahul | 41 | |
| 5 | 1004 | Sourav | 89 | |
| 6 | 1005 | Har Bhajan | 56 | |

Calculate the grade of these students on the basis of following guidelines:

| If Marks | Then Grade |
|-----------------------------|------------|
| ≥ 80 | A+ |
| $60 \leq \text{marks} < 80$ | A |
| $50 \leq \text{marks} < 60$ | B |
| < 50 | F |

3. Given the following worksheet

| A | B | C | D | E | F | G |
|---|----------|----------------|------|-------|-------|------------------|
| 1 | Salesman | Sales in (Rs.) | | | | |
| 2 | No. | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Total Commission |
| 3 | S001 | 5000 | 8500 | 12000 | 9000 | |
| 4 | S002 | 7000 | 4000 | 7500 | 11000 | |
| 5 | S003 | 4000 | 9000 | 6500 | 8200 | |
| 6 | S004 | 5500 | 6900 | 4500 | 0500 | |
| 7 | S005 | 7400 | 8500 | 9200 | 8300 | |
| 8 | S006 | 5300 | 7600 | 9800 | 6100 | |

Calculate the commission earned by the salesmen on the basis of following Candidates:

| If Total Sales | Commission |
|----------------|------------|
|----------------|------------|

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

| | |
|---------------------|---------------|
| < 20000 | 0% of sales |
| > 20000 and < 25000 | 4% of sales |
| > 25000 and < 30000 | 5.5% of sales |
| > 30000 and < 35000 | 8% of sales |
| >= 35000 | 11% of sales |

The total sales is sum of sales of all the four quarters.

4. A company XYZ Ltd. pays a monthly salary to its employees which consists of basic salary, allowances & deductions. The details of allowances and deductions are as follows:

Allowances

- HRA Dependent on Basic
 - 30% of Basic if Basic \leq 1000
 - 25% of Basic if Basic $>$ 1000 & Basic \leq 3000
 - 20% of Basic if Basic $>$ 3000
- DA Fixed for all employees, 30% of Basic
- Conveyance Allowance
 - Rs. 50/- if Basic is \leq 1000
 - Rs. 75/- if Basic $>$ 1000 & Basic \leq 2000
 - Rs. 100 if Basic $>$ 2000
- Entertainment Allowance NIL if Basic is \leq 1000
 - Rs. 100/- if Basic $>$ 1000

Deductions

- Provident Fund 6% of Basic
- Group Insurance Premium Rs. 40/- if Basic is \leq 1500
 - Rs. 60/- if Basic $>$ 1500 & Basic \leq 3000
 - Rs. 80/- if Basic $>$ 3000

Calculate the following:

Gross Salary = Basic + HRA + DA + Conveyance + Entertainment

Total deduction = Provident Fund + Group Insurance Premium

Net Salary = Gross Salary – Total Deduction

5. Create Payment Table for a fixed Principal amount, variable rate of interests and time in the format below:

| No. of Instalments | 5% | 6% | 7% | 8% | 9% |
|--------------------|----|----|----|----|----|
| 3 | XX | XX | XX | XX | XX |
| 4 | XX | XX | XX | XX | XX |

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

| | | | | | |
|---|----|----|----|----|----|
| 5 | XX | XX | XX | XX | XX |
| 6 | XX | XX | XX | XX | XX |

6. Use an array formula to calculate Simple Interest for given principal amounts given the rate of Interest and time

| | |
|------------------|-----------------|
| Rate of Interest | 8% |
| Time | 5 Years |
| Principal | Simple Interest |
| 1000 | ? |
| 18000 | ? |
| 5200 | ? |

7. The following table gives year wise sale figure of five salesmen in Rs.

| Salesman | 2000 | 2001 | 2002 | 2003 | |
|----------|-------|-------|--------|-------|--|
| S1 | 10000 | 12000 | 20000 | 50000 | |
| S2 | 15000 | 18000 | 50000 | 60000 | |
| S3 | 20000 | 22000 | 70000 | 70000 | |
| S4 | 30000 | 30000 | 100000 | 80000 | |
| S5 | 40000 | 45000 | 125000 | 90000 | |

- (a) Calculate total sale year wise.
(b) Calculate the net sale made by each salesman
(c) Calculate the maximum sale made by the salesman
(d) Calculate the commission for each salesman under the condition.
(i) If total sales >4,00,000 give 5% commission on total sale made by the salesman.
(ii) Otherwise give 2% commission.
(e) Draw a bar graph representing the sale made by each salesman.
(f) Draw a pie graph representing the sale made by salesman in 2000.
8. Enter the following data in Excel Sheet

PERSONAL BUDGET FOR FIRST QUARTER

Monthly Income (Net): 1,475

| EXPENSES | JAN | FEB | MARCH | QUARTER | |
|-----------------|------------|------------|--------------|----------------|----------------|
| QUARTER | | | | TOTAL | AVERAGE |
| Rent | 600.00 | 600.00 | 600.00 | 600.00 | |
| Telephone | 48.25 | 43.50 | 60.00 | | |
| Utilities | 67.27 | 110.00 | 70.00 | | |

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

| | | | |
|-----------------|--------|--------|-------|
| Credit Card | 200.00 | 110.00 | 70.00 |
| Oil | 100.00 | 150.00 | 90.00 |
| AV to Insurance | 150.00 | | |
| Cable TV | 40.75 | 40.75 | 40.75 |

Monthly Total

- (a) Calculate Quarter total and Quarter average.
 - (b) Calculate Monthly total.
 - (c) Surplus = Monthly income - Monthly total.
 - (d) What would be total surplus if monthly income is 1500.
 - (e) How much does telephone expense for March differ from quarter average.
 - (f) Create a 3D column graph for telephone and utilities.
 - (g) Create a pie chart for monthly expenses.
9. Enter the following data in Excel Sheet

TOTAL REVENUE EARNED FOR SAM'S BOOKSTALL

| Publisher name | 1997 | 1998 | 1999 | 2000 | total |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| A | Rs. 1,000.00 | Rs. 1100.00 | | Rs. 1,300.00 | |
| Rs.800.00 | | | | | |
| B | Rs. 1,500.00 | Rs. 700.00 | Rs. 1,000.00 | | Rs. |
| 2,000.00 | | | | | |
| C | Rs. 700.00 | Rs. 900.00 | Rs. 1,500.00 | | Rs.600.00 |
| D | Rs. 1,200.00 | Rs. 500.00 | Rs. 200.00 | | Rs. 1,100.00 |
| E | Rs 800.00 | Rs. 1,000.00 | Rs. 3,000.00 | | |
| Rs.560.00 | | | | | |

- (a) Compute the total revenue earned.
 - (b) Plot the line chart to compare the revenue of all publisher for 4 years.
 - (b) Chart Title should be 'Total Revenue of sam's Bookstall (1997-2000)'
 - (c) Give appropriate categories and value axis title.
10. Generate 25 random numbers between 0 & 100 and find their sum, average and count. How many no. are in range 50-60

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

II Semester, DSC 1B

Computer Programming with C

Unit - I

Computing Concepts: Types of Software, Programming Languages, Translator Programs, Problem Solving Techniques, Using Computer.

Overview of C: History of C, Importance of C, Sample Programs, Basic Structure of C Programs, Programming Style, Executing a ' C ' Program.

Constants, Variables, and Data Types : Introduction, Character set, C tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Declaration of Storage Class, Assigning Values to Variables, Defining Symbolic Constant, Declaring Variable as Constant and Volatile, Overflow and Underflow of Data.

Managing Input and Output Operations: Introduction, Reading a Character, Writing a Character, Formatted Input and Output.

Operators and Expressions : Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operator, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of Arithmetic Operators, Some Computational Problems, Type Conversions in Expressions, Operator Precedence and Associativity, Mathematical Functions.

Unit – II

Decision Making and Branching: Introduction, Decision Making with IF Statement, Simple If Statement, The If...Else Statement, Nested of If...Else Statements, The else if Ladder, The Switch Statement, The?: Operator, The Goto Statement.

Decision Making and Looping: Introduction, The While statement, the do Statement, the For Statement, Jumps in Loops.

Arrays: Introduction, One-dimensional Arrays, Declaration and Initialization of One-dimensional Arrays, Two-dimensional Arrays, Initializing two-dimensional Arrays, Multi-dimensional Arrays, Dynamic Arrays.

Unit III

Character Arrays and Strings: Introduction, Declaring and Initializing String Variables, Reading Strings from Terminal, Writing Strings to Screen, Arithmetic Operations on Characters, Putting Strings together, Comparison of Two Strings, String-handling Functions, Table of Strings, Other Features of Strings.

User-Defined Functions : Introduction, Need for User-Defined Functions, A Multi-function Program, Elements of user-defined Functions, Definition of Functions, Return Valus and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and No Return Values, Arguments but No Return Values, Arguments with Return Values, No Arguments but Returns a Value, Functions that Return Multiple Values, Nesting of Functions, Recursion, Passing Arrays to Functions, Passing Strings to Functions, The Scope, Visibility and Lifetime of Variables, Multifile Programs.

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Unit- IV

Pointers : Introduction, Understanding Pointers, Accessing the Address of a Variable, Declaring Pointer Variables, Initialization of pointer Variables, Accessing a Variable through its pointer, Chain of Pointers, Pointer Expressions, Pointer Increments and Scale Factor, Pointers and Arrays, Pointer and Arrays, Pointers and Character Strings, Arrays of Pointers, Pointers as Function Arguments, Functions Returning Pointers, Pointers to Functions, Pointers and Structures.

Structures and Unions : Introduction, Defining a Structure, Declaring Structure Variables, Accessing Structure Members, Structure Initialization, Copying and Comparing Structure Variables, Operations on Individual Members, Arrays of Structures, Arrays within Structures, Structures within Structures, Structures and Functions, Unions, Size of Structures, Bit Fields.

File Management in C : Introduction, Defining and Opening a File, Closing a File, Input/Output Operations on Files, Error Handling During I/O Operations, Random Access to Files, Command Line Arguments.

Text Book:

1. Computing Fundamentals & C Programming – McGrawHill Education.

References:

1. Spoken Tutorial on “C”, as E-resource for Learning. <http://spoken-tutorial.org>

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

Practical: Computer Programming with C

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Write a c program for electricity bill tacking different categories of users, diffrent slabs in each category.(using nested if else statement)
2. write a c program to evaluate the following using loops
 - a. $1+x^2/2!+x^4/4!+\dots$ upto 5 terms
 - b. $x+x^3/3!+x^5/5!+\dots$ upto 5 terms
3. Write a c program to check whether the given number is
 - a. Prime or not
 - b. Perfect or abundant or deficient
4. Write a c program to find the mean, mode, median, and variance of list of values by using one dimensional array
5. Write a menu driven program to read a list of numbers and perform the following operations
 - a. Print the list
 - b. Delete duplicates from the list
 - c. Reverse the list
6. Write a program to read a list of numbers and search for given number using binary search algorithm and if found display its index otherwise display the message "element not found in the list" using functions
7. Write a menu driven program to read two matrices and compute their sum and product using functions
8. Write a menu driven program to read list of student names and perform the following operations using functions.
 - a. To print list of names
 - b. To sort them in ascending order
 - c. To print the list after sorting
9. Write a c program that consists of recursive functions to find
 - a. Factorial of a given number
 - b. Print the pascal triangle using bionomial theorem

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

10. Write a menu driven program to read list of student names and perform the following operations using array of character pointers.
 - a. To insert a student name
 - b. To delete a name
 - c. To print the names

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

III Semester, DSC 1C

Database Management System

Unit 1

Introduction to Databases: Databases and Database Users, Introduction, Example, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, Advantages of Using the DBMS Approach, History of Database Applications, When Not to Use a DBMS.

Database System Concepts and Architecture: Data Models, Schemas, and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, the Database System Environment, Centralized and Client/Server Architectures for DBMSs, Classification of Database Management Systems.

Data Models: Data Modelling and Data Models, the Importance of Data Models, Data Model Basic Building Blocks, Business Rules, the Evolution of Data Models, Degrees of Data Abstraction

Unit II

The Relational Database Model: Logical View of Data, Keys, Integrity Rules, Relational Set Operators, The Data Dictionary and the System Catalog, Relationships within the Relational Database, Data Redundancy Revisited, Indexes.

Entity Relationship (ER) Modelling: The Entity Relationship Model (ERM)- Entities , Attributes , Relationships , Connectivity and Cardinality , Existence Dependence , Relationship Strength , ,Weak Entities , Relationship Participation , Relationship Degree, Recursive Relationships, Associative (Composite) Entities; Developing an ER Diagram, Database Design Challenges: Conflicting Goals.

Unit III

ADVANCED DATA MODELING: The Extended Entity Relationship Model, Entity Clustering, Entity Integrity: Selecting Primary Keys.

Normalization of Database Tables: Database Tables and Normalization, The Need for Normalization, The Normalization Process, Improving the Design, Surrogate Key Considerations, Higher-Level Normal Forms, Normalization and Database Design, Denormalization.

Unit IV

Introduction to Structured Query Language (SQL): Introduction to SQL, Data Definition Commands, Data Manipulation Commands, SELECT Queries, Advanced Data Definition Commands, Advanced SELECT Queries, Virtual Tables: Creating a View, Joining Database Tables.

Advanced SQL: Relational Set Operators, SQL Join Operators, Subqueries and Correlated Queries, SQL Functions, Oracle Sequences, Updatable Views, Procedural SQL, Embedded SQL.

Text Books:

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1. Peter Rob and Carlos Coronel, Database Systems: Design, Implementation, and Management, Thomson, Eighth Edition, 2009
2. R. Elmasri,S. Navathe, Fundamentals of Database Systems, Pearson Education, sixth Edition, 2011

Book references:

1. MySQL : Reference Manual
2. Spoken Tutorial on “MySQL”, as E-resource for Learning, <http://spoken-tutorial.org>

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

Practical: Database Management System

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

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

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

IssuedBooks (Accession number, Borrower)

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

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

Paper Details (Paper code, Name of the Paper)

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

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper 2.

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

- c) List all students who live in “Delhi” and have marks greater than 60 in paper 1.
 - d) Find the total attendance and total marks obtained by each student.
 - e) List the name of student who has got the highest marks in paper 2.
3. Create the following tables and answer the queries given below:

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)

1. Identify primary and foreign keys.
2. Alter table employee, add a column “email” of type varchar(20).
3. Find the name of all managers who work for both Samba Bank and NCB Bank.
4. 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.
5. Find the names of all employees who live in the same city as the company for which they work.
6. Find the highest salary, lowest salary and average salary paid by each company.
7. Find the sum of salary and number of employees in each company.

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

8. 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 Delhi.
- j) Get part numbers for part supplied by a supplier in Allahabad to a project in Chennai.
- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

IV Semester, DSC 1D

Internet Technologies

Unit – I

HTML- Basic HML, The document body, Text, Hyperlinks, Adding More Formatting, Lists, Using Color and Images, Images, Tables, Frames, Forms- Toward Interactivity .

Cascading Stylesheets - Introduction, Inline Styles, Embedded Style Sheets, Linking external sheets, Backgrounds, text flow and box model.

Unit - II

JavaScript- Introduction, simple programming, Obtaining User Input with prompt Dialogs, Operators (arithmetic, Decision making, assignment, logical, increment and decrement). Control Structures - if... else selection statement, while, do... while repetitions statement, for statement, switch statement, break and continue statements.

Functions - program modules in JavaScript, programmer defined functions, function definition, Random-number generator, scope rules, global functions, recursion,

Unit – III

JavaScript: Arrays, Objects - Math Object, String Object, Date Object, Boolean & Number Object, document and window Objects. Event Model - on click, on load, on error, onmouseover, onmouseout, on focus, on blur, on submit, on reset, more DHTML events.

Unit - IV

Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Math, Other Markup Languages, and Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

Text books:

1. Internet& World Wide Web- H. M. Deitel, P.J. Deitel, A. B. Goldberg-Third Edition

References:

1. D.R. Brooks, An Introduction to HTML and Javascript for Scientists and Engineers, Springer
2. URL: www.wikipedia.org
3. HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009.
4. J. A. Ramalho, Learn Advanced HTML 4.0 with DHTML, BPB Publications, 2007

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

Practical: Internet Technologies

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using HTML.

1. Create HTML document with following formatting – Bold, Italics, Underline, Colors, Headings, Title, Font and Font Width, Background, Paragraph, Line Brakes, Horizontal Line, Blinking text as well as marquee text.
2. Create HTML document with Ordered and Unordered lists, Inserting Images, Internal and External linking
3. Create HTML document with Table:

| | | | | |
|--|--|--|-----------------|--|
| | | | | |
| | | | Some image here | |
| | | | | |

4. Create Form with Input Type, Select and Text Area in HTML.
5. Create an HTML containing Roll No., student's name and Grades in a tabular form.
6. Create an HTML document (having two frames) which will appear as follows:

| About department | |
|------------------|---|
| Department1 | This frame would show the contents according to the link clicked by the user on the left Frame. |
| Department1 | |
| Department1 | |

7. Create an HTML document containing horizontal frames as follows:

| |
|--|
| Department Names (could be along with Logos) |
| Contents according to the Link clicked |

8. Create a website of 6 – 7 pages with different effects as mentioned in above problems.

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

9. Create HTML documents (having multiple frames) in the following three formats:

| |
|-------|
| rame1 |
| ame2 |

| | |
|---------|---------|
| Frame 1 | |
| Frame 2 | Frame 3 |

10. Create a form using HTML which has the following types of controls:
- I. Text Box
 - II. Option/radio buttons
 - III. Check boxes
 - IV. Reset and Submit buttons

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Last Name:

Business:

We must have a correct e-mail address to send you the news letter:

Email:

How did you hear about XYZ News Magazine and Emails?

Here on the Web In a magazine Television Other

Would you like to be on our regular mailing list?

Yes, we love junk emails

11. Create a student Bio-Data, using forms.
12. Create a web page using following style sheets
- i. Inline style sheets. ii. Embedded style sheets. iii. External style sheets
13. Create a web page using "class" style sheets with different "border-width" property values like thick, medium, thin, groove, inset, and outset, red & blue.

JavaScript:

Create event driven program for following:

B.A /B.Sc. (Life Sciences) with Computer Application Syllabus

1. Print a table of numbers from 5 to 15 and their squares and cubes using alert.
2. Print the largest of three numbers.
3. Find the factorial of a number n.
4. Enter a list of positive numbers terminated by Zero. Find the sum and average of these numbers.
5. A person deposits Rs 1000 in a fixed account yielding 5% interest. Compute the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Write a JavaScript program to accept two values from form and apply any 5 mathematical functions.
8. Display the current date and time in both GMT and local form.
9. Write a JavaScript program on MouseOver, MouseOut, blur events.
10. Write a XML program using document type definitions
11. Write Student database with XML.
12. Write a XML program using XS

KAKATIYA UNIVERSITY WARANGAL, TELANGANA



**B.A and B.Sc (Life Sciences) with Computer
Application Syllabus**

Under the

**CHOICE BASED CREDIT SYSTEM
(With effect from 2016-17)**

**DEPARTMENT OF COMPUTER SCIENCE
Kakatiya University, Warangal-506009**



**DEPARTMENT OF COMPUTER SCIENCE
KAKATIYA UNIVERSITY
WARANGAL-506 009**

Department of Computer Science, Kakatiya University offers B.A and B.Sc. (Life Science) with computer application as core subjects at UG level (3 Year course) with six semesters with internal assessment for theory papers under Choice Based Credit System (CBCS) in University constituent and affiliated colleges for the students admitted in first year from 2016-17 academic year onwards.

1. Each of first four Semesters (i.e I, II III and IV) contains one theory core paper (20 marks for Internal Assessment and 80 marks for Semester End Exam equivalent to 4 credits) as Discipline Specific Course (DSC) and one practical paper (50 marks equivalent to 02 credits), whereas each of last two semesters (i.e V and VI) contains one theory core paper as DSC (15 marks for Internal Assessment and 60 marks for Semester End Exam equivalent to 3 credits), one theory elective paper as Discipline Specific Elective (DSE) (15 marks for Internal Assessment and 60 marks for Semester End Exam equivalent to 3 credits) and two practical papers (25 marks in each paper equivalent to 01 credit). For total six semesters in B.A and B.Sc. (Life Science) with computer application courses, the total marks are 1000 and credits are 40 for each.
2. Internal Assessment examination will be conducted twice in every Semester. Marks will be awarded from the average of the two Internal Assessment Exams in each Semester.
3. Scheme for CBCS, work-load for each paper, distribution of marks and credits; and scheme of question paper are attached herewith.
4. The syllabi of B.A and B.Sc. (Life Science) with computer application theory and practical papers of I, II, III, IV, V and VI semesters are enclosed
5. The practical examination will be conducted at the end of each semester. A minimum of 40% marks should be obtained by the student to pass the practical examination of both B.A and B.Sc. (Life Science) with computer application in all semesters.
6. All the theory papers and practical papers of both B.A and B.Sc. (Life Science) with computer application in I, II, III and IV semesters are common to all students. But, elective theory (DSE) papers of B.A and B.Sc. (Life Science) with computer application in V and VI Semesters are to be chosen by the student from the available options.
7. Elective (DSE) papers of B.A and B.Sc. (Life Science) with computer application will be offered separately at the beginning of Semesters V and VI. Every student has to choose one elective from the Electives being offered.

**B.A and B.Sc. (Life Science) with Computer Application
CBCS pattern in Semester System (w. e. from 2016-2017)**

| Code | Semester | Course category | Title of the Paper | No. of Credits | HPW | Max. Marks | | | Total Marks |
|---------------------------|----------|--------------------|--|----------------|----------|------------|----------|----------|-------------|
| | | | | | | I.A | End Exam | Total | |
| FIRST YEAR | | | | | | | | | |
| BS106 | I | DSC-1A (Theory) | Computer Fundamentals | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1A (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS206 | II | DSC-1B (Theory) | Computer Programming with C | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1B (Practical) | | 1 | 2 | - | 25 | 25 | |
| SECOND YEAR | | | | | | | | | |
| BS306 | III | DSC-1C (Theory) | Database Management System | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1C (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS406 | IV | DSC-1D (Theory) | Internet Technologies | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1D (Practical) | | 1 | 2 | - | 25 | 25 | |
| THRID YEAR | | | | | | | | | |
| BS505 | V | DSC-1E (Theory) | Multimedia Systems and Applications | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1E (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS508 | V | DSC-1E (Theory) | Elective 1 (A/B/C) A) Computer Networks B) Object Oriented Programming with C++ C) System programming | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1E (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS605 | VI | DSC-1F (Theory) | Visual Programming | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1F (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS608 | VI | DSC-1F (Theory) | Elective 2 (A/B/C) A) Computer Graphics B) Software Engineering C) PHP Programming | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1F (Practical) | | 1 | 2 | - | 25 | 25 | |
| Summary of Credits | | | | 36 | - | - | - | - | 900 |

Note: - Skill Enhancement Courses (SEC1, SEC2, SEC3 and SEC4) will be introduce later

Core 1: Computer Fundamentals

Unit – I

Introduction to Computer : Introduction, Digital and Analog Computers, Characteristics of Computer, History of Computer, Generations of Computer, Classification of Computer, The Computer System, Application of Computers.

The Computer System Hardware: Introduction, Central Processing Unit, Memory Unit, Instruction Format, Instruction Set, Instruction Cycle, Microprocessor, Interconnecting the Units of a Computer, Performance of a Computer, Inside a Computer Cabinet

Computer Memory : Introduction, Memory Representation, Memory Hierarchy, CPU Registers, Cache Memory, Primary Memory, Secondary Memory, Access Types of Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk, Magneto-Optical Disk, Using the Computer Memory.

Unit – II

Input and Output Devices: Introduction, Input-Output Unit, Input Devices, Human Data Entry Devices, Source Data Entry Devices, Output Devices, I/O Port, Working of I/O System.

Data Representation : Introduction, Number System, Conversion from Decimal to Binary, Octal, Hexadecimal, Conversion of Binary, Octal, Hexadecimal to Decimal , Conversion of Binary to Octal, Hexadecimal, Conversion of Octal, Hexadecimal to Binary, Binary Arithmetic, Signed and Unsigned Numbers, Binary Data Representation, Binary Coding Schemes, Logic Gates.

Interaction of User and Computer: Introduction, Types of Software, System Software, Application Software, Software Acquisition.

Unit – III

Operating System : Introduction, Objectives of Operating System, Types of OS, Functions of OS, Process Management, Memory Management, File Management, Device Management, Protection and Security, User Interface, Examples of Operating Systems.

Computer Programming Fundamentals: Introduction, Program Development Life Cycle, Algorithm, Control Structures, Flowchart, Pseudo Code, Programming Paradigms.

The Internet and Internet Services: Introduction, History of Internet, Internetworking Protocol, the Internet Architecture, Managing the Internet, Connecting to Internet, Internet Connections, Internet Address, Internet Services, Uses of Internet.

Unit IV

Information Systems : Introduction, Data, Information and Knowledge, Characteristics of Information, Information System (IS), Computer-Based Information System (CBIS), Need for Efficient Information System, Categories of Information System, Operations Support System, Management Support System, Specialized Information System, Careers in Information Systems.

Computer Security: Introduction, Security Threat and Security Attack, Malicious Software, Hacking, Security Services, Security Mechanisms, Cryptography, Digital Signature, Firewall, Users Identification and Authentication, Other

Security Measures, Security Awareness, Security Policy.

Emerging Computer Technologies: Distributed Networking, Peer-to-Peer Computing, Grid Computing, Cloud Computing, Utility Computing, On-demand Computing, Wireless Network, Bluetooth, and Artificial Intelligence.

Text Books:

1. A. Goel, Computer Fundamentals, Pearson Education, 2010.
- 2.** Reema Thareja, Fundamentals of Computers, Oxford 2015.

References:

1. Spoken Tutorial on “Linux (Ubuntu), LibreOffice (Writer, Calc, Impress), Firefox”, as E-resource for Learning. <http://spoken-tutorial.org>

Practical: Computer Fundamentals

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

The practical assignment must include connecting parts of a computer and assembling it to an extent, media formatting and installation of some software.

Practical exercises based on Open Office tools using document preparation and spreadsheet handling packages.

Text Editor

1. Prepare a grocery list having four columns (Serial number, The name of the product, quantity and price) for the month of April, 06.
 - Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
 - The headings of the columns should be in 12-point and bold.
 - The rest of the document should be in 10-point Times New Roman.
 - Leave a gap of 12-points after the title.
2. Create a telephone directory.
 - The heading should be 16-point Arial Font in bold
 - The rest of the document should use 10-point font size
 - Other headings should use 10-point Courier New Font.
 - The footer should show the page number as well as the date last updated.
3. Design a time-table form for your college.
 - The first line should mention the name of the college in 16-point Arial Font and should be bold.
 - The second line should give the course name/teacher's name and the department in 14-point Arial.
 - Leave a gap of 12-points.
 - The rest of the document should use 10-point Times New Roman font.
 - The footer should contain your specifications as the designer and date of creation.
4. BPB Publications plans to release a new book designed as per your syllabus. Design the first page of the book as per the given specifications.

- The title of the book should appear in bold using 20-point Arial font.
- The name of the author and his qualifications should be in the center of the page in 16-point Arial font.
- At the bottom of the document should be the name of the publisher and address in 16-point Times New Roman.
- The details of the offices of the publisher (only location) should appear in the footer.

5. Create the following one page documents.

- Compose a note inviting friends to a get-together at your house, including a list of things to bring with them.
- Design a certificate in landscape orientation with a border around the document.
- Design a Garage Sale sign.
- Make a sign outlining your rules for your bedroom at home, using a numbered list.

6. Create the following documents:

- A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.
- Use a newsletter format to promote upcoming projects or events in your classroom or college.
- Convert following text to a table, using comma as delimiter
- Type the following as shown (do not bold).

Color, Style, Item

Blue, A980, Van

8Red, X023, Car

Green, YL724, Truck

Name, Age, Sex

Bob, 23, M

Linda, 46, F

Tom, 29, M

7. Enter the following data into a table given on the next page.

| Salesperson | Dolls | Trucks | Puzzles |
|----------------|-------|--------|---------|
| Kennedy, Sally | 1327 | 1423 | 1193 |
| White, Pete | 1421 | 3863 | 2934 |
| Pillar, James | 5214 | 3247 | 5467 |
| York, George | 2190 | 1278 | 1928 |

| | | | |
|-----------------|------|------|------|
| Banks, Jennifer | 1201 | 2528 | 1203 |
| Atwater, Kelly | 4098 | 3079 | 2067 |

Add a column Region (values: S, N, N,S,S,S) between the Salesperson and Dolls columns to the given table Sort your table data by Region and within Region by Salesperson in ascending order:

In this exercise, you will add a new row to your table, place the word "Total" at the bottom of the Salesperson column, and sum the Dolls, Trucks, and Puzzles columns.

8. Wrapping of text around the image.
9. Create your resume by incorporating most of the options learned till now.
10. Following features of menu option must be covered

FILE Complete menu

EDIT Complete menu

VIEW Complete menu

INSERT Complete menu

FORMAT Complete menu

TABLE Complete menu

WINDOW Complete menu

HELP Complete menu

TOOLS All options except Online collaboration, Tools on Macro, Templates

Spreadsheet

1. Enter the Following data in Excel Sheet

REGIONAL SALES PROJECTION

| State | Qtr1 | Qtr2 | Qtr3 | QTR4 | Qtr Total | Rate | Amount |
|-----------|------|------|------|------|-----------|------|--------|
| Delhi | 2020 | 2400 | 2100 | 3000 | | 15 | |
| Punjab | | 1100 | 1300 | 1500 | 1400 | | 20 |
| U.P. | 3000 | 3200 | 2600 | 2800 | | 17 | |
| Harayana | 1800 | 2000 | 2200 | 2700 | | 15 | |
| Rajasthan | 2100 | 2000 | 1800 | 2200 | | 20 | |

TOTAL

AVERAGE

(a) Apply Formatting as follow:

I. Title in TIMES NEW ROMAN

ii. Font Size - 14

iii. Remaining text - ARIAL, Font Size -10

iv. State names and Qtr. Heading Bold, Italic with Gray Fill Color.

v. Numbers in two decimal places.

vi. Qtr. Heading in center Alignment.

Vii. Apply Border to whole data.

(b) Calculate State and Qtr. Total

(c) Calculate Average for each quarter

(d) Calculate Amount = Rate * Total.

2. Given the following worksheet

| | A | B | C | D |
|---|----------|------------|----------|----------|
| 1 | Roll No. | Name | Marks | Grade |
| 2 | 1001 | Sachin | 99 | |
| 3 | 1002 | Sehwag | 65 | |
| 4 | 1003 | Rahul | 41 | |
| 5 | 1004 | Sourav | 89 | |
| 6 | 1005 | Har Bhajan | 56 | |

Calculate the grade of these students on the basis of following guidelines:

If Marks Then Grade

>= 80 A+

10>= 60 < 80 A

>= 50 < 60 B

< 50 F

3. Given the following worksheet

| A | B | C | D | E | F | G |
|---|----------|----------------|------|-------|-------|------------------|
| 1 | Salesman | Sales in (Rs.) | | | | |
| 2 | No. | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Total Commission |
| 3 | S001 | 5000 | 8500 | 12000 | 9000 | |
| 4 | S002 | 7000 | 4000 | 7500 | 11000 | |
| 5 | S003 | 4000 | 9000 | 6500 | 8200 | |
| 6 | S004 | 5500 | 6900 | 4500 | 0500 | |
| 7 | S005 | 7400 | 8500 | 9200 | 8300 | |
| 8 | S006 | 5300 | 7600 | 9800 | 6100 | |

Calculate the commission earned by the salesmen on the basis of following Candidates:

If Total Sales Commission

< 20000 0% of sales

> 20000 and < 25000 4% of sales

| | |
|---------------------|---------------|
| > 25000 and < 30000 | 5.5% of sales |
| > 30000 and < 35000 | 8% of sales |
| >= 35000 | 11% of sales |

The total sales is sum of sales of all the four quarters.

4. A company XYZ Ltd. pays a monthly salary to its employees which consists of basic salary, allowances & deductions. The details of allowances and deductions are as follows:

Allowances

- HRA Dependent on Basic
 - 30% of Basic if Basic <=1000
 - 25% of Basic if Basic>1000 & Basic<=3000
 - 20% of Basic if Basic >3000
- DA Fixed for all employees, 30% of Basic
- Conveyance Allowance
 - Rs. 50/- if Basic is <=1000
 - Rs. 75/- if Basic >1000 & Basic<=2000
 - Rs. 100 if Basic >2000
- Entertainment Allowance NIL if Basic is <=1000
 - Rs. 100/- if Basic > 1000

Deductions

- Provident Fund 6% of Basic
- Group Insurance Premium Rs. 40/- if Basic is <=1500
 - Rs. 60/- if Basic > 1500 & Basic<=3000
 - Rs. 80/- if Basic >3000

Calculate the following:

Gross Salary = Basic + HRA + DA + Conveyance + Entertainment

Total deduction = Provident Fund + Group Insurance Premium

Net Salary = Gross Salary – Total Deduction

5. Create Payment Table for a fixed Principal amount, variable rate of interests and time in the format below:

| No. of Instalments | 5% | 6% | 7% | 8% | 9% |
|--------------------|----|----|----|----|----|
| 3 | XX | XX | XX | XX | XX |
| 4 | XX | XX | XX | XX | XX |
| 5 | XX | XX | XX | XX | XX |
| 6 | XX | XX | XX | XX | XX |

6. Use an array formula to calculate Simple Interest for given principal amounts given the rate of Interest and time

| | |
|------------------|-----------------|
| Rate of Interest | 8% |
| Time | 5 Years |
| Principal | Simple Interest |
| 1000 | ? |
| 18000 | ? |
| 5200 | ? |

7. The following table gives year wise sale figure of five salesmen in Rs.

| Salesman | 2000 | 2001 | 2002 | 2003 | |
|----------|-------|------|-------|--------|-------|
| S1 | 10000 | | 12000 | 20000 | 50000 |
| S2 | 15000 | | 18000 | 50000 | 60000 |
| S3 | 20000 | | 22000 | 70000 | 70000 |
| S4 | 30000 | | 30000 | 100000 | 80000 |
| S5 | 40000 | | 45000 | 125000 | 90000 |

- (a) Calculate total sale year wise.
 (b) Calculate the net sale made by each salesman
 (c) Calculate the maximum sale made by the salesman
 (d) Calculate the commission for each salesman under the condition.
 (i) If total sales >4,00,000 give 5% commission on total sale made by the salesman.
 (ii) Otherwise give 2% commission.
 (e) Draw a bar graph representing the sale made by each salesman.
 (f) Draw a pie graph representing the sale made by salesman in 2000.
8. Enter the following data in Excel Sheet

PERSONAL BUDGET FOR FIRST QUARTER

Monthly Income (Net): 1,475

| EXPENSES QUARTER | JAN | FEB | MARCH | QUARTER TOTAL | AVERAGE |
|-----------------------------|------------|------------|--------------|--------------------------|----------------|
| Rent | 600.00 | | 600.00 | 600.00 | |
| Telephone | 48.25 | 43.50 | 60.00 | | |
| Utilities | | 67.27 | 110.00 | 70.00 | |
| Credit Card | 200.00 | | 110.00 | 70.00 | |
| Oil | 100.00 | | 150.00 | 90.00 | |
| AV to Insurance | | 150.00 | | | |

Cable TV 40.75 40.75 40.75

Monthly Total

- (a) Calculate Quarter total and Quarter average.
- (b) Calculate Monthly total.
- (c) Surplus = Monthly income - Monthly total.
- (d) What would be total surplus if monthly income is 1500.
- (e) How much does telephone expense for March differ from quarter average.
- (f) Create a 3D column graph for telephone and utilities.
- (g) Create a pie chart for monthly expenses.

9. Enter the following data in Excel Sheet

TOTAL REVENUE EARNED FOR SAM’S BOOKSTALL

| Publisher name | 1997 | 1998 | 1999 | 2000 | total |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| A | Rs. 1,000.00 | | Rs. 1100.00 | | Rs. 1,300.00 |
| | Rs.800.00 | | | | |
| B | Rs. 1,500.00 | | Rs. 700.00 | Rs. 1,000.00 | Rs. |
| | | | | | 2,000.00 |
| C | Rs. 700.00 | Rs. 900.00 | Rs. 1,500.00 | | Rs.600.00 |
| D | Rs. 1,200.00 | | Rs. 500.00 | Rs. 200.00 | Rs. 1,100.00 |
| E | Rs 800.00 | Rs. 1,000.00 | | Rs. 3,000.00 | |
| | Rs.560.00 | | | | |

- (a) Compute the total revenue earned.
- (b) Plot the line chart to compare the revenue of all publisher for 4 years.
- (b) Chart Title should be ‘Total Revenue of sam’s Bookstall (1997-2000)’
- (c) Give appropriate categories and value axis title.

10. Generate 25 random numbers between 0 & 100 and find their sum, average and count. How many no. are in range 50-60

Core 2: Computer Programming with C

Unit - I

Computing Concepts: Types of Software, Programming Languages, Translator Programs, Problem Solving Techniques, Using Computer.

Overview of C: History of C, Importance of C, Sample Programs, Basic Structure of C Programs, Programming Style, Executing a ' C ' Program.

Constants, Variables, and Data Types : Introduction, Character set, C tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Declaration of Storage Class, Assigning Values to Variables, Defining Symbolic Constant, Declaring Variable as Constant and Volatile, Overflow and Underflow of Data.

Managing Input and Output Operations: Introduction, Reading a Character, Writing a Character, Formatted Input and Output.

Operators and Expressions : Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operator, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of Arithmetic Operators, Some Computational Problems, Type Conversions in Expressions, Operator Precedence and Associativity, Mathematical Functions.

Unit - II

Decision Making and Branching: Introduction, Decision Making with IF Statement, Simple If Statement, The If...Else Statement, Nested of If...Else Statements, The else if Ladder, The Switch Statement, The?: Operator, The Goto Statement.

Decision Making and Looping: Introduction, The While statement, the do Statement, the For Statement, Jumps in Loops.

Arrays: Introduction, One-dimensional Arrays, Declaration and Initialization of One-dimensional Arrays, Two-dimensional Arrays, Initializing two-dimensional Arrays, Multi-dimensional Arrays, Dynamic Arrays.

Unit III

Character Arrays and Strings: Introduction, Declaring and Initializing String Variables, Reading Strings from Terminal, Writing Strings to Screen, Arithmetic Operations on Characters, Putting Strings together, Comparison of Two Strings, String-handling Functions, Table of Strings, Other Features of Strings.

User-Defined Functions : Introduction, Need for User-Defined Functions, A Multi-function Program, Elements of user-defined Functions, Definition of Functions, Return Value and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and No Return Values, Arguments but No Return Values, Arguments with Return Values, No Arguments but Returns a Value, Functions that Return Multiple Values, Nesting of Functions, Recursion, Passing Arrays to Functions, Passing Strings to Functions, The Scope, Visibility and Lifetime of Variables, Multifile Programs.

Unit- IV

Pointers : Introduction, Understanding Pointers, Accessing the Address of a Variable, Declaring Pointer Variables, Initialization of pointer Variables, Accessing a Variable through its pointer, Chain of Pointers, Pointer Expressions, Pointer Increments and Scale Factor, Pointers and Arrays, Pointer and Arrays, Pointers and Character Strings, Arrays of Pointers, Pointers as Function Arguments, Functions Returning Pointers, Pointers to Functions, Pointers and Structures.

Structures and Unions : Introduction, Defining a Structure, Declaring Structure Variables, Accessing Structure Members, Structure Initialization, Copying and Comparing Structure Variables, Operations on Individual Members, Arrays of Structures, Arrays within Structures, Structures within Structures, Structures and Functions, Unions, Size of Structures, Bit Fields.

File Management in C : Introduction, Defining and Opening a File, Closing a File, Input/Output Operations on Files, Error Handling During I/O Operations, Random Access to Files, Command Line Arguments.

Text Book:

1. Computing Fundamentals & C Programming – McGrawHill Education.

References:

1. Spoken Tutorial on “C”, as E-resource for Learning. <http://spoken-tutorial.org>

Practical: Computer Programming with C

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Write a c program for electricity bill tacking different categories of users, diffrent slabs in each category.(using nested if else statement)
2. write a c program to evaluate the following using loops
 - a. $1+x^2/2!+x^4/4!+\dots$ upto 5 terms
 - b. $x+x^3/3!+x^5/5!+\dots$ upto 5 terms
3. Write a c program to check whether the given number is
 - a. Prime or not
 - b. Perfect or abundant or deficient
4. Write a c program to find the mean, mode, median, and variance of list of values by using one dimensional array
5. Write a menu driven program to read a list of numbers and perform the following operations
 - a. Print the list
 - b. Delete duplicates from the list
 - c. Reverse the list
6. Write a program to read a list of numbers and search for given number using binary search algorithm and if found display its index otherwise display the message "element not found in the list" using functions
7. Write a menu driven program to read two matrices and compute their sum and product using functions
8. Write a menu driven program to read list of student names and perform the following operations using functions.
 - a. To print list of names
 - b. To sort them in ascending order
 - c. To print the list after sorting
9. Write a c program that consists of recursive functions to find
 - a. Factorial of a given number
 - b. Print the pascal triangle using bionomial theorem

10. Write a menu driven program to read list of student names and perform the following operations using array of character pointers.
 - a. To insert a student name
 - b. To delete a name
 - c. To print the names

Core 3: Database Management System

Unit 1

Introduction to Databases: Databases and Database Users, Introduction, Example, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, Advantages of Using the DBMS Approach, History of Database Applications, When Not to Use a DBMS.

Database System Concepts and Architecture: Data Models, Schemas, and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, the Database System Environment, Centralized and Client/Server Architectures for DBMSs, Classification of Database Management Systems.

Data Models: Data Modelling and Data Models, the Importance of Data Models, Data Model Basic Building Blocks, Business Rules, the Evolution of Data Models, Degrees of Data Abstraction

Unit II

The Relational Database Model: Logical View of Data, Keys, Integrity Rules, Relational Set Operators, The Data Dictionary and the System Catalog, Relationships within the Relational Database, Data Redundancy Revisited, Indexes.

Entity Relationship (ER) Modelling: The Entity Relationship Model (ERM)- Entities , Attributes , Relationships , Connectivity and Cardinality , Existence Dependence , Relationship Strength , ,Weak Entities , Relationship Participation , Relationship Degree, Recursive Relationships, Associative (Composite) Entities; Developing an ER Diagram, Database Design Challenges: Conflicting Goals.

Unit III

ADVANCED DATA MODELING: The Extended Entity Relationship Model, Entity Clustering, Entity Integrity: Selecting Primary Keys.

Normalization of Database Tables: Database Tables and Normalization, The Need for Normalization, The Normalization Process, Improving the Design, Surrogate Key Considerations, Higher-Level Normal Forms, Normalization and Database Design, Denormalization.

Unit IV

Introduction to Structured Query Language (SQL): Introduction to SQL, Data Definition Commands, Data Manipulation Commands, SELECT Queries, Advanced Data Definition Commands, Advanced SELECT Queries, Virtual Tables: Creating a View, Joining Database Tables.

Advanced SQL: Relational Set Operators, SQL Join Operators, Subqueries and Correlated Queries, SQL Functions, Oracle Sequences, Updatable Views, Procedural SQL, Embedded SQL.

Text Books:

1. Peter Rob and Carlos Coronel, Database Systems: Design, Implementation, and Management, Thomson, Eighth Edition, 2009

2. R. Elmasri,S. Navathe, Fundamentals of Database Systems, Pearson Education, sixth Edition, 2011

Book references:

1. MySQL : Reference Manual
2. Spoken Tutorial on “MySQL”, as E-resource for Learning, <http://spoken-tutorial.org>

Practical: Database Management System

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

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

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

IssuedBooks (Accession number, Borrower)

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

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

Paper Details (Paper code, Name of the Paper)

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

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper 2.

- c) List all students who live in “Delhi” and have marks greater than 60 in paper 1.
 - d) Find the total attendance and total marks obtained by each student.
 - e) List the name of student who has got the highest marks in paper 2.
3. Create the following tables and answer the queries given below:

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)

- 1. Identify primary and foreign keys.
- 2. Alter table employee, add a column “email” of type varchar(20).
- 3. Find the name of all managers who work for both Samba Bank and NCB Bank.
- 4. 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.
- 5. Find the names of all employees who live in the same city as the company for which they work.
- 6. Find the highest salary, lowest salary and average salary paid by each company.
- 7. Find the sum of salary and number of employees in each company.
- 8. 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 Delhi.
- j) Get part numbers for part supplied by a supplier in Allahabad to a project in Chennai.
- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

Core 4: Internet Technologies

Unit – I

HTML- Basic HML, The document body, Text, Hyperlinks, Adding More Formatting, Lists, Using Color and Images, Images, Tables, Frames, Forms-Toward Interactivity .

Cascading Stylesheets - Introduction, Inline Styles, Embedded Style Sheets, Linking external sheets, Backgrounds, text flow and box model.

Unit - II

JavaScript- Introduction, simple programming, Obtaining User Input with prompt Dialogs, Operators (arithmetic, Decision making, assignment, logical, increment and decrement). Control Structures - if... else selection statement, while, do... while repetitions statement, for statement, switch statement, break and continue statements.

Functions - program modules in JavaScript, programmer defined functions, function definition, Random-number generator, scope rules, global functions, recursion,

Unit – III

JavaScript: Arrays, Objects - Math Object, String Object, Date Object, Boolean & Number Object, document and window Objects. Event Model - on click, on load, on error, onmouseover, onmouseout, on focus, on blur, on submit, on reset, more DHTML events.

Unit - IV

Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Math, Other Markup Languages, and Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

Text books:

1. Internet& World Wide Web- H. M. Deitel, P.J. Deitel, A. B. Goldberg-Third Edition

References:

1. D.R. Brooks, An Introduction to HTML and Javascript for Scientists and Engineers, Springer
2. URL: www.wikipedia.org
3. HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009.
4. J. A. Ramalho, Learn Advanced HTML 4.0 with DHTML, BPB Publications, 2007

Practical: Internet Technologies

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
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Example programs:

Practical exercises based on concepts listed in theory using HTML.

1. Create HTML document with following formatting – Bold, Italics, Underline, Colors, Headings, Title, Font and Font Width, Background, Paragraph, Line Brakes, Horizontal Line, Blinking text as well as marquee text.
2. Create HTML document with Ordered and Unordered lists, Inserting Images, Internal and External linking
3. Create HTML document with Table:

| | | | | |
|--|--|--|-----------------|--|
| | | | | |
| | | | Some image here | |
| | | | | |

4. Create Form with Input Type, Select and Text Area in HTML.
5. Create an HTML containing Roll No., student's name and Grades in a tabular form.
6. Create an HTML document (having two frames) which will appear as follows:

| About department | |
|------------------|---|
| Department1 | This frame would show the contents according to the link clicked by the user on the left Frame. |
| Department1 | |
| Department1 | |

7. Create an HTML document containing horizontal frames as follows:

| |
|--|
| Department Names (could be along with Logos) |
| Contents according to the Link clicked |

8. Create a website of 6 – 7 pages with different effects as mentioned in above problems.
9. Create HTML documents (having multiple frames) in the following three formats:

| |
|-------|
| rame1 |
| ame2 |

| | |
|---------|---------|
| Frame 1 | |
| Frame 2 | Frame 3 |

10. Create a form using HTML which has the following types of controls:
 - I. Text Box
 - II. Option/radio buttons
 - III. Check boxes
 - IV. Reset and Submit buttons

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11. Create a student Bio-Data, using forms.
12. Create a web page using following style sheets
 - i. Inline style sheets. ii. Embedded style sheets. iii. External style sheets
13. Create a web page using "class" style sheets with different "border-width" property values like thick, medium, thin, grove, inset, and outset, red & blue.

JavaScript:

Create event driven program for following:

1. Print a table of numbers from 5 to 15 and their squares and cubes using alert.
2. Print the largest of three numbers.

3. Find the factorial of a number n .
4. Enter a list of positive numbers terminated by Zero. Find the sum and average of these numbers.
5. A person deposits Rs 1000 in a fixed account yielding 5% interest. Compute the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Write a JavaScript program to accept two values from form and apply any 5 mathematical functions.
8. Display the current date and time in both GMT and local form.
9. Write a JavaScript program on MouseOver, MouseOut, blur events.
10. Write a XML program using document type definitions
11. Write Student database with XML.
12. Write a XML program using XS

Core 5: Multimedia Systems and Applications

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

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.

Text book:

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

Reference books:

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

Practical: Multimedia Systems and Applications

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

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, pe , oval, circle, rectangle , square, pencil , brush , lasso tool
2. Create an animation using text tool to set the font , size , color etc.
3. Create an animation using **Free transform tool** that should use followings-
Move Objects
Skew Objects
Stretch Objects
Rotate Objects
Stretch Objects while maintaining proportion
Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background color etc.)Using the following tools
Eraser tool
Hand tool
Ink bottle tool
Zoom tool
Paint Bucket tool
Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).

8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

Core 6: Visual Programming

Unit I

Introduction to VB: Writing windows application with VB, Programming languages -procedural, object oriented, event driven; VB Environment, Writing first VB project, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Variables, constants, and Calculation: Data types, naming rules and conversion, constants-named and intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data Counting and accumulating Sums.

Unit II

Decisions and Conditions : If statement, Conditions-comparing numeric variables and constants, comparing strings, compound conditions (and, or, not), nested if statements, using if statements with option buttons & check boxes, displaying message in message box, input validation. Calling event procedures, debugging VB projects, Debugging Step-by-Step Tutorial.

Modular programming: Menus, using common dialog box, writing general procedure.

Forms Handling : Multiple forms, creating, adding, removing forms, hide, show method, load, unload statement, me keyword, referring to objects on a different forms, Variables and constants in Multiple-Forms.

Iteration Handling: Lists Boxes and Combo Boxes, Do/loops, for/next loops, using msgbox function, using string function

Unit III

Arrays: control Arrays, the case structure, single-dimension arrays, for Each/Next statement, table lookup, using list boxes with array, multidimensional arrays.

Database Connectivity: VB and database, using the data control, viewing a database file- step-by-step, Navigating the Database in code, using list boxes and comboboxes as data-bound controls, adding a lookup table and navigation-step-by-step, updating a database file, Recordsets, working with database fields, creating a new Dynaset.

Advanced topics in VB: ActiveX controls, Dynamic link libraries (DLL), Multiple Document interface (MDI).

Text Book:

1. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata Mcgraw Hill Edition 2000 (Fourteenth Reprint 2004))

Practical: Visual Programming

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- External Viva-voce is compulsory.

Example programs:

Note: - Use any open source alternative such as Tkinter with Python SharpDevelop/GAMBAS/OPENXAVA with JAVA

1. Print a table of numbers from 5 to 15 and their squares and Cubes.
2. Print the largest of three numbers.
3. Find the factorial of a number n.
4. Enter a list of positive numbers terminated by zero. Find the sum and average of these numbers.
5. A person deposits Rs. 1000 in a fixed account yielding 5% interest. Complete the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Read n numbers. Count the number of negative numbers, positive numbers and zeroes in the list.use arrays.
8. Read a single dimension array. Find the sum and average of these numbers.
9. Read a two dimension array. Find the sum of two 2D Array.
10. Create a database Employee and Make a form to allow data entry to **Employee Form** with the following command buttons:

Employee Form

| | |
|-----------------|----------------------|
| Employee Name | <input type="text"/> |
| Employee Id: | <input type="text"/> |
| Date of Joining | <input type="text"/> |
| Designation: | <input type="text"/> |
| Department: | <input type="text"/> |
| Address: | <input type="text"/> |
| Basic Pay: | <input type="text"/> |

| | | | | | | | |
|------|------|-------|------|-----|------|--------|--------|
| PREV | NEXT | FIRST | LAST | ADD | SAVE | DELETE | CANCEL |
|------|------|-------|------|-----|------|--------|--------|

Elective 1.A: Computer Networks

Unit I

Introduction: data communication- components, Networks, Protocols and Standards, Line configuration, topology, transmission mode, categories of networks.

OSI and TCP/IP Models: Layers and their functions, comparison of models.

Multiplexing: Many To One/One To Many, Frequency-Division Multiplexing (FDM), Wave-Division Multiplexing (WDM), Time-Division Multiplexing (TDM),

Unit II

Error Detection and Correction: Types of Errors, Detection, Vertical Redundancy Check (VRC), Longitudinal Redundancy Check (LRC), Cyclic Redundancy Check (CRC), Checksum, Error Correction.

Data Link Control: Line Discipline, Flow Control, Error Control, Asynchronous Protocols, Synchronous Protocols, Character-Oriented Protocols, Bit-Oriented Protocols, Link Access Procedures

Switching: Circuit Switching, Packet Switching, Message Switching.

Unit III

Transport Layer: Duties of the Transport Layer, Connection, the OSI Transport Protocol.

Upper OSI Layers: Session Layer, Presentation Layer, Application Layer.

TCP/IP Protocol Suite: Overview of TCP/IP, Network Layer, Addressing, Subnetting, Other Protocols In The Network Layer, Transport Layer

Text Book:

1. Behrouz A. Forouzan, *Data Communication and Networking*, 2nd Ed., Tata McGraw Hill.

Books Recommended

1. A.S. Tenenbaum, *Computer Networks*, 4th Ed., Pearson Education Asia, 2003.
2. D. E. Comer, *Internetworking with TCP/IP*, Pearson Education Asia, 2001.
3. William Stallings, *Data and Computer Communications*, 7th Ed., Pearson education Asia, 2002.

Practical: Computer Networks

NOTE:

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- Faculty must take care about UG standard programs it should be minimum 25 – 30.
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- External Viva-voce is compulsory.

Example programs:

Simulation Exercises: The following experiments shall be conducted using either NS2/NS3/OPNET or any other simulators.

1. Simulate a three nodes point-to-point network with duplex links between them. Set the queue size vary the bandwidth and find the number of packets dropped.
2. Simulate a four node point-to-point network, and connect the links as follows: n0- n2, n1-n2 and n2-n3. Apply TCP agent between n0-n3 and UDP n1-n3. Apply relevant applications over TCP and UDP agents changing the parameter and determine the number of packets by TCP/UDP.
3. Simulate the different types of Internet traffic such as FTP a TELNET over a network and analyze the throughput.
4. Simulate the transmission of ping messaged over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.
5. Simulate an Ethernet LAN using N-nodes (6-10), change error rate and data rate and compare the throughput.
6. Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and determine collision across different nodes.
7. Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and plot congestion window for different source/destination.
8. Simulate simple ESS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to transmission of packets.

Elective 1.B: Object Oriented Programming with C++

Unit I

Object-Oriented Paradigm, Data types, Operators and Expressions, Control Flows

Unit II

Arrays and Strings, Modular Programming with Functions, Pointers and runtime Binding, Structures and Unions.

Unit III

Classes and Objects, inheritance, virtual functions, Exception Handling,

Text Book:

1. K R Venugopal, Rajkumar Buyya, Mastering in C++, McGrawHill, 2nd Edition, 2013.

Reference:

1. Spoken Tutorial on “C++”, as E-resource for Learning. <http://spoken-tutorial.org>

Practical: Object Oriented Programming with C++

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Example programs:

- 1) Write a program to test Arithmetic operators.
- 2) Write a program to Swap two numbers.
- 3) Write a program to demonstrate Switch statement.
- 4) Write a program to find roots of a quadratic equation.
- 5) Write a program to check whether the given number is palindrome or not.
- 6) Write a program to convert binary number to decimal number.
- 7) Write a program to print the following format.
1
2 3
4 5 6
7 8 9 10
- 8) Write a program to search an element in a given list.
- 9) Write a program to perform addition of two Matrices.
- 10) Write a program to perform multiplication of two Matrices.
- 11) Write a program to find factorial of a given number using recursion.
- 12) Write a program to demonstrate Pointer arithmetic
- 13) Write a program to demonstrate Call-By-Value, Call-By-Address, Call-By-Reference.
- 14) Write a program to demonstrate Structure data type.
- 15) Write a program to demonstrate Enumerated data type.
- 16) Write a program to demonstrate inline functions.
- 17) Write a program to demonstrate Function Overloading.
- 18) Write a c++ program to demonstrate Class concept.
- 19) Write a c++ program on Constructor overloading.
- 20) Write a c++ program on Destructor.
- 21) Write a c++ program for copy constructor.
- 22) Write a c++ program to demonstrate Friend function.

- 23) Write a c++ program for Unary operator overloading (Friend function/Member function).
- 24) Write a c++ program for Binary operator overloading (Friend function/Member function).
- 25) Write a c++ program for Member Function overloading within a class
- 26) Write a c++ program for Single and Multilevel Inheritance.
- 27) Write a c++ program for Overriding of member functions.
- 28) Write a c++ program to demonstrate constructor calling mechanism in inheritance.
- 29) Write a c++ program for Multiple and Hybrid inheritance.
- 30) Write a c++ program to demonstrate pure virtual function implementation.

Elective 1.C: System Programming

Unit I

Computer Hardware And System Software: Introduction, Computer Hardware and Types of System Software, Man-machine Communication Spectrum.

INTRODUCTION TO COMPILERS: Introduction, Theory of Computer Languages, Design of a Language, Evolution of Compilers, Stages of Compilation.

Unit II

LEXICAL ANALYSIS: Introduction, Alphabets and Tokens in Computer Languages, Representation of Tokens and Regular Expression, Token Recognition and Finite State Automata, Lexical Analysis Tool

SYNTAX ANALYSIS: Introduction, Context-free Grammar and Structure of Language, Parser and its Types, Top-down Parser, Bottom-up Parser, Parser Generator Tool (Yacc),

Unit III

INTERMEDIATE CODE GENERATION: Introduction, Need for Intermediate Code, Types of Intermediate Code, Semantic Analysis.

OPTIMIZATION: Introduction, Hints on Writing Optimized Code at User Level, Construction of Basic Blocks and Processing.

CODE GENERATION: Introduction, Issues in Code Generation, Target Machine Architecture

COMPILER WRITING TOOLS: Introduction, Lexical Tools, Syntactic Tools,

Test Book:

1. K. Muneeswaran, Compiler Design (with CD), Oxford university press, 2012

Reference Books

1. Santanu Chattopadhyaya, Systems Programming, PHI, 2011.
2. Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, Compilers: Principles, Techniques, and Tools, 2nd edition, Prentice Hall, 2006.
3. D. M. Dhamdhare, Systems Programming, Tata McGraw Hill, 2011.
4. Leland Beck, D. Manjula, System Software: An Introduction to System Programming, 3rd edition, Pearson Education, 2008.
5. Grune D, Van Reeuwijk . K, Bal H. E, Jacobs C J H, Langendoen K, Modern Compiler Design, 2nd edition, Springer, 2012

Practical: Systems Programming

NOTE:

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- External Viva-voce is compulsory.

Example programs:

1. To implement an assembler for a hypothetical language.
2. To get familiar with lex: write a program to recognize numbers, identifiers.
3. To get familiar with yacc: write a desk calculator.
4. Implement a symbol table with functions to create, insert, modify, search, and display.
5. Implement pass one of a two pass assembler.
6. Implement pass two of a two pass assembler.
7. Implement a single pass assembler.
8. Implement a two pass macro processor
9. Implement a single pass macro processor.
10. Implement an absolute loader.
11. Implement a relocating loader.
12. Implement pass one of a direct-linking loader.
13. Implement pass two of a direct-linking loader.
14. Implement a simple text editor with features like insertion / deletion of a character, word, and sentence.
15. Implement a symbol table with suitable hashing

Elective2.A: Computer Graphics

Unit I

Computer Graphics: Graphs and Charts, Computer-Aided Design, Virtual-Reality Environments, Data Visualizations, Education and Training, Computer Art, Entertainment, Image Processing, Graphical User Interfaces.

Computer Graphics Hardware: Video Display Devices, Raster-Scan System, Graphics Workstations and Viewing Systems, Input Devices, Hard-Copy Devices, Graphics Networks, Graphics on the Internet.

Computer Graphics Software: Coordinate Representations, Graphics Functions, Software Standards, Other Graphics Packages, Introduction to OpenGL.

Unit II

Graphics Output Primitives: Coordinate Reference Frames, Specifying A Two-Dimensional World-Coordinate Reference Frame in OpenGL, OpenGL Point Functions, OpenGL Line Functions, OpenGL Curve Functions, Fill-Area Primitives, Polygon Fill Areas, OpenGL Polygon Fill-Area Functions, OpenGL Vertex Arrays, Pixel-Array Primitives, OpenGL Pixel-Array Functions, Character Primitives, OpenGL Character Functions, Picture Partitioning, OpenGL Display Lists, OpenGL Display-Window Reshape Function.

Attributes of Graphics Primitives: OpenGL State Variables, Color and Grayscale, OpenGL Color Functions, Point Attributes, OpenGL Point-Attribute Functions, Line Attributes, OpenGL Line-Attribute Functions, Curve Attributes, Fill-Area Attributes, OpenGL Fill-Area Attribute Functions, Character Attributes, OpenGL Character-Attribute Functions, OpenGL Antialiasing Functions, OpenGL Query Functions, OpenGL Attribute Groups.

Algorithms for Graphics Primitives and Attributes: Line-Drawing Algorithms, Circle-Generating Algorithms, Ellipse-Generating Algorithms.

Unit III

Two-Dimensional Geometric Transformations: Basic Two-Dimensional Geometric Transformations, Matrix Representations, Inverse Transformations, Two-Dimensional Composite Transformations, Raster Methods for Geometric Transformations, OpenGL Raster Transformations, Transformations between Two-Dimensional Coordinate Systems, OpenGL Functions for Two-Dimensional Geometric Transformations.

Two-Dimensional Viewing: The Two-Dimensional Viewing Pipeline, The Clipping Window, Normalization and Viewport Transformations, OpenGL Two-Dimensional Viewing Functions, Clipping Algorithms, Two-Dimensional Point Clipping, Two-Dimensional Line Clipping, Polygon Fill-Area Clipping, Curve Clipping, Text Clipping.

Text Book:

1. Donald D. Hearn, M. Pauline Baker, Warren Carithers "Computer Graphics with Open GL" 4th Edition, 2011.

References:

1. J.D. Foley, A van Dam, S.K. Feiner and J.F. Hughes, *Computer Graphics: Principals and Practices*, 2nd Ed., Addison-Wesley, MA, 1990.

2. D.F. Rogers, *Procedural Elements in Computer Graphics*, 2nd Ed., McGraw Hill Book Company, 2001.
3. D.F. Rogers and A.J. Adams, *Mathematical Elements in Computer Graphics*, 2nd Ed., McGraw Hill Book Company, 1990.

Practical: Computer graphics

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Program to recursively subdivide a tetrahedron to form 3D Sierpinski gasket. The number of recursive steps is to be specified by the user.
2. Program to implement Liang-Barsky line clipping algorithm.
3. Program to draw a color cube and spin it using OpenGL transformation matrices.
4. Program to create a house like figure and rotate it about a given fixed point using OpenGL functions.
5. Program to implement the Cohen-Sutherland line-clipping algorithm. Make provision to specify the input line, window for clipping and view port for displaying the clipped image.
6. Program to create a cylinder and a parallel piped by extruding a circle and quadrilateral respectively. Allow the user to specify the circle and quadrilateral.
7. Program using OpenGL functions, to draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene.
8. Program to draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing. Use OpenGL functions.
9. Program to fill any given polygon using scan-line area filling algorithm. (Use appropriate data structures.)
10. Program to display a set of values $\{f_{ij}\}$ as a rectangular mesh.

Elective 2.B: Software Engineering

Unit I

Introduction: The Evolving Role of Software, Software, Software Myths.

PROCESS: Software Engineering: A Layered Technology, the Software Process, Software Process Models, the Linear Sequential Model, the Prototyping Model, the RAD Model Evolutionary Software Process Models, Component-Based Development, The Formal Methods Model, Fourth Generation Techniques, Process Technology, Product and Process.

Unit II

PROJECT MANAGEMENT: The Management Spectrum, People, The Product, The Process, The Project, The W5HH Principle.

RISK ANALYSIS AND MANAGEMENT: Reactive versus Proactive Risk Strategies, Software Risks, Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation, Monitoring, and Management.

Unit III

SOFTWARE TESTING TECHNIQUES: Software Testing Fundamentals, Test Case Design, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing, Testing for Specialized Environments, Architectures, and Applications.

SOFTWARE TESTING STRATEGIES: A Strategic Approach to Software Testing, Strategic Issues, integration Testing, Unit Testing, Validation Testing, System Testing,

Text book:

1. Roger S. Pressman ,Software Engineering (Sixth edition) , Tata McGraw Hill,2009

Practical: Software Engineering

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Practical exercises based on concepts listed in Software Testing theory.

1. Write a program that take three inputs (a,b &c) that represent the sides of a triangle, and the output is one of the below four:
 - a. Not a triangle
 - b. Scalene triangle
 - c. Isosceles triangle
 - d. Equilateral triangle
 - 1.1 Generate test cases using Boundary Value Analysis, Equivalence Class Partitioning and Decision Table Testing.
 - 1.2 Generate test cases using Basis path testing.
 - 1.3 Run code coverage tool.
2. Write a program that determines the nature of roots of a quadratic equation. Output should be one of the following:-
 - Not a quadratic equation.
 - Complex roots
 - Real roots
 - Single roots
 - I. Generate test cases using Boundary Value Analysis, Equivalence Class Partitioning and Decision Table Testing.
 - II. Generate test cases using Basis path testing.
 - III. Run code coverage tool
3. Write a program that checks whether the number is even or odd. Run code coverage tool and find the amount of code being covered.
4. Write a program that dynamically allocates memory to 10 integers using malloc() or calloc() and
 - donot free memory leading to memory leaks. Verify the same using Valgrind.
 - Now, free memory using free() at the end of the program to avoid memory leaks. Verify the same using Valgrind.

Elective 2.C: PHP Programming

Unit I

Introducing PHP: History, Unique Features, Basic Development Concepts, Creating Your First PHP Script, Mixing PHP with HTML, Sample Applications.

Using Variables and Operators: Storing Data in Variables, Understanding PHP's Data Types, Setting and Checking Variable Data Types, Using Constants, Manipulating Variables with Operators.

Unit II

Controlling Program Flow: Writing Simple and Complex Conditional Statements, Repeating Actions with Loops, Working with String and Numeric Functions,

Working with Arrays: Storing Data in Arrays, Processing Arrays with Loops and Iterators, Using Arrays with Forms, Working with Array Functions, Working with Dates and Times.

Unit III

Using Functions and Classes: Creating User-Defined Functions, Creating Classes, Using Advanced OOP Concepts.

Working with Databases and SQL: Introducing Databases and SQL, Creating and Populating a Database, Using PHP's MySQLi Extension, Adding or Modifying Data, Handling Errors, Using PHP's SQLite Extension. Using PHP's PDO Extension, Building a Login Form.

Text book:

1. Vikram Vaswani, PHP: A Beginner's Guide(5.3), The McGraw-Hill, 2009

Reference Books:

1. Steven Holzner, "PHP: The Complete Reference Paperback", McGraw Hill Education (India), 2007.
2. Timothy Boronczyk, Martin E. Psinas, "PHP and MYSQL (Create-Modify-Reuse)", Wiley India Private Limited, 2008.
3. Robin Nixon, "Learning PHP, MySQL, JavaScript, CSS & HTML5", 3rd Edition Paperback, O'reilly, 2014.
4. Luke Welling, Laura Thompson, "PHP and MySQL Web Development", 4th Edition, Addition Paperback, Addison-Wesley Professional,2008.
5. David Sklar, Adam Trachtenberg, "PHP Cookbook: Solutions & Examples for PHP Programmers", 2014.
6. Spoken Tutorial on "PHP", as E-resource for Learning. <http://spoken-tutorial.org>

Practical: PHP programming

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Create a PHP page using functions for comparing three integers and print the largest number.
2. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
3. WAP to check whether the given number is prime or not.
4. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
5. Write a PHP function that checks if a string is all lower case.
6. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
7. WAP to sort an array.
8. Write a PHP script that removes the whitespaces from a string. Sample string : 'The quick " " brown fox' Expected Output :
Thequick""brownfox
9. Write a PHP script that finds out the sum of first n odd numbers.
10. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
11. Write a PHP script that checks if a string contains another string.
12. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
13. Write a simple PHP program to check that emails are valid.
14. WAP to print first n even numbers.
15. Write a PHP program to print Fibonacci series using recursion.
16. Write a PHP script to replace the first 'the' of the following string with 'That'.
17. Using switch case and dropdown list display a –Hello message depending on the language selected in drop down list.

18. Create a script to construct the following pattern, using nested for loop.

*

* *

* * *

* * * *

* * * * *

KAKATIYA UNIVERSITY WARANGAL, TELANGANA



**B.A and B.Sc (Life Sciences) with Computer
Application Syllabus**

Under the

**CHOICE BASED CREDIT SYSTEM
(With effect from 2016-17)**

**DEPARTMENT OF COMPUTER SCIENCE
Kakatiya University, Warangal-506009**



**DEPARTMENT OF COMPUTER SCIENCE
KAKATIYA UNIVERSITY
WARANGAL-506 009**

Department of Computer Science, Kakatiya University offers B.A and B.Sc. (Life Science) with computer application as core subjects at UG level (3 Year course) with six semesters with internal assessment for theory papers under Choice Based Credit System (CBCS) in University constituent and affiliated colleges for the students admitted in first year from 2016-17 academic year onwards.

1. Each of first four Semesters (i.e I, II III and IV) contains one theory core paper (20 marks for Internal Assessment and 80 marks for Semester End Exam equivalent to 4 credits) as Discipline Specific Course (DSC) and one practical paper (50 marks equivalent to 02 credits), whereas each of last two semesters (i.e V and VI) contains one theory core paper as DSC (15 marks for Internal Assessment and 60 marks for Semester End Exam equivalent to 3 credits), one theory elective paper as Discipline Specific Elective (DSE) (15 marks for Internal Assessment and 60 marks for Semester End Exam equivalent to 3 credits) and two practical papers (25 marks in each paper equivalent to 01 credit). For total six semesters in B.A and B.Sc. (Life Science) with computer application courses, the total marks are 1000 and credits are 40 for each.
2. Internal Assessment examination will be conducted twice in every Semester. Marks will be awarded from the average of the two Internal Assessment Exams in each Semester.
3. Scheme for CBCS, work-load for each paper, distribution of marks and credits; and scheme of question paper are attached herewith.
4. The syllabi of B.A and B.Sc. (Life Science) with computer application theory and practical papers of I, II, III, IV, V and VI semesters are enclosed
5. The practical examination will be conducted at the end of each semester. A minimum of 40% marks should be obtained by the student to pass the practical examination of both B.A and B.Sc. (Life Science) with computer application in all semesters.
6. All the theory papers and practical papers of both B.A and B.Sc. (Life Science) with computer application in I, II, III and IV semesters are common to all students. But, elective theory (DSE) papers of B.A and B.Sc. (Life Science) with computer application in V and VI Semesters are to be chosen by the student from the available options.
7. Elective (DSE) papers of B.A and B.Sc. (Life Science) with computer application will be offered separately at the beginning of Semesters V and VI. Every student has to choose one elective from the Electives being offered.

**B.A and B.Sc. (Life Science) with Computer Application
CBCS pattern in Semester System (w. e. from 2016-2017)**

| Code | Semester | Course category | Title of the Paper | No. of Credits | HPW | Max. Marks | | | Total Marks |
|---------------------------|----------|--------------------|--|----------------|----------|------------|----------|----------|-------------|
| | | | | | | I.A | End Exam | Total | |
| FIRST YEAR | | | | | | | | | |
| BS106 | I | DSC-1A (Theory) | Computer Fundamentals | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1A (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS206 | II | DSC-1B (Theory) | Computer Programming with C | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1B (Practical) | | 1 | 2 | - | 25 | 25 | |
| SECOND YEAR | | | | | | | | | |
| BS306 | III | DSC-1C (Theory) | Database Management System | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1C (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS406 | IV | DSC-1D (Theory) | Internet Technologies | 4 | 4 | 20 | 80 | 100 | 125 |
| | | DSC-1D (Practical) | | 1 | 2 | - | 25 | 25 | |
| THRID YEAR | | | | | | | | | |
| BS505 | V | DSC-1E (Theory) | Multimedia Systems and Applications | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1E (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS508 | V | DSC-1E (Theory) | Elective 1 (A/B/C) A) Computer Networks B) Object Oriented Programming with C++ C) System programming | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1E (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS605 | VI | DSC-1F (Theory) | Visual Programming | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1F (Practical) | | 1 | 2 | - | 25 | 25 | |
| BS608 | VI | DSC-1F (Theory) | Elective 2 (A/B/C) A) Computer Graphics B) Software Engineering C) PHP Programming | 3 | 3 | 15 | 60 | 75 | 100 |
| | | DSC-1F (Practical) | | 1 | 2 | - | 25 | 25 | |
| Summary of Credits | | | | 36 | - | - | - | - | 900 |

Note: - Skill Enhancement Courses (SEC1, SEC2, SEC3 and SEC4) will be introduce later

Core 1: Computer Fundamentals

Unit – I

Introduction to Computer : Introduction, Digital and Analog Computers, Characteristics of Computer, History of Computer, Generations of Computer, Classification of Computer, The Computer System, Application of Computers.

The Computer System Hardware: Introduction, Central Processing Unit, Memory Unit, Instruction Format, Instruction Set, Instruction Cycle, Microprocessor, Interconnecting the Units of a Computer, Performance of a Computer, Inside a Computer Cabinet

Computer Memory : Introduction, Memory Representation, Memory Hierarchy, CPU Registers, Cache Memory, Primary Memory, Secondary Memory, Access Types of Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk, Magneto-Optical Disk, Using the Computer Memory.

Unit – II

Input and Output Devices: Introduction, Input-Output Unit, Input Devices, Human Data Entry Devices, Source Data Entry Devices, Output Devices, I/O Port, Working of I/O System.

Data Representation : Introduction, Number System, Conversion from Decimal to Binary, Octal, Hexadecimal, Conversion of Binary, Octal, Hexadecimal to Decimal , Conversion of Binary to Octal, Hexadecimal, Conversion of Octal, Hexadecimal to Binary, Binary Arithmetic, Signed and Unsigned Numbers, Binary Data Representation, Binary Coding Schemes, Logic Gates.

Interaction of User and Computer: Introduction, Types of Software, System Software, Application Software, Software Acquisition.

Unit – III

Operating System : Introduction, Objectives of Operating System, Types of OS, Functions of OS, Process Management, Memory Management, File Management, Device Management, Protection and Security, User Interface, Examples of Operating Systems.

Computer Programming Fundamentals: Introduction, Program Development Life Cycle, Algorithm, Control Structures, Flowchart, Pseudo Code, Programming Paradigms.

The Internet and Internet Services: Introduction, History of Internet, Internetworking Protocol, the Internet Architecture, Managing the Internet, Connecting to Internet, Internet Connections, Internet Address, Internet Services, Uses of Internet.

Unit IV

Information Systems : Introduction, Data, Information and Knowledge, Characteristics of Information, Information System (IS), Computer-Based Information System (CBIS), Need for Efficient Information System, Categories of Information System, Operations Support System, Management Support System, Specialized Information System, Careers in Information Systems.

Computer Security: Introduction, Security Threat and Security Attack, Malicious Software, Hacking, Security Services, Security Mechanisms, Cryptography, Digital Signature, Firewall, Users Identification and Authentication, Other

Security Measures, Security Awareness, Security Policy.

Emerging Computer Technologies: Distributed Networking, Peer-to-Peer Computing, Grid Computing, Cloud Computing, Utility Computing, On-demand Computing, Wireless Network, Bluetooth, and Artificial Intelligence.

Text Books:

1. A. Goel, Computer Fundamentals, Pearson Education, 2010.
- 2.** Reema Thareja, Fundamentals of Computers, Oxford 2015.

References:

1. Spoken Tutorial on “Linux (Ubuntu), LibreOffice (Writer, Calc, Impress), Firefox”, as E-resource for Learning. <http://spoken-tutorial.org>

Practical: Computer Fundamentals

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

The practical assignment must include connecting parts of a computer and assembling it to an extent, media formatting and installation of some software.

Practical exercises based on Open Office tools using document preparation and spreadsheet handling packages.

Text Editor

1. Prepare a grocery list having four columns (Serial number, The name of the product, quantity and price) for the month of April, 06.
 - Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
 - The headings of the columns should be in 12-point and bold.
 - The rest of the document should be in 10-point Times New Roman.
 - Leave a gap of 12-points after the title.
2. Create a telephone directory.
 - The heading should be 16-point Arial Font in bold
 - The rest of the document should use 10-point font size
 - Other headings should use 10-point Courier New Font.
 - The footer should show the page number as well as the date last updated.
3. Design a time-table form for your college.
 - The first line should mention the name of the college in 16-point Arial Font and should be bold.
 - The second line should give the course name/teacher's name and the department in 14-point Arial.
 - Leave a gap of 12-points.
 - The rest of the document should use 10-point Times New Roman font.
 - The footer should contain your specifications as the designer and date of creation.
4. BPB Publications plans to release a new book designed as per your syllabus. Design the first page of the book as per the given specifications.

- The title of the book should appear in bold using 20-point Arial font.
- The name of the author and his qualifications should be in the center of the page in 16-point Arial font.
- At the bottom of the document should be the name of the publisher and address in 16-point Times New Roman.
- The details of the offices of the publisher (only location) should appear in the footer.

5. Create the following one page documents.

- Compose a note inviting friends to a get-together at your house, including a list of things to bring with them.
- Design a certificate in landscape orientation with a border around the document.
- Design a Garage Sale sign.
- Make a sign outlining your rules for your bedroom at home, using a numbered list.

6. Create the following documents:

- A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.
- Use a newsletter format to promote upcoming projects or events in your classroom or college.
- Convert following text to a table, using comma as delimiter
- Type the following as shown (do not bold).

Color, Style, Item

Blue, A980, Van

8Red, X023, Car

Green, YL724, Truck

Name, Age, Sex

Bob, 23, M

Linda, 46, F

Tom, 29, M

7. Enter the following data into a table given on the next page.

| Salesperson | Dolls | Trucks | Puzzles |
|----------------|-------|--------|---------|
| Kennedy, Sally | 1327 | 1423 | 1193 |
| White, Pete | 1421 | 3863 | 2934 |
| Pillar, James | 5214 | 3247 | 5467 |
| York, George | 2190 | 1278 | 1928 |

| | | | |
|-----------------|------|------|------|
| Banks, Jennifer | 1201 | 2528 | 1203 |
| Atwater, Kelly | 4098 | 3079 | 2067 |

Add a column Region (values: S, N, N,S,S,S) between the Salesperson and Dolls columns to the given table Sort your table data by Region and within Region by Salesperson in ascending order:

In this exercise, you will add a new row to your table, place the word "Total" at the bottom of the Salesperson column, and sum the Dolls, Trucks, and Puzzles columns.

8. Wrapping of text around the image.
9. Create your resume by incorporating most of the options learned till now.
10. Following features of menu option must be covered

FILE Complete menu

EDIT Complete menu

VIEW Complete menu

INSERT Complete menu

FORMAT Complete menu

TABLE Complete menu

WINDOW Complete menu

HELP Complete menu

TOOLS All options except Online collaboration, Tools on Macro, Templates

Spreadsheet

1. Enter the Following data in Excel Sheet

REGIONAL SALES PROJECTION

| State | Qtr1 | Qtr2 | Qtr3 | QTR4 | Qtr Total | Rate | Amount |
|-----------|------|------|------|------|-----------|------|--------|
| Delhi | 2020 | 2400 | 2100 | 3000 | | 15 | |
| Punjab | | 1100 | 1300 | 1500 | 1400 | | 20 |
| U.P. | 3000 | 3200 | 2600 | 2800 | | 17 | |
| Harayana | 1800 | 2000 | 2200 | 2700 | | 15 | |
| Rajasthan | 2100 | 2000 | 1800 | 2200 | | 20 | |

TOTAL

AVERAGE

(a) Apply Formatting as follow:

I. Title in TIMES NEW ROMAN

ii. Font Size - 14

iii. Remaining text - ARIAL, Font Size -10

iv. State names and Qtr. Heading Bold, Italic with Gray Fill Color.

v. Numbers in two decimal places.

vi. Qtr. Heading in center Alignment.

Vii. Apply Border to whole data.

(b) Calculate State and Qtr. Total

(c) Calculate Average for each quarter

(d) Calculate Amount = Rate * Total.

2. Given the following worksheet

| | A | B | C | D |
|---|----------|------------|----------|----------|
| 1 | Roll No. | Name | Marks | Grade |
| 2 | 1001 | Sachin | 99 | |
| 3 | 1002 | Sehwag | 65 | |
| 4 | 1003 | Rahul | 41 | |
| 5 | 1004 | Sourav | 89 | |
| 6 | 1005 | Har Bhajan | 56 | |

Calculate the grade of these students on the basis of following guidelines:

If Marks Then Grade

>= 80 A+

10>= 60 < 80 A

>= 50 < 60 B

< 50 F

3. Given the following worksheet

| A | B | C | D | E | F | G |
|---|----------|----------------|------|-------|-------|------------------|
| 1 | Salesman | Sales in (Rs.) | | | | |
| 2 | No. | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Total Commission |
| 3 | S001 | 5000 | 8500 | 12000 | 9000 | |
| 4 | S002 | 7000 | 4000 | 7500 | 11000 | |
| 5 | S003 | 4000 | 9000 | 6500 | 8200 | |
| 6 | S004 | 5500 | 6900 | 4500 | 0500 | |
| 7 | S005 | 7400 | 8500 | 9200 | 8300 | |
| 8 | S006 | 5300 | 7600 | 9800 | 6100 | |

Calculate the commission earned by the salesmen on the basis of following Candidates:

If Total Sales Commission

< 20000 0% of sales

> 20000 and < 25000 4% of sales

| | |
|---------------------|---------------|
| > 25000 and < 30000 | 5.5% of sales |
| > 30000 and < 35000 | 8% of sales |
| >= 35000 | 11% of sales |

The total sales is sum of sales of all the four quarters.

4. A company XYZ Ltd. pays a monthly salary to its employees which consists of basic salary, allowances & deductions. The details of allowances and deductions are as follows:

Allowances

- HRA Dependent on Basic
 - 30% of Basic if Basic <=1000
 - 25% of Basic if Basic>1000 & Basic<=3000
 - 20% of Basic if Basic >3000
- DA Fixed for all employees, 30% of Basic
- Conveyance Allowance
 - Rs. 50/- if Basic is <=1000
 - Rs. 75/- if Basic >1000 & Basic<=2000
 - Rs. 100 if Basic >2000
- Entertainment Allowance NIL if Basic is <=1000
 - Rs. 100/- if Basic > 1000

Deductions

- Provident Fund 6% of Basic
- Group Insurance Premium Rs. 40/- if Basic is <=1500
 - Rs. 60/- if Basic > 1500 & Basic<=3000
 - Rs. 80/- if Basic >3000

Calculate the following:

Gross Salary = Basic + HRA + DA + Conveyance + Entertainment

Total deduction = Provident Fund + Group Insurance Premium

Net Salary = Gross Salary – Total Deduction

5. Create Payment Table for a fixed Principal amount, variable rate of interests and time in the format below:

| No. of Instalments | 5% | 6% | 7% | 8% | 9% |
|--------------------|----|----|----|----|----|
| 3 | XX | XX | XX | XX | XX |
| 4 | XX | XX | XX | XX | XX |
| 5 | XX | XX | XX | XX | XX |
| 6 | XX | XX | XX | XX | XX |

6. Use an array formula to calculate Simple Interest for given principal amounts given the rate of Interest and time

| | |
|------------------|-----------------|
| Rate of Interest | 8% |
| Time | 5 Years |
| Principal | Simple Interest |
| 1000 | ? |
| 18000 | ? |
| 5200 | ? |

7. The following table gives year wise sale figure of five salesmen in Rs.

| Salesman | 2000 | 2001 | 2002 | 2003 | |
|----------|-------|------|-------|--------|-------|
| S1 | 10000 | | 12000 | 20000 | 50000 |
| S2 | 15000 | | 18000 | 50000 | 60000 |
| S3 | 20000 | | 22000 | 70000 | 70000 |
| S4 | 30000 | | 30000 | 100000 | 80000 |
| S5 | 40000 | | 45000 | 125000 | 90000 |

- (a) Calculate total sale year wise.
 (b) Calculate the net sale made by each salesman
 (c) Calculate the maximum sale made by the salesman
 (d) Calculate the commission for each salesman under the condition.
 (i) If total sales >4,00,000 give 5% commission on total sale made by the salesman.
 (ii) Otherwise give 2% commission.
 (e) Draw a bar graph representing the sale made by each salesman.
 (f) Draw a pie graph representing the sale made by salesman in 2000.
8. Enter the following data in Excel Sheet

PERSONAL BUDGET FOR FIRST QUARTER

Monthly Income (Net): 1,475

| EXPENSES QUARTER | JAN | FEB | MARCH | QUARTER TOTAL | AVERAGE |
|-----------------------------|------------|------------|--------------|--------------------------|----------------|
| Rent | 600.00 | | 600.00 | 600.00 | |
| Telephone | 48.25 | 43.50 | 60.00 | | |
| Utilities | | 67.27 | 110.00 | 70.00 | |
| Credit Card | 200.00 | | 110.00 | 70.00 | |
| Oil | 100.00 | | 150.00 | 90.00 | |
| AV to Insurance | | 150.00 | | | |

Cable TV 40.75 40.75 40.75

Monthly Total

- (a) Calculate Quarter total and Quarter average.
- (b) Calculate Monthly total.
- (c) Surplus = Monthly income - Monthly total.
- (d) What would be total surplus if monthly income is 1500.
- (e) How much does telephone expense for March differ from quarter average.
- (f) Create a 3D column graph for telephone and utilities.
- (g) Create a pie chart for monthly expenses.

9. Enter the following data in Excel Sheet

TOTAL REVENUE EARNED FOR SAM'S BOOKSTALL

| Publisher name | 1997 | 1998 | 1999 | 2000 | total |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| A | Rs. 1,000.00 | | Rs. 1100.00 | | Rs. 1,300.00 |
| | Rs.800.00 | | | | |
| B | Rs. 1,500.00 | | Rs. 700.00 | Rs. 1,000.00 | Rs. |
| | | | | | 2,000.00 |
| C | Rs. 700.00 | Rs. 900.00 | Rs. 1,500.00 | | Rs.600.00 |
| D | Rs. 1,200.00 | | Rs. 500.00 | Rs. 200.00 | Rs. 1,100.00 |
| E | Rs 800.00 | Rs. 1,000.00 | | Rs. 3,000.00 | |
| | Rs.560.00 | | | | |

- (a) Compute the total revenue earned.
- (b) Plot the line chart to compare the revenue of all publisher for 4 years.
- (b) Chart Title should be 'Total Revenue of sam's Bookstall (1997-2000)'
- (c) Give appropriate categories and value axis title.

10. Generate 25 random numbers between 0 & 100 and find their sum, average and count. How many no. are in range 50-60

Core 2: Computer Programming with C

Unit - I

Computing Concepts: Types of Software, Programming Languages, Translator Programs, Problem Solving Techniques, Using Computer.

Overview of C: History of C, Importance of C, Sample Programs, Basic Structure of C Programs, Programming Style, Executing a ' C ' Program.

Constants, Variables, and Data Types : Introduction, Character set, C tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Declaration of Storage Class, Assigning Values to Variables, Defining Symbolic Constant, Declaring Variable as Constant and Volatile, Overflow and Underflow of Data.

Managing Input and Output Operations: Introduction, Reading a Character, Writing a Character, Formatted Input and Output.

Operators and Expressions : Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operator, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of Arithmetic Operators, Some Computational Problems, Type Conversions in Expressions, Operator Precedence and Associativity, Mathematical Functions.

Unit - II

Decision Making and Branching: Introduction, Decision Making with IF Statement, Simple If Statement, The If...Else Statement, Nested of If...Else Statements, The else if Ladder, The Switch Statement, The?: Operator, The Goto Statement.

Decision Making and Looping: Introduction, The While statement, the do Statement, the For Statement, Jumps in Loops.

Arrays: Introduction, One-dimensional Arrays, Declaration and Initialization of One-dimensional Arrays, Two-dimensional Arrays, Initializing two-dimensional Arrays, Multi-dimensional Arrays, Dynamic Arrays.

Unit III

Character Arrays and Strings: Introduction, Declaring and Initializing String Variables, Reading Strings from Terminal, Writing Strings to Screen, Arithmetic Operations on Characters, Putting Strings together, Comparison of Two Strings, String-handling Functions, Table of Strings, Other Features of Strings.

User-Defined Functions : Introduction, Need for User-Defined Functions, A Multi-function Program, Elements of user-defined Functions, Definition of Functions, Return Value and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and No Return Values, Arguments but No Return Values, Arguments with Return Values, No Arguments but Returns a Value, Functions that Return Multiple Values, Nesting of Functions, Recursion, Passing Arrays to Functions, Passing Strings to Functions, The Scope, Visibility and Lifetime of Variables, Multifile Programs.

Unit- IV

Pointers : Introduction, Understanding Pointers, Accessing the Address of a Variable, Declaring Pointer Variables, Initialization of pointer Variables, Accessing a Variable through its pointer, Chain of Pointers, Pointer Expressions, Pointer Increments and Scale Factor, Pointers and Arrays, Pointer and Arrays, Pointers and Character Strings, Arrays of Pointers, Pointers as Function Arguments, Functions Returning Pointers, Pointers to Functions, Pointers and Structures.

Structures and Unions : Introduction, Defining a Structure, Declaring Structure Variables, Accessing Structure Members, Structure Initialization, Copying and Comparing Structure Variables, Operations on Individual Members, Arrays of Structures, Arrays within Structures, Structures within Structures, Structures and Functions, Unions, Size of Structures, Bit Fields.

File Management in C : Introduction, Defining and Opening a File, Closing a File, Input/Output Operations on Files, Error Handling During I/O Operations, Random Access to Files, Command Line Arguments.

Text Book:

1. Computing Fundamentals & C Programming – McGrawHill Education.

References:

1. Spoken Tutorial on “C”, as E-resource for Learning. <http://spoken-tutorial.org>

Practical: Computer Programming with C

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Write a c program for electricity bill tacking different categories of users, diffrent slabs in each category.(using nested if else statement)
2. write a c program to evaluate the following using loops
 - a. $1+x^2/2!+x^4/4!+\dots$ upto 5 terms
 - b. $x+x^3/3!+x^5/5!+\dots$ upto 5 terms
3. Write a c program to check whether the given number is
 - a. Prime or not
 - b. Perfect or abundant or deficient
4. Write a c program to find the mean, mode, median, and variance of list of values by using one dimensional array
5. Write a menu driven program to read a list of numbers and perform the following operations
 - a. Print the list
 - b. Delete duplicates from the list
 - c. Reverse the list
6. Write a program to read a list of numbers and search for given number using binary search algorithm and if found display its index otherwise display the message "element not found in the list" using functions
7. Write a menu driven program to read two matrices and compute their sum and product using functions
8. Write a menu driven program to read list of student names and perform the following operations using functions.
 - a. To print list of names
 - b. To sort them in ascending order
 - c. To print the list after sorting
9. Write a c program that consists of recursive functions to find
 - a. Factorial of a given number
 - b. Print the pascal triangle using bionomial theorem

10. Write a menu driven program to read list of student names and perform the following operations using array of character pointers.
 - a. To insert a student name
 - b. To delete a name
 - c. To print the names

Core 3: Database Management System

Unit 1

Introduction to Databases: Databases and Database Users, Introduction, Example, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, Advantages of Using the DBMS Approach, History of Database Applications, When Not to Use a DBMS.

Database System Concepts and Architecture: Data Models, Schemas, and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, the Database System Environment, Centralized and Client/Server Architectures for DBMSs, Classification of Database Management Systems.

Data Models: Data Modelling and Data Models, the Importance of Data Models, Data Model Basic Building Blocks, Business Rules, the Evolution of Data Models, Degrees of Data Abstraction

Unit II

The Relational Database Model: Logical View of Data, Keys, Integrity Rules, Relational Set Operators, The Data Dictionary and the System Catalog, Relationships within the Relational Database, Data Redundancy Revisited, Indexes.

Entity Relationship (ER) Modelling: The Entity Relationship Model (ERM)- Entities , Attributes , Relationships , Connectivity and Cardinality , Existence Dependence , Relationship Strength , ,Weak Entities , Relationship Participation , Relationship Degree, Recursive Relationships, Associative (Composite) Entities; Developing an ER Diagram, Database Design Challenges: Conflicting Goals.

Unit III

ADVANCED DATA MODELING: The Extended Entity Relationship Model, Entity Clustering, Entity Integrity: Selecting Primary Keys.

Normalization of Database Tables: Database Tables and Normalization, The Need for Normalization, The Normalization Process, Improving the Design, Surrogate Key Considerations, Higher-Level Normal Forms, Normalization and Database Design, Denormalization.

Unit IV

Introduction to Structured Query Language (SQL): Introduction to SQL, Data Definition Commands, Data Manipulation Commands, SELECT Queries, Advanced Data Definition Commands, Advanced SELECT Queries, Virtual Tables: Creating a View, Joining Database Tables.

Advanced SQL: Relational Set Operators, SQL Join Operators, Subqueries and Correlated Queries, SQL Functions, Oracle Sequences, Updatable Views, Procedural SQL, Embedded SQL.

Text Books:

1. Peter Rob and Carlos Coronel, Database Systems: Design, Implementation, and Management, Thomson, Eighth Edition, 2009

2. R. Elmasri,S. Navathe, Fundamentals of Database Systems, Pearson Education, sixth Edition, 2011

Book references:

1. MySQL : Reference Manual
2. Spoken Tutorial on “MySQL”, as E-resource for Learning, <http://spoken-tutorial.org>

Practical: Database Management System

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

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

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

IssuedBooks (Accession number, Borrower)

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

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

Paper Details (Paper code, Name of the Paper)

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

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
- b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper 2.

- c) List all students who live in “Delhi” and have marks greater than 60 in paper 1.
 - d) Find the total attendance and total marks obtained by each student.
 - e) List the name of student who has got the highest marks in paper 2.
3. Create the following tables and answer the queries given below:

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)

- 1. Identify primary and foreign keys.
- 2. Alter table employee, add a column “email” of type varchar(20).
- 3. Find the name of all managers who work for both Samba Bank and NCB Bank.
- 4. 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.
- 5. Find the names of all employees who live in the same city as the company for which they work.
- 6. Find the highest salary, lowest salary and average salary paid by each company.
- 7. Find the sum of salary and number of employees in each company.
- 8. 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 Delhi.
- j) Get part numbers for part supplied by a supplier in Allahabad to a project in Chennai.
- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

Core 4: Internet Technologies

Unit – I

HTML- Basic HML, The document body, Text, Hyperlinks, Adding More Formatting, Lists, Using Color and Images, Images, Tables, Frames, Forms-Toward Interactivity .

Cascading Stylesheets - Introduction, Inline Styles, Embedded Style Sheets, Linking external sheets, Backgrounds, text flow and box model.

Unit - II

JavaScript- Introduction, simple programming, Obtaining User Input with prompt Dialogs, Operators (arithmetic, Decision making, assignment, logical, increment and decrement). Control Structures - if... else selection statement, while, do... while repetitions statement, for statement, switch statement, break and continue statements.

Functions - program modules in JavaScript, programmer defined functions, function definition, Random-number generator, scope rules, global functions, recursion,

Unit – III

JavaScript: Arrays, Objects - Math Object, String Object, Date Object, Boolean & Number Object, document and window Objects. Event Model - on click, on load, on error, onmouseover, onmouseout, on focus, on blur, on submit, on reset, more DHTML events.

Unit - IV

Introduction, XML Basics, Structuring Data, XML Namespaces, Document Type Definitions (DTDs), W3C XML Schema Documents, XML Vocabularies, Math, Other Markup Languages, and Extensible Style sheet Language and XSL Transformations, Document Object Model (DOM).

Text books:

1. Internet& World Wide Web- H. M. Deitel, P.J. Deitel, A. B. Goldberg-Third Edition

References:

1. D.R. Brooks, An Introduction to HTML and Javascript for Scientists and Engineers, Springer
2. URL: www.wikipedia.org
3. HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009.
4. J. A. Ramalho, Learn Advanced HTML 4.0 with DHTML, BPB Publications, 2007

Practical: Internet Technologies

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using HTML.

1. Create HTML document with following formatting – Bold, Italics, Underline, Colors, Headings, Title, Font and Font Width, Background, Paragraph, Line Brakes, Horizontal Line, Blinking text as well as marquee text.
2. Create HTML document with Ordered and Unordered lists, Inserting Images, Internal and External linking
3. Create HTML document with Table:

| | | | | |
|--|--|--|-----------------|--|
| | | | | |
| | | | Some image here | |
| | | | | |

4. Create Form with Input Type, Select and Text Area in HTML.
5. Create an HTML containing Roll No., student's name and Grades in a tabular form.
6. Create an HTML document (having two frames) which will appear as follows:

| About department | |
|------------------|---|
| Department1 | This frame would show the contents according to the link clicked by the user on the left Frame. |
| Department1 | |
| Department1 | |

7. Create an HTML document containing horizontal frames as follows:

| |
|--|
| Department Names (could be along with Logos) |
| Contents according to the Link clicked |

8. Create a website of 6 – 7 pages with different effects as mentioned in above problems.
9. Create HTML documents (having multiple frames) in the following three formats:

| |
|-------|
| rame1 |
| ame2 |

| | |
|---------|---------|
| Frame 1 | |
| Frame 2 | Frame 3 |

10. Create a form using HTML which has the following types of controls:
 - I. Text Box
 - II. Option/radio buttons
 - III. Check boxes
 - IV. Reset and Submit buttons

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Interested in receiving daily small updates of all latest News? Well, now you can. And best of all, it is free! Just fill out this form and submit it by clicking the "send it In" button. We will put you on our mailing list and you will receive your first email in 3-5 days.

Please fill the following boxes to help us send the emails and our news letter:

First Name:

Last Name:

Business:

We must have a correct e-mail address to send you the news letter:

Email:

How did you hear about XYZ News Magazine and Emails?

Here on the Web In a magazine Television Other

Would you like to be on our regular mailing list?

Yes, we love junk emails

11. Create a student Bio-Data, using forms.
12. Create a web page using following style sheets
 - i. Inline style sheets. ii. Embedded style sheets. iii. External style sheets
13. Create a web page using "class" style sheets with different "border-width" property values like thick, medium, thin, grove, inset, and outset, red & blue.

JavaScript:

Create event driven program for following:

1. Print a table of numbers from 5 to 15 and their squares and cubes using alert.
2. Print the largest of three numbers.

3. Find the factorial of a number n .
4. Enter a list of positive numbers terminated by Zero. Find the sum and average of these numbers.
5. A person deposits Rs 1000 in a fixed account yielding 5% interest. Compute the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Write a JavaScript program to accept two values from form and apply any 5 mathematical functions.
8. Display the current date and time in both GMT and local form.
9. Write a JavaScript program on MouseOver, MouseOut, blur events.
10. Write a XML program using document type definitions
11. Write Student database with XML.
12. Write a XML program using XS

Core 5: Multimedia Systems and Applications

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

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.

Text book:

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

Reference books:

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

Practical: Multimedia Systems and Applications

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

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, pe , oval, circle, rectangle , square, pencil , brush , lasso tool
2. Create an animation using text tool to set the font , size , color etc.
3. Create an animation using **Free transform tool** that should use followings-
Move Objects
Skew Objects
Stretch Objects
Rotate Objects
Stretch Objects while maintaining proportion
Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background color etc.)Using the following tools
Eraser tool
Hand tool
Ink bottle tool
Zoom tool
Paint Bucket tool
Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).

8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

Core 6: Visual Programming

Unit I

Introduction to VB: Writing windows application with VB, Programming languages -procedural, object oriented, event driven; VB Environment, Writing first VB project, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Variables, constants, and Calculation: Data types, naming rules and conversion, constants-named and intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data Counting and accumulating Sums.

Unit II

Decisions and Conditions : If statement, Conditions-comparing numeric variables and constants, comparing strings, compound conditions (and, or, not), nested if statements, using if statements with option buttons & check boxes, displaying message in message box, input validation. Calling event procedures, debugging VB projects, Debugging Step-by-Step Tutorial.

Modular programming: Menus, using common dialog box, writing general procedure.

Forms Handling : Multiple forms, creating, adding, removing forms, hide, show method, load, unload statement, me keyword, referring to objects on a different forms, Variables and constants in Multiple-Forms.

Iteration Handling: Lists Boxes and Combo Boxes, Do/loops, for/next loops, using msgbox function, using string function

Unit III

Arrays: control Arrays, the case structure, single-dimension arrays, for Each/Next statement, table lookup, using list boxes with array, multidimensional arrays.

Database Connectivity: VB and database, using the data control, viewing a database file- step-by-step, Navigating the Database in code, using list boxes and comboboxes as data-bound controls, adding a lookup table and navigation-step-by-step, updating a database file, Recordsets, working with database fields, creating a new Dynaset.

Advanced topics in VB: ActiveX controls, Dynamic link libraries (DLL), Multiple Document interface (MDI).

Text Book:

1. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata Mcgraw Hill Edition 2000 (Fourteenth Reprint 2004))

Practical: Visual Programming

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Note: - Use any open source alternative such as Tkinter with Python SharpDevelop/GAMBAS/OPENXAVA with JAVA

1. Print a table of numbers from 5 to 15 and their squares and Cubes.
2. Print the largest of three numbers.
3. Find the factorial of a number n.
4. Enter a list of positive numbers terminated by zero. Find the sum and average of these numbers.
5. A person deposits Rs. 1000 in a fixed account yielding 5% interest. Complete the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Read n numbers. Count the number of negative numbers, positive numbers and zeroes in the list.use arrays.
8. Read a single dimension array. Find the sum and average of these numbers.
9. Read a two dimension array. Find the sum of two 2D Array.
10. Create a database Employee and Make a form to allow data entry to **Employee Form** with the following command buttons:

Employee Form

| | |
|-----------------|----------------------|
| Employee Name | <input type="text"/> |
| Employee Id: | <input type="text"/> |
| Date of Joining | <input type="text"/> |
| Designation: | <input type="text"/> |
| Department: | <input type="text"/> |
| Address: | <input type="text"/> |
| Basic Pay: | <input type="text"/> |

| | | | | | | | |
|------|------|-------|------|-----|------|--------|--------|
| PREV | NEXT | FIRST | LAST | ADD | SAVE | DELETE | CANCEL |
|------|------|-------|------|-----|------|--------|--------|

Elective 1.A: Computer Networks

Unit I

Introduction: data communication- components, Networks, Protocols and Standards, Line configuration, topology, transmission mode, categories of networks.

OSI and TCP/IP Models: Layers and their functions, comparison of models.

Multiplexing: Many To One/One To Many, Frequency-Division Multiplexing (FDM), Wave-Division Multiplexing (WDM), Time-Division Multiplexing (TDM),

Unit II

Error Detection and Correction: Types of Errors, Detection, Vertical Redundancy Check (VRC), Longitudinal Redundancy Check (LRC), Cyclic Redundancy Check (CRC), Checksum, Error Correction.

Data Link Control: Line Discipline, Flow Control, Error Control, Asynchronous Protocols, Synchronous Protocols, Character-Oriented Protocols, Bit-Oriented Protocols, Link Access Procedures

Switching: Circuit Switching, Packet Switching, Message Switching.

Unit III

Transport Layer: Duties of the Transport Layer, Connection, the OSI Transport Protocol.

Upper OSI Layers: Session Layer, Presentation Layer, Application Layer.

TCP/IP Protocol Suite: Overview of TCP/IP, Network Layer, Addressing, Subnetting, Other Protocols In The Network Layer, Transport Layer

Text Book:

1. Behrouz A. Forouzan, *Data Communication and Networking*, 2nd Ed., Tata McGraw Hill.

Books Recommended

1. A.S. Tanenbaum, *Computer Networks*, 4th Ed., Pearson Education Asia, 2003.
2. D. E. Comer, *Internetworking with TCP/IP*, Pearson Education Asia, 2001.
3. William Stallings, *Data and Computer Communications*, 7th Ed., Pearson education Asia, 2002.

Practical: Computer Networks

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Simulation Exercises: The following experiments shall be conducted using either NS2/NS3/OPNET or any other simulators.

1. Simulate a three nodes point-to-point network with duplex links between them. Set the queue size vary the bandwidth and find the number of packets dropped.
2. Simulate a four node point-to-point network, and connect the links as follows: n0- n2, n1-n2 and n2-n3. Apply TCP agent between n0-n3 and UDP n1-n3. Apply relevant applications over TCP and UDP agents changing the parameter and determine the number of packets by TCP/UDP.
3. Simulate the different types of Internet traffic such as FTP a TELNET over a network and analyze the throughput.
4. Simulate the transmission of ping messaged over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.
5. Simulate an Ethernet LAN using N-nodes (6-10), change error rate and data rate and compare the throughput.
6. Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and determine collision across different nodes.
7. Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and plot congestion window for different source/destination.
8. Simulate simple ESS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to transmission of packets.

Elective 1.B: Object Oriented Programming with C++

Unit I

Object-Oriented Paradigm, Data types, Operators and Expressions, Control Flows

Unit II

Arrays and Strings, Modular Programming with Functions, Pointers and runtime Binding, Structures and Unions.

Unit III

Classes and Objects, inheritance, virtual functions, Exception Handling,

Text Book:

1. K R Venugopal, Rajkumar Buyya, Mastering in C++, McGrawHill, 2nd Edition, 2013.

Reference:

1. Spoken Tutorial on “C++”, as E-resource for Learning. <http://spoken-tutorial.org>

Practical: Object Oriented Programming with C++

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

- 1) Write a program to test Arithmetic operators.
- 2) Write a program to Swap two numbers.
- 3) Write a program to demonstrate Switch statement.
- 4) Write a program to find roots of a quadratic equation.
- 5) Write a program to check whether the given number is palindrome or not.
- 6) Write a program to convert binary number to decimal number.
- 7) Write a program to print the following format.
1
2 3
4 5 6
7 8 9 10
- 8) Write a program to search an element in a given list.
- 9) Write a program to perform addition of two Matrices.
- 10) Write a program to perform multiplication of two Matrices.
- 11) Write a program to find factorial of a given number using recursion.
- 12) Write a program to demonstrate Pointer arithmetic
- 13) Write a program to demonstrate Call-By-Value, Call-By-Address, Call-By-Reference.
- 14) Write a program to demonstrate Structure data type.
- 15) Write a program to demonstrate Enumerated data type.
- 16) Write a program to demonstrate inline functions.
- 17) Write a program to demonstrate Function Overloading.
- 18) Write a c++ program to demonstrate Class concept.
- 19) Write a c++ program on Constructor overloading.
- 20) Write a c++ program on Destructor.
- 21) Write a c++ program for copy constructor.
- 22) Write a c++ program to demonstrate Friend function.

- 23) Write a c++ program for Unary operator overloading (Friend function/Member function).
- 24) Write a c++ program for Binary operator overloading (Friend function/Member function).
- 25) Write a c++ program for Member Function overloading within a class
- 26) Write a c++ program for Single and Multilevel Inheritance.
- 27) Write a c++ program for Overriding of member functions.
- 28) Write a c++ program to demonstrate constructor calling mechanism in inheritance.
- 29) Write a c++ program for Multiple and Hybrid inheritance.
- 30) Write a c++ program to demonstrate pure virtual function implementation.

Elective 1.C: System Programming

Unit I

Computer Hardware And System Software: Introduction, Computer Hardware and Types of System Software, Man-machine Communication Spectrum.

INTRODUCTION TO COMPILERS: Introduction, Theory of Computer Languages, Design of a Language, Evolution of Compilers, Stages of Compilation.

Unit II

LEXICAL ANALYSIS: Introduction, Alphabets and Tokens in Computer Languages, Representation of Tokens and Regular Expression, Token Recognition and Finite State Automata, Lexical Analysis Tool

SYNTAX ANALYSIS: Introduction, Context-free Grammar and Structure of Language, Parser and its Types, Top-down Parser, Bottom-up Parser, Parser Generator Tool (Yacc),

Unit III

INTERMEDIATE CODE GENERATION: Introduction, Need for Intermediate Code, Types of Intermediate Code, Semantic Analysis.

OPTIMIZATION: Introduction, Hints on Writing Optimized Code at User Level, Construction of Basic Blocks and Processing.

CODE GENERATION: Introduction, Issues in Code Generation, Target Machine Architecture

COMPILER WRITING TOOLS: Introduction, Lexical Tools, Syntactic Tools,

Test Book:

1. K. Muneeswaran, Compiler Design (with CD), Oxford university press, 2012

Reference Books

1. Santanu Chattopadhyaya, Systems Programming, PHI, 2011.
2. Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, Compilers: Principles, Techniques, and Tools, 2nd edition, Prentice Hall, 2006.
3. D. M. Dhamdhare, Systems Programming, Tata McGraw Hill, 2011.
4. Leland Beck, D. Manjula, System Software: An Introduction to System Programming, 3rd edition, Pearson Education, 2008.
5. Grune D, Van Reeuwijk . K, Bal H. E, Jacobs C J H, Langendoen K, Modern Compiler Design, 2nd edition, Springer, 2012

Practical: Systems Programming

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. To implement an assembler for a hypothetical language.
2. To get familiar with lex: write a program to recognize numbers, identifiers.
3. To get familiar with yacc: write a desk calculator.
4. Implement a symbol table with functions to create, insert, modify, search, and display.
5. Implement pass one of a two pass assembler.
6. Implement pass two of a two pass assembler.
7. Implement a single pass assembler.
8. Implement a two pass macro processor
9. Implement a single pass macro processor.
10. Implement an absolute loader.
11. Implement a relocating loader.
12. Implement pass one of a direct-linking loader.
13. Implement pass two of a direct-linking loader.
14. Implement a simple text editor with features like insertion / deletion of a character, word, and sentence.
15. Implement a symbol table with suitable hashing

Elective2.A: Computer Graphics

Unit I

Computer Graphics: Graphs and Charts, Computer-Aided Design, Virtual-Reality Environments, Data Visualizations, Education and Training, Computer Art, Entertainment, Image Processing, Graphical User Interfaces.

Computer Graphics Hardware: Video Display Devices, Raster-Scan System, Graphics Workstations and Viewing Systems, Input Devices, Hard-Copy Devices, Graphics Networks, Graphics on the Internet.

Computer Graphics Software: Coordinate Representations, Graphics Functions, Software Standards, Other Graphics Packages, Introduction to OpenGL.

Unit II

Graphics Output Primitives: Coordinate Reference Frames, Specifying A Two-Dimensional World-Coordinate Reference Frame in OpenGL, OpenGL Point Functions, OpenGL Line Functions, OpenGL Curve Functions, Fill-Area Primitives, Polygon Fill Areas, OpenGL Polygon Fill-Area Functions, OpenGL Vertex Arrays, Pixel-Array Primitives, OpenGL Pixel-Array Functions, Character Primitives, OpenGL Character Functions, Picture Partitioning, OpenGL Display Lists, OpenGL Display-Window Reshape Function.

Attributes of Graphics Primitives: OpenGL State Variables, Color and Grayscale, OpenGL Color Functions, Point Attributes, OpenGL Point-Attribute Functions, Line Attributes, OpenGL Line-Attribute Functions, Curve Attributes, Fill-Area Attributes, OpenGL Fill-Area Attribute Functions, Character Attributes, OpenGL Character-Attribute Functions, OpenGL Antialiasing Functions, OpenGL Query Functions, OpenGL Attribute Groups.

Algorithms for Graphics Primitives and Attributes: Line-Drawing Algorithms, Circle-Generating Algorithms, Ellipse-Generating Algorithms.

Unit III

Two-Dimensional Geometric Transformations: Basic Two-Dimensional Geometric Transformations, Matrix Representations, Inverse Transformations, Two-Dimensional Composite Transformations, Raster Methods for Geometric Transformations, OpenGL Raster Transformations, Transformations between Two-Dimensional Coordinate Systems, OpenGL Functions for Two-Dimensional Geometric Transformations.

Two-Dimensional Viewing: The Two-Dimensional Viewing Pipeline, The Clipping Window, Normalization and Viewport Transformations, OpenGL Two-Dimensional Viewing Functions, Clipping Algorithms, Two-Dimensional Point Clipping, Two-Dimensional Line Clipping, Polygon Fill-Area Clipping, Curve Clipping, Text Clipping.

Text Book:

1. Donald D. Hearn, M. Pauline Baker, Warren Carithers "Computer Graphics with Open GL" 4th Edition, 2011.

References:

1. J.D. Foley, A van Dam, S.K. Feiner and J.F. Hughes, *Computer Graphics: Principals and Practices*, 2nd Ed., Addison-Wesley, MA, 1990.

2. D.F. Rogers, *Procedural Elements in Computer Graphics*, 2nd Ed., McGraw Hill Book Company, 2001.
3. D.F. Rogers and A.J. Adams, *Mathematical Elements in Computer Graphics*, 2nd Ed., McGraw Hill Book Company, 1990.

Practical: Computer graphics

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Program to recursively subdivide a tetrahedron to form 3D Sierpinski gasket. The number of recursive steps is to be specified by the user.
2. Program to implement Liang-Barsky line clipping algorithm.
3. Program to draw a color cube and spin it using OpenGL transformation matrices.
4. Program to create a house like figure and rotate it about a given fixed point using OpenGL functions.
5. Program to implement the Cohen-Sutherland line-clipping algorithm. Make provision to specify the input line, window for clipping and view port for displaying the clipped image.
6. Program to create a cylinder and a parallel piped by extruding a circle and quadrilateral respectively. Allow the user to specify the circle and quadrilateral.
7. Program using OpenGL functions, to draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene.
8. Program to draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing. Use OpenGL functions.
9. Program to fill any given polygon using scan-line area filling algorithm. (Use appropriate data structures.)
10. Program to display a set of values $\{f_{ij}\}$ as a rectangular mesh.

Elective 2.B: Software Engineering

Unit I

Introduction: The Evolving Role of Software, Software, Software Myths.

PROCESS: Software Engineering: A Layered Technology, the Software Process, Software Process Models, the Linear Sequential Model, the Prototyping Model, the RAD Model Evolutionary Software Process Models, Component-Based Development, The Formal Methods Model, Fourth Generation Techniques, Process Technology, Product and Process.

Unit II

PROJECT MANAGEMENT: The Management Spectrum, People, The Product, The Process, The Project, The W5HH Principle.

RISK ANALYSIS AND MANAGEMENT: Reactive versus Proactive Risk Strategies, Software Risks, Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation, Monitoring, and Management.

Unit III

SOFTWARE TESTING TECHNIQUES: Software Testing Fundamentals, Test Case Design, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing, Testing for Specialized Environments, Architectures, and Applications.

SOFTWARE TESTING STRATEGIES: A Strategic Approach to Software Testing, Strategic Issues, integration Testing, Unit Testing, Validation Testing, System Testing,

Text book:

1. Roger S. Pressman ,Software Engineering (Sixth edition) , Tata McGraw Hill,2009

Practical: Software Engineering

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Practical exercises based on concepts listed in Software Testing theory.

1. Write a program that take three inputs (a,b &c) that represent the sides of a triangle, and the output is one of the below four:
 - a. Not a triangle
 - b. Scalene triangle
 - c. Isosceles triangle
 - d. Equilateral triangle
 - 1.1 Generate test cases using Boundary Value Analysis, Equivalence Class Partitioning and Decision Table Testing.
 - 1.2 Generate test cases using Basis path testing.
 - 1.3 Run code coverage tool.
2. Write a program that determines the nature of roots of a quadratic equation. Output should be one of the following:-
 - Not a quadratic equation.
 - Complex roots
 - Real roots
 - Single roots
 - I. Generate test cases using Boundary Value Analysis, Equivalence Class Partitioning and Decision Table Testing.
 - II. Generate test cases using Basis path testing.
 - III. Run code coverage tool
3. Write a program that checks whether the number is even or odd. Run code coverage tool and find the amount of code being covered.
4. Write a program that dynamically allocates memory to 10 integers using malloc() or calloc() and
 - donot free memory leading to memory leaks. Verify the same using Valgrind.
 - Now, free memory using free() at the end of the program to avoid memory leaks. Verify the same using Valgrind.

Elective 2.C: PHP Programming

Unit I

Introducing PHP: History, Unique Features, Basic Development Concepts, Creating Your First PHP Script, Mixing PHP with HTML, Sample Applications.

Using Variables and Operators: Storing Data in Variables, Understanding PHP's Data Types, Setting and Checking Variable Data Types, Using Constants, Manipulating Variables with Operators.

Unit II

Controlling Program Flow: Writing Simple and Complex Conditional Statements, Repeating Actions with Loops, Working with String and Numeric Functions,

Working with Arrays: Storing Data in Arrays, Processing Arrays with Loops and Iterators, Using Arrays with Forms, Working with Array Functions, Working with Dates and Times.

Unit III

Using Functions and Classes: Creating User-Defined Functions, Creating Classes, Using Advanced OOP Concepts.

Working with Databases and SQL: Introducing Databases and SQL, Creating and Populating a Database, Using PHP's MySQLi Extension, Adding or Modifying Data, Handling Errors, Using PHP's SQLite Extension. Using PHP's PDO Extension, Building a Login Form.

Text book:

1. Vikram Vaswani, PHP: A Beginner's Guide(5.3), The McGraw-Hill, 2009

Reference Books:

1. Steven Holzner, "PHP: The Complete Reference Paperback", McGraw Hill Education (India), 2007.
2. Timothy Boronczyk, Martin E. Psinas, "PHP and MYSQL (Create-Modify-Reuse)", Wiley India Private Limited, 2008.
3. Robin Nixon, "Learning PHP, MySQL, JavaScript, CSS & HTML5", 3rd Edition Paperback, O'reilly, 2014.
4. Luke Welling, Laura Thompson, "PHP and MySQL Web Development", 4th Edition, Addition Paperback, Addison-Wesley Professional,2008.
5. David Sklar, Adam Trachtenberg, "PHP Cookbook: Solutions & Examples for PHP Programmers", 2014.
6. Spoken Tutorial on "PHP", as E-resource for Learning. <http://spoken-tutorial.org>

Practical: PHP programming

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Create a PHP page using functions for comparing three integers and print the largest number.
2. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
3. WAP to check whether the given number is prime or not.
4. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
5. Write a PHP function that checks if a string is all lower case.
6. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
7. WAP to sort an array.
8. Write a PHP script that removes the whitespaces from a string. Sample string : 'The quick " " brown fox' Expected Output :
Thequick""brownfox
9. Write a PHP script that finds out the sum of first n odd numbers.
10. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.
11. Write a PHP script that checks if a string contains another string.
12. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
13. Write a simple PHP program to check that emails are valid.
14. WAP to print first n even numbers.
15. Write a PHP program to print Fibonacci series using recursion.
16. Write a PHP script to replace the first 'the' of the following string with 'That'.
17. Using switch case and dropdown list display a –Hello message depending on the language selected in drop down list.

18. Create a script to construct the following pattern, using nested for loop.

*

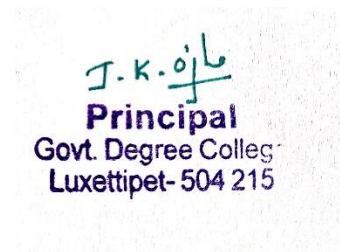
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GOVERNMENT DEGREE COLLEGE, LUXETTIPET
DEPARTMENT OF COMPUTERS
BCOM(COMPUTERS APPLICATIONS)
SYLLABUS



Department of Commerce & Business Management, Kakatiya University, Warangal.
Paper DSC 103: FUNDAMENTALS OF INFORMATION TECHNOLOGY

Hours Per Week: 6 (4T+2P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand the basic concepts and terminology of information technology and to identify issues related to information security.

UNIT-I: INTRODUCTION TO COMPUTERS:

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer. Role of I/O devices in a computer system. **Input Units:** Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, **Output Units:** Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT -II: COMPUTER ARITHMETIC & STORAGE FUNDAMENTALS:

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another. Primary Vs Secondary Storage, Data storage & retrieval methods. **Primary Storage:** RAM ROM, PROM, EPROM, EEPROM. **Secondary Storage:** Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

UNIT-III: SOFTWARE:

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

UNIT-IV: OPERATING SYSTEM:

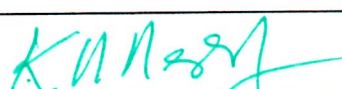
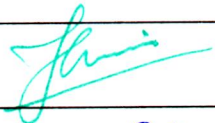
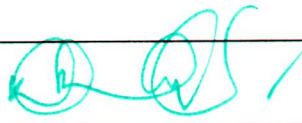


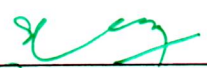

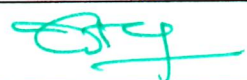

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

UNIT-V: DATA COMMUNICATION:

Data, Communication, Basic Networking Devices, Communication Process, Data Transmission speed, Communication Types(modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

SUGGESTED READINGS:

Computer Fundamentals: P.K.Sinha

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Chairman (BOS)
Dept. of Com. & Business Mgt.
Kakatiya University, Warangal.

Kakatiya University, Warangal
Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper SEC1 (a): PRINCIPLES OF INSURANCE

Objectives: To make Students to learn Principles of Insurance.

UNIT I: RISK MANAGEMENT AND INSURANCE:

Risk Management -Types of Risks - Actual and Consequential Losses - Management of Risks - Different Classes of Insurance - Importance of Insurance - Management of Risk by Individuals and Insurers - Fixing of Premiums – Reinsurance - Role of Insurance in Economic Development and Social Security - Constituents of Insurance Market - Operations of Insurance Companies - Operations of Intermediaries - Specialist Insurance Companies - Role of Regulators - Common and specific terms in Life and Non-Life Insurance - Understanding Insurance Customers - Customer Behavior at Purchase Point - Customer Behavior when Claim Occurs - Importance of Ethical Behavior

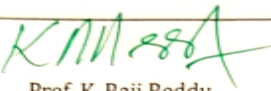
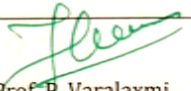







UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS:

Insurance Contract Terms - Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause - Life Insurance Products: Risk of Dying Early - Risk of Living too Long - Products offered - Term Plans - Pure Endowment Plans - Combinations of Plans - Traditional Products - Linked Policies - Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets - Exposure to Perils - Features of Products Covering Fire and Allied Perils - Products covering Marine and Transit Risks - Products covering Financial Losses due to Accidents - Products covering Financial Losses due to Hospitalization - Products Covering Miscellaneous Risks

SUGGESTED READINGS:

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
4. Principles of Insurance : Dr V Padmavathi, Dr V Jayalakshmi - PBP
5. Insurance and Risk Management: P.K. Gupta
6. Insurance Theory and Practice : Tripathi PHI
7. Principles of Insurance Management: Neelam C Gulati, Excel Books

Suggested Websites: 1) www.irda.gov.in 2) www.policyholder.gov.in
3) www.irdaindia.org.in

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|---|--|--|
|  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. III Semester - Paper SEC1 (b): FOUNDATION OF DIGITAL MARKETING

Objective: To make students to understand Foundation of digital marketing.

UNIT I: DIGITAL MARKETING FOUNDATIONS:

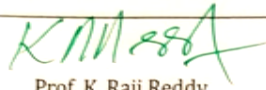
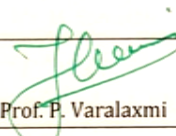


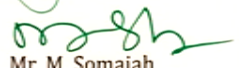



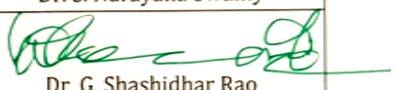
Digital Marketing Strategy - Exploring Digital Marketing - Starting with the Website - Foundations of Analytics - Search Engine Optimization - Search and Display Marketing - Social Media Marketing - Video Marketing – Advantages & Limitations of Digital Marketing.

UNIT II: ONLINE MARKETING, MOBILE MARKETING FOUNDATIONS:

Online marketing tools and setup – E-Marketing: Segmentation, personalization and mobile marketing - Content marketing: Blogs for content marketing - Content marketing for staying relevant - Newsletters for content marketing.

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Foundations of Digital Marketing: Dr. K.V. Nagaraj.K Usha Rani - PBP
4. Digital Marketing by Vandana Ahuja, Oxford
5. Digital Marketing by Seema Gupta, McGraw Hill
6. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry

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|  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. III Semester - Paper SEC1 (c) FUNDAMENTALS OF BUSINESS ANALYTICS

Objective: To make students to learn Fundamentals of Business Analytics.

UNIT I: USING DATA TO DRIVE BUSINESS DECISIONS:


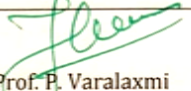







Need for data-driven decision making: Solving the business problem using Analytics - Overview of the Business Analytics cycle - Hierarchy of information user -The complete Business Analytics professional: Understanding Business Analyst roles and responsibilities - Identify the Popular Business Analytics Tools.

UNIT II: DATA ANALYTICS USING EXCEL:

Basics of Excel: Organizing data with Excel - Performing simple computations and aggregations using Excel - Working with Summing and other Reporting functions in Excel - Working with pivot tables and charts - Using Excel for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips - Display tips - Keyboard shortcuts - Mouse shortcuts - Standardized layouts - Understanding table based and spreadsheet-based layouts - Best practices Setting data rules and Cleaning data - Format as table - Data cleansing techniques using External Data - Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Query data from SQL - Working in the Select Part of an SQL Query - Managing SQL commands - Managing Tables - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - Using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data - Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options

SUGGESTED READINGS:

1. Fundamentals of Business Analytics, 2nd Edition; R N Prasad; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Monetizing Your Data: A Guide to Turning Data into Profit-Driving Strategies and Solutions; Andrew Roman Wells, Kathy Williams Chiang; Wiley
4. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
5. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
6. Excel Statistics: A Quick Guide, 3rd edition; Neil J. Salkind; Sage Publications
7. Microsoft Excel 2019: For Beginners; J. Davidson
8. Microsoft Excel 2019: Learn Excel Basics with Quick Examples; James Jackson

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Kakatiya University, Warangal

Faculty of Commerce & Business Management,.

B.Com. III Semester - Paper SEC2 (a): PRACTICE OF LIFE INSURANCE

Objective: To make students to learn Practice of Life Insurance.

UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE

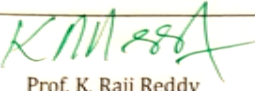
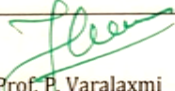







POLICIES AND PREMIUM CALCULATION: Meaning evolution, growth and principles of Life Insurance –Life Insurance Organizations in India – Competition and Regulation of Life Insurance - Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes. Computation of Premiums - Meaning of Premium, its calculation- Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITTINGS AND FINANCIAL

PLANNING & TAX SAVING: Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis- Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

SUGGESTED READINGS:

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Principles of Life Insurance – Dr. V. Padmavathi, Dr. V. Jayalakshmi - PBP
5. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
6. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
7. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
8. Life Insurance in India: Sadhak, Respose Books, New Delhi.

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B.Com. III Semester - Paper SEC2 (b): WEB DESIGN AND ANALYTICS

Objective: To make students to understand the Fundamentals of Web design and Analytics.

UNIT I: WEB DESIGN AND OPTIMIZING CONVERSION RATES:

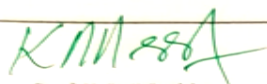
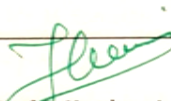





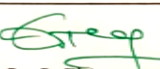
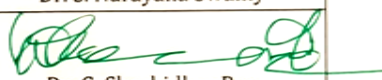
Exploring and learning web design – Understanding Conversion rate optimization (CRO) – Setting CRO – Understanding target audience – Optimization champion

UNIT II: GOOGLE ANALYTICS:

Getting started with Google Analytics – Core concepts – Additional interface features – Using reports – Audience reports – Acquisition reports – Social reports – Behavior reports – Track events – Conversion reports – Additional features

SUGGESTED READINGS:

1. The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns by Ian Dodson, Wiley
2. Fundamentals of Digital Marketing by Puneet Singh Bhatia, Pearson
3. Digital Marketing by Vandana Ahuja, Oxford
4. Digital Marketing by Seema Gupta, McGraw Hill
5. Digital Marketing For Dummies by Ryan Deiss and Russ Henneberry
6. Don't Make Me Think Revisited: A Common Sense Approach to Web Usability By Steve Krug
7. Web Analytics 2.0 – Avinash Kaushik
8. Successful Analytics by Brian Clifton
9. Math and Stats for Web Analytics and Conversion Optimization by Himanshu Sharma

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B.Com. III Semester - Paper SEC2 (c): APPLICATION OF BUSINESS ANALYTICS

Objective: To make students to understand the Application of Business analytics.

UNIT I: STATISTICS USING EXCEL:

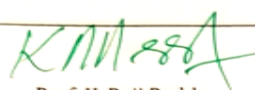
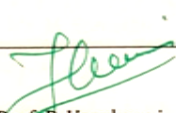
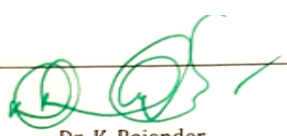

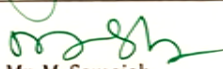




Descriptive statistics using Excel: Describe data using charts and basic statistical measures – Histograms - Pareto charts – Boxplots - Tree map and Sunburst charts - Inferential Statistics using Excel: Correlation and Regression - Probability distribution – Sampling techniques – Hypothesis testing

UNIT II: GETTING STARTED WITH R:

Introduction to R and R Studio components: Read datasets into R - Export data from R - Manipulate and Process Data in R - Use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R

SUGGESTED READINGS:

1. Microsoft Business Intelligence Tools for Excel Analysis; Michael Alexander, Jared Decker, Bernard Wehbe; Wiley
2. Business Analysis with Microsoft Excel and Power BI, 5th edition; Conrad G. Carlberg; Pearson
3. Excel Data Analysis: Your visual blueprint for creating and analyzing data, charts and PivotTables, 3rd Edition; Denise Etheridge; Wiley
4. Microsoft Excel 2019 Formulas and Functions (Business Skills), 1st Edition; Paul McFedries; Microsoft
5. Microsoft Excel Data Analysis for Dummies, 3rd edition; Stephen L. Nelson, E. C. Nelson; Wiley
6. Data Analytics with R; Bharti Motwani; Wiley

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B.Com. III Semester - Paper DSC 301: ADVANCED ACCOUNTING

Objective: To acquire accounting knowledge of partnership firms and joint stock companies

UNIT-I: PARTNERSHIP ACCOUNTS-I:

Meaning - Partnership Deed - Capital Accounts (Fixed and Fluctuating) - Admission of a Partner - Retirement and Death of a Partner (Excluding Joint Life Policy)(Including problems)

UNIT-II: PARTNERSHIP ACCOUNTS-II:

Dissolution of Partnership - Insolvency of a Partner (excluding Insolvency of all partners) - Sale to a Company (Including problems)

UNIT-III: ISSUE OF SHARES, DEBENTURES, UNDERWRITING AND BONUS SHARES:

Issue of Shares at par, premium and discount - Pro-rata allotment - Forfeiture and Re-issue of Shares - Issue of Debentures with Conditions of Redemption - Underwriting: Meaning - Conditions - Bonus Shares: Meaning - SEBI Guidelines for Issue of Bonus Shares - Accounting of Bonus Shares (Including problems)

UNIT-IV: COMPANY FINAL ACCOUNTS AND PROFIT PRIOR TO INCORPORATION:

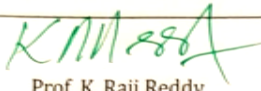
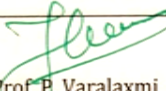







Companies Act, 2013: Structure - General Instructions for preparation of Balance Sheet and Statement of Profit and Loss - Part-I: Form of Balance Sheet - Part-II: Statement of Profit and Loss - Preparation of Final Accounts of Companies - Profits Prior to Incorporation - Accounting treatment (Including problems)

UNIT-V: VALUATION OF GOODWILL AND SHARES:

Valuation of Goodwill: Need - Methods: Average Profits method, Super Profits method and Capitalization Method -Valuation of Shares: Need - Net Assets method, Yield method and Fair Value Method. (Including problems)

SUGGESTED READINGS:

1. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
2. Advanced Accountancy: Shukla and Grewal, S.Chand & Co.
3. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons.
4. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
5. Advanced Accountancy: Dr. G. Yogeshwaran, Julia Allen - PBP
6. Accountancy-III: Tulasian, Tata McGraw Hill Co.
7. Advanced Accountancy: Arulanandam; Himalaya.
8. Accountancy-III: S.P. Jain & K.L Narang, Kalyani Publishers.

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B.Com. III Semester - Paper DSC 302: BUSINESS STATISTICS -I

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

UNIT-I: INTRODUCTION:

Origin and Development of Statistics - Definition - Importance and Scope - Limitations of Statistics - Distrust of Statistics.

Statistical Investigation: Planning of statistical investigation - Census and Sampling methods - Collection of primary and secondary data - Statistical errors and approximation - classification and Tabulation of data - Frequency distribution

UNIT - II: DIAGRAMMATIC AND GRAPHIC PRESENTATION:

Diagrammatic presentation: One Dimensional and Two Dimensional Diagrams - Pictograms - Cartograms - Graphic presentation: Technique of Construction of Graphs - Graphs of Frequency Distribution - Graphs of Time Series or Histograms

UNIT-III: MEASURES OF CENTRAL TENDENCY:

Introduction -Significance - Arithmetic Mean - Geometric Mean - Harmonic Mean – Mode - Median - Quartiles and Percentiles - Simple and Weighted Averages - Uses and Limitations of different Averages

UNIT-IV: MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS:

Measures of Dispersion: Significance - Characteristics - Absolute and Relative Measures – Range - Quartile Deviation - Mean Deviation- Standard Deviation - Coefficient of Variation


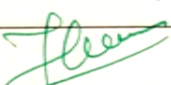





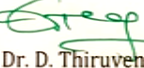

Measures of Skewness - Karl Pearson's Coefficient of Skewness - Bowley's Coefficient of Skewness - Kelly's Measure of Skewness - Kurtosis: Mesokurtosis, Platy kurtosis and Leptokurtosis

UNIT-V: CORRELATION:

Meaning -Types - Correlation and Causation - Methods: Scatter Diagram - Karl Person's Coefficient of Correlation - Probable Error and Interpretation of Coefficient of Correlation - Rank Correlation - Concurrent Deviation Method

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Statistics: E. Narayanan Nadar, PHI Learning
4. Business Statstics –I: Dr. Obul Reddy, Dr. D. Shridevi - PBP
5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
6. Business Statistics: K. Alagar, Tata McGraw Hill
7. Fundamentals of Statistical: S. P Gupta, Sultan Chand
8. Business Statistics: J. K. Sharma, Vikas Publishers
9. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications

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B.Com. III Semester - Paper DSC 303: FINANCIAL INSTITUTIONS & MARKETS

Objective: To familiarize with various Financial Institutions and Markets.

UNIT-I: INDIAN FINANCIAL SYSTEM:

Components - Functions - Flow of Funds Matrix - Financial System and Economic Development - Recent Developments in Indian Financial System - Weaknesses of Indian Financial System

UNIT-II: FINANCIAL INSTITUTIONS:

Commercial Banking: Types - Functions - Lending by Commercial Banks - Recent Developments - Merchant Banking – functions - Venture Capital – objectives - Private Equity - role in start-ups - Hire purchase and leasing - Non-banking Finance Companies: Types - Functions

UNIT-III: MONEY MARKET:

Functions of Money Market - Organization of Money Market - Dealers - Money Market Instruments - RBI - Functions - Role of RBI in Money Market - LAF (Liquidity Adjustment Facility), MSF (Marginal Standing Facility), Repo, and Reverse Repo.

UNIT-IV: DEBT MARKET:

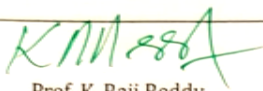
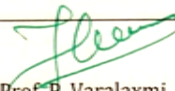


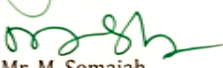


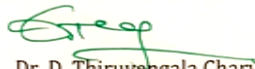

Evolution of Debt Markets in India - Instruments and Players in Debt Market: Government Securities - PSU Bonds - Corporate Bonds - Securities Trading Corporation of India - Primary Dealers in Government Securities - Bonds: Features of Bonds - Types of Bonds - Bond Ratings.

UNIT-V: EQUITY MARKET:

Meaning - Development of Equity Market in India - Primary Market: IPO and FPO - Methods of IPO - Role of Merchant Bankers in Fixing the Price - Red Herring Prospectus – Sweat Equity - ESOP - Rights Issue - Secondary Market: Meaning and Functions of Stock Exchanges - Evolution and Growth of Stock Exchanges - Stock Exchanges in India - Recent Developments in Indian Stock Exchanges - Stock Market Indices - SEBI: Objectives and Functions

SUGGESTED READINGS:

- 1) Bhole, L.M., Financial Markets and Institutions. Tata McGraw Hill Publishing Company, New Delhi, India.
- 2) Prof. Prashanta Athma, Financial Institutions and Markets: PBP
- 3) Gordon & Natarajan, Financial Markets and Services. Himalaya Publishing House, New Delhi, India.
- 4) Khan and Jain, Financial Services, Tata McGraw Hill, New Delhi, India.
- 5) Khan, M.Y., Indian Financial System -Theory and Practice. Vikas Publishing House, New Delhi, India.

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: to acquire basic conceptual background necessary to design and develop simple database system, Relational database mode, ER model and distributed databases, and to write good queries using a standard query language called SQL.

UNIT-I: BASIC CONCEPTS: Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary -Types of Database. Relational and ER Models: Data Models - Relational Model – Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint - Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model – Entities – Attributes – Relationships - More about Entities and Relationships - Defining Relationship for College Database - E-R Diagram - Conversion of E-R Diagram to Relational Database.

UNIT-II: DATABASE INTEGRITY AND NORMALISATION: Relational Database Integrity - TheKeys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems – Single Valued Dependencies – Normalisation - Rules of Data Normalisation - The First Normal Form -The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless-join Decomposition - Dependency Preservation. File Organisation : Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation

- Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation - Inverted File Organisation.

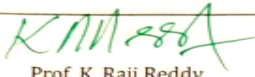
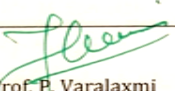





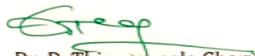

UNIT-III: STRUCTURES QUERY LANGUAGE (SQL): Meaning–SQL commands – Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by – Where - Group by - Nested Queries. Joins – Views – Sequences - Indexes and Synonyms - Table Handling.

UNIT-IV: TRANSACTIONS AND CONCURRENCY MANAGEMENT: Transactions – Concurrent Transactions - Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control. Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity - Database Security - Authorization.

UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES: Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution - Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

ADVANCED TOPICS: Overview: Parallel Database - Multimedia Database - Mobile Database - Web Database - Multidimensional Database. Data Warehouse - OLTP Vs OLAP - NoSQL Database. **LAB:** SQL QUERIES BASED ON VARIOUS COMMANDS.

SUGGESTED READINGS: 1) Database Systems: R.Elmasri & S.B. Navathe, Pearson.; 2) Introduction to Database Management System: ISRD Group, McGraw Hill.; 3) Database Management System: R.Ramakrishnan & J.Gehrke, McGrawHill.; 4) Modern Database Management: J.A.Hoffer, V.Rames & H.Topi, Pearson.; 5) Database System Concepts: Silberschatz, Korth & Sudarshan, McGrawHill. 6) Simplified Approach to DBMS: Parteek Bhaia, Kalyani Publishers.

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

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

UNIT I: GENERAL INSURANCE POLICIES:

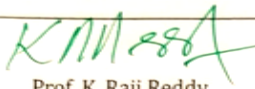
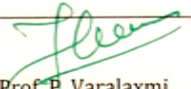







Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability,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

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

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

SUGGESTED READINGS:

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

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Kakatiya University, Warangal
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B.Com. IV Semester - Paper SEC3 (b): SOCIAL MEDIA MARKETING

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

UNIT I: SOCIAL MEDIA MARKETING:









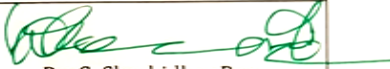
Building an online community – Understanding Social Media Marketing – Marketing and building presence on Facebook – Marketing and building presence on Twitter – Employer branding on LinkedIn

UNIT II: ONLINE ADVERTISING ON SOCIAL MEDIA:

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

SUGGESTED READINGS:

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

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

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

Objective: To make students to understand the Business Intelligence.

UNIT I: BUSINESS INTELLIGENCE USING POWER BI:

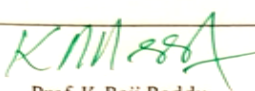
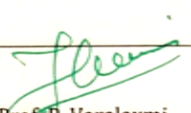
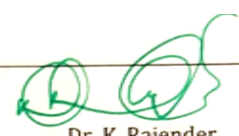






Getting data in Power BI: Overview of Power BI Desktop - Connect to data sources in Power BI Desktop - Clean and transform data with the Query Editor - advanced data import and cleaning techniques - Cleaning irregularly formatted data - Modeling the data: Manage data relationships - Create calculated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

UNIT II: POWER BI AND EXCEL:

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

SUGGESTED READINGS:

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

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Kakatiya University, Warangal
Faculty of Commerce & Business Management,

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

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

UNIT I: INSURANCE LEGISLATION IN INDIA:


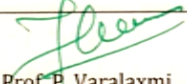


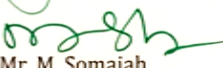


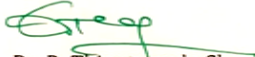

History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS-insurance repositories-TPAs—Role and duties of surveyors—Origin and development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

UNIT II: POLICY HOLDERS RIGHTS OF 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:

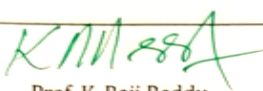
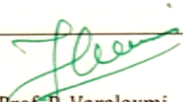





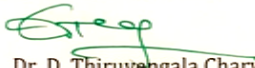
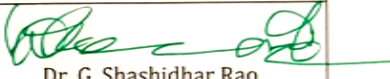
Understanding SEO – Keyword strategy – Content optimization – Long-term content planning – Link-building strategies – Measuring SEO effectiveness – SEO for Ecommerce – Local search – Mobile SEO

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:

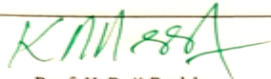
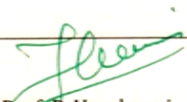





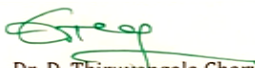
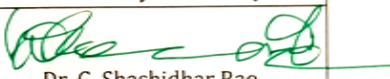
Visuals in Power BI: Bar charts – Pie charts – Treemaps – Combination charts – Slicers – Map visualizations – Matrixes and Tables – Scatter charts – Waterfall and funnel charts - Gauges and single-number cards - Modifying visuals and reports: Modify colors in charts and visuals – Add shapes, text boxes, 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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Kakatiya University, Warangal
Faculty of Commerce & Business Management,
B.Com. IV Semester - Paper DSC 401: INCOME TAX

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

UNIT-I: INTRODUCTION:

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

UNIT-II: INCOME FROM SALARIES:

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

UNIT-III: INCOME FROM HOUSE PROPERTY:

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

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

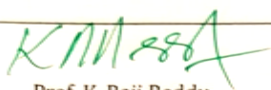
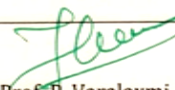






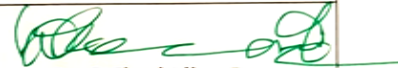
Definition of Business and Profession – Procedure for computation of Income from Business – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for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

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

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

SUGGESTED READINGS:

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

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

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

UNIT-I: INTRODUCTION TO EXCEL:

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

UNIT-II: WORKSHEET OPERATIONS:

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

UNIT-III: TABLES AND FORMATTING:

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

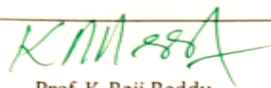
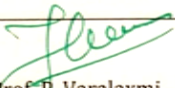


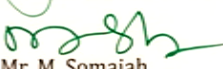


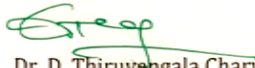

UNIT-IV: EXCEL FILES & TEMPLATES:

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

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

SUGGESTED READINGS:

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

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Kakatiya University, Warangal

Faculty of Commerce & Business Management,

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

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

UNIT-I: REGRESSION:

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

UNIT-II: INDEX NUMBERS:

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

UNIT-III: TIME SERIES:

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

UNIT-IV: PROBABILITY:


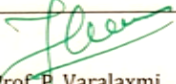


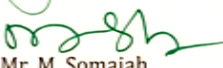




Introduction - Definition – Probability Concepts - Experiment – Types of Events - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye's Theorem - Basics of Set Theory – Permutations & Combinations.

UNIT-V: THEORITCAL DISTRIBUTIONS:

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

SUGGESTED READINGS:

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

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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)

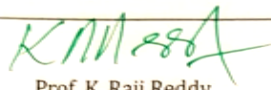
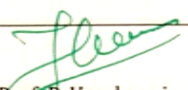







UNIT-IV: ACCOUNTS OF BANKING COMPANIES:

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 - Ondrag drop – Onerror - Onfocus - Onkey Press – Onkey Up – Onload - Onmouse Down – Onmouse Move - Onmouse Out – Onmouse Over - Onmove - Onrest – Onresize - Onselect - On submit - Onunload.

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

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

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

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

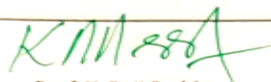
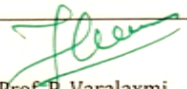







Extensible Markup Language (XML): Introduction - Creating XML Documents - XML style Sheet - Hyperlinks in XML Document Object Model - XML Query Language.

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

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

SUGGESTED READINGS:

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

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper GE: BUSINESS ECONOMICS

Objective: To acquire knowledge for application of economic principles and tools in business practices.

UNIT-I: INTRODUCTION:

Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Concepts used in Business Economics -Law of Diminishing marginal utility - Law of Equi-marginal utility.

UNIT- II: DEMAND ANALYSIS:

Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand –Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticities of Demand

UNIT-III: SUPPLY ANALYSIS:

Law of Supply - Factors influencing Supply - Market Equilibrium- Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

UNIT-IV: PRODUCTION ANALYSIS:

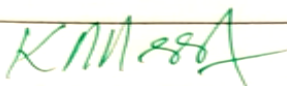

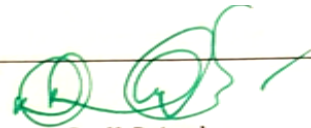






Concept of Production –production function-Total Production - Marginal Production - Average Production – Returns to a factor- Law of Variable Proportions - Law of Returns to Scale – Isocost – Isoquants - Economies and Dis-economies of Scale.

UNIT-V: COST AND REVENUEANALYSIS:

Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches -Revenue Curves–relationship between total marginal and average revenues- --Break Even Analysis—Meaning – Assumptions – Uses and Limitations.

SUGGESTED READINGS:

1. Business Economics: V. G. Mankar, Himalaya Publishing House
2. Managerial Economics: Vanith Agrawal, Pearson Education
3. Business Economics: H. L. Ahuja, S. Chand & Co. Ltd.
4. Business Economics : R. K. Lekhi, Kalyani Publishers
5. Business Economics: D. M. Mithani, Himalaya Publishing House
6. Business Economics: P. N. Chopra, Kalyani Publishers
7. Essential of Business Economics: D. N. Dwivedi, Vikas Publishers

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 501 (a) : COST ACCOUNTING

Objective: To make the students acquire the knowledge of cost accounting methods.

UNIT-I: INTRODUCTION:

Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting – Cost concepts – Cost Classification. (Theory Only)

UNIT-II: MATERIAL:

Direct and Indirect Material cost – Inventory Control Techniques – Stock Levels – EOQ – ABC Analysis – JIT - VED - FSND - Issue of Materials to Production – Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods. (Problems)

UNIT-III: LABOUR AND OVERHEADS:

Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods.

Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads. (Problems)

UNIT-IV: UNIT AND JOB COSTING:

Unit Costing: Features - Cost Sheet – Tender and Estimated Cost Sheet.


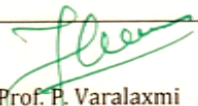







Job Costing: Features - Objectives – Procedure - Preparation of Job Cost Sheet. (Problems)

UNIT-V: CONTRACT AND PROCESS COSTING:

Contract Costing: Features – Advantages - Procedure of Contract Costing – Guidelines to Assess profit on incomplete Contracts. Process Costing: Meaning – Features – Preparation of Process Account – Normal and Abnormal Losses. (Problems)

SUGGESTED READINGS:

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: Prashanta Athma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 501 (b): FINANCIAL PLANNING & PERFORMANCE

Objective: To make students to understand the Financial Planning & Performance.

UNIT I: STRATEGIC PLANNING:

Strategic planning: Meaning – Characteristics – Environmental Scanning – Strategic Planning Vs. Tactical Planning – Strategic Planning Process

Annual profit plan and supporting schedules: Operational budgets - Financial budgets - Capital budgets - Financial statement projections - Cash flow projections.

UNIT II: BUDGETING AND FORECASTING:

Budgeting Concepts: Operations and performance goals - Characteristics of a successful budget process - Resource allocation - Forecasting techniques: Regression analysis - Learning curve analysis - Expected value - Budgeting Methodologies: Annual business plans (master budgets) - Project budgeting - Activity-based budgeting - Zero-based budgeting - Continuous (rolling) budgets - Flexible budgeting – Meaning & Problems.

UNIT III: COST AND VARIANCE ANALYSIS:

Cost and Variance Analysis: Comparison of actual to planned results - Use of flexible budgets to analyze performance - Management by exception - Standard Cost System: Use of standard cost systems - Analysis of variation from standard cost expectations

UNIT IV: PERFORMANCE MEASURES:

Performance Measures: Product profitability analysis - Business unit profitability analysis - Customer profitability analysis - Return on investment - Residual income - Investment base issues - Key performance indicators (KPIs) - Balanced scorecard - Responsibility Centers and Reporting Segments: Types of responsibility centers - Transfer pricing - Reporting of organizational segments

UNIT V: TECHNOLOGY AND ANALYTICS:

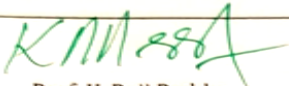
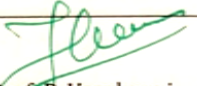





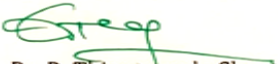

Information Systems: Accounting information systems - Enterprise resource planning systems -

Enterprise performance management systems - Data Governance: Data policies and procedures - Life cycle of data - Controls against security breaches - Technology-enabled finance transformation: System Development Life Cycle - Process automation - Innovative applications

Data analytics: Business intelligence - Data mining - Analytic tools - Data visualization

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Strategic Management and Business Policy: Globalization, Innovation and Sustainability, 15th edition; Wheelen, Thomas L., et. al.; Prentice Hall
3. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
4. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
5. Quantitative Methods for Business, 13th Edition; Anderson, David, R., Sweeney, Dennis J., Williams, Thomas A., Camm, Jeff, and Martin, R. Kipp; Cengage Learning
6. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 501 (c) : INTERNATIONAL FINANCIAL
REPORTING - I

Objective: To make students to understand the International Financial Reporting.

UNIT I: GENERAL PURPOSE OF FINANCIAL ACCOUNTING AND REPORTING AS PER US GAAP AND IFRS:
Conceptual framework: Standard Setting Bodies & Hierarchy - Elements of F/S - Primary objectives of financial reporting - Qualitative Characteristics of F/S - Fundamental Assumptions & Principles - Accounting Cycle & Preparation of F/S - General-purpose financial statements: Balance sheet - Income statement - Statement of comprehensive income - Statement of changes in equity - Statement of changes cash flows - Public company reporting requirements: SEC Reporting Requirements - Interim Financial Reporting - Segment Reporting - Revenue recognition: 5-Step approach to Revenue Recognition - Certain Customer's Rights & Obligations - Specific Arrangements - Long Term Construction Contracts

UNIT II: CURRENT ASSETS AND CURRENT LIABILITIES (AS PER US GAAP AND IFRS):

Monetary Current Assets & Current Liabilities: Cash & Cash Equivalents - Accounts Receivable - Notes Receivable - Transfers & Servicing of Financial Assets - Accounts Payable - Employee-related Expenses Payable - Inventory: Determining Inventory & Cost of Goods Sold - Inventory Valuation - Inventory Estimation Methods

UNIT III: FINANCIAL INVESTMENTS AND FIXED ASSETS (AS PER US GAAP AND IFRS):

Financial Investments: Investments in Equity Securities - Investment in Debt Securities - Financial Instruments - Tangible Fixed Assets: Acquisition of Fixed Assets - Capitalization of Interest - Costs Incurred After Acquisition - Depreciation - Impairment - Asset Retirement Obligation - Disposal & Involuntary Conversions - Intangible Assets: Knowledge-based intangibles (R&D, software) - Legal rights based intangibles (patent, copyright, trademark, franchise, license, leasehold improvements) - Goodwill

UNIT IV: FINANCIAL LIABILITIES (AS PER US GAAP AND IFRS):

Bonds Payable: Types of Bonds - Convertible bonds vs. Bonds with detachable warrants - Bond Retirement - Fair Value Option & Fair Value Election - Debt Restructuring: Settlement - Modification of terms

UNIT V: SELECT TRANSACTIONS (AS PER US GAAP AND IFRS):

Fair value measurements: Valuation techniques - Fair value hierarchy - Fair value concepts - Accounting changes and error correction: Changes in accounting estimate - Changes in accounting principle - Changes in reporting entity - Correction of an error - Contingencies: Possibility of occurrence (remote, reasonably possible or probable) - Disclosure vs. Recognition










Derivatives and Hedge Accounting: Speculation (non-hedge) - Fair value hedge - Cash flow hedge - Non-

monetary exchanges: Exchanges with commercial substance - Exchanges without commercial substance -

Leases: Operating lease - Finance lease - Sale leaseback

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (a): COMPUTERIZED ACCOUNTING

Objective: To make the students to acquire the knowledge of computer software

UNIT I: MAINTAINING CHART OF ACCOUNTS IN ERP:

Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shut Company-Select a Company-Alter Company Details-Company Features and Configurations-F11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger Creation-Single Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation-Multiple Group Creation-Displaying Groups and Ledgers-Displaying Groups-Display of Ledgers-Deletion of Groups and Ledgers – P2P procure to page.

UNIT II: MAINTAINING STOCK KEEPING UNITS (SKU):

Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock Group-Creation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports.

UNIT III: RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:

Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)-Contra Voucher (F4)-Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)-Journal Voucher (F7).



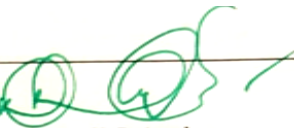






UNIT IV: ACCOUNTS RECEIVABLE AND PAYABLE MANAGEMENT: Introduction-Accounts Payables and Receivables-Maintaining Bill-wise Details-Activation of Maintain Bill-wise Details Feature-New Reference-Against Reference-Advance-On Account-Stock Category Report-Changing the Financial Year in ERP.

UNIT V: MIS REPORTS:

Introduction-Advantages of Management Information Systems-MIS Reports in ERP - Trial Balance - Balance Sheet-Profit and Loss Account-Cash Flow Statement-Ratio Analysis-Books and Reports - Day Book-Receipts and Payments-Purchase Register-Sales Register-Bills Receivable and Bills Payable.

SUGGESTED READINGS:

1. Computerised Accounting: Garima Agarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
5. Computerised Accounting and Business Systems: Kalyani Publications
6. Manuals of Respective Accounting Packages
7. Tally ERP 9: J.S. Arora, Kalyani Publications.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (b): FINANCIAL DECISION MAKING - I

Objective: To make students to understand the Financial Decision Making.

UNIT I: FINANCIAL STATEMENT ANALYSIS

Basic Financial Statement Analysis: Common size financial statements - Common base year financial statements - Financial Ratios: Liquidity - Leverage - Activity - Profitability - Market Profitability analysis: Income measurement analysis - Revenue analysis - Cost of sales analysis - Expense analysis - Variation analysis - Impact of changes in accounting treatment - Accounting and economic concepts of value and income - Earnings quality

UNIT II: FINANCIAL MANAGEMENT

Risk & Return: Calculating return - Types of risk - Relationship between risk and return Long-term Financial Management: Term structure of interest rates - Types of financial instruments - Cost of capital - Valuation of financial instruments

UNIT III: RAISING CAPITAL

Raising Capital: Sources of Long term Capital: Equity, Preference, Debt - Financial institutions - Initial and secondary public offerings - Dividend policy - Lease financing

UNIT IV: WORKING CAPITAL MANAGEMENT

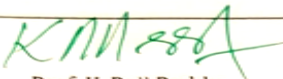
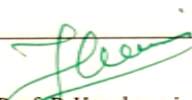
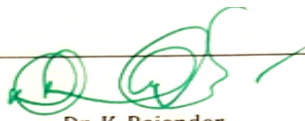




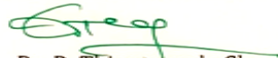
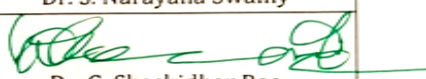
Managing working capital: Cash management - Marketable securities management - Accounts receivable management - Inventory management - Short-term Credit: Types of short-term credit - Short-term credit management

UNIT V: CORPORATE RESTRUCTURING AND INTERNATIONAL FINANCE

Corporate Restructuring: Mergers and acquisitions - Bankruptcy - Other forms of restructuring International Finance: Fixed, flexible, and floating exchange rates - Managing transaction exposure - Financing international trade.

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Interpretation and Application of International Financial Reporting Standards; Mackenzie, Bruce, Coetsee, Danie, Njikizana, Tapiwa, Chamboko, Raymond, Colyvas, Blaise, and Hanekom, Brandon; Wiley
3. Financial Reporting & Analysis, 13th edition; Gibson, Charles H.; South-Western Cengage Learning
4. Financial Statement Analysis, 10th edition; Subramanyam, K.R., and Wild, John L.; McGraw Hill
5. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 502 (c) : INTERNATIONAL TAX & REGULATION

Objective: To make students to understand the International Tax & Regulation..

UNIT I: TAXATION OF INDIVIDUALS:

Individual Income Tax Return: Filing Status - Cash basis and Accrual basis. Gross Income: Wages, Salaries, Bonus, Commission, Fees & Tips - Interest & Dividend Income Business Income - Capital Gains & Losses - Passive Income - Farming Income - Deductions: Adjustments - Deductions from AGI - Calculating Tax: Tax Credits - Alternative Minimum Taxes - Other Taxes - Estimated Tax penalty

UNIT II: PROPERTY TRANSACTIONS & DEPRECIATION:

Capital Gains & Losses - Gains & Losses from Sale of Long-term Business property - Depreciation & Amortization

UNIT III: TAXATION OF CORPORATIONS:

C-Corporations: Formation - Income Tax Return - Income - Deductions - Reconciliation of Taxable Income with books - Calculating Tax - Corporate Earnings & Distributions - Corporate Liquidation & Reorganizations - S-Corporations: Eligibility criteria - Income Tax Return - Shareholder basis - Earnings and Distribution - Termination of Election

UNIT IV: TAXATION OF OTHER ENTITIES:

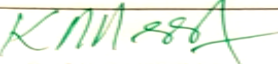
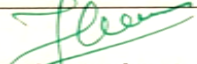





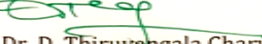

Partnerships: Formation - Income Tax Return - Partner basis - Partnership Distributions - Sale of Partnership Interest by a Partner - Termination of Partnership - Estate, Trust & Gift Taxation: Estate and Trust Fiduciary Income Tax Return - Estate Tax Return - Gift Tax Return - Generation-skipping transfer Tax - Tax Exempt Organizations: Formation - Income Tax Return

UNIT V: STATUTORY REGULATIONS, ACCOUNTANT RESPONSIBILITIES, BUSINESS STRUCTURES:

Federal Security Regulations: Securities Act of 1933 - Securities Exchange Act of 1934 - Other federal security regulations - Professional & Legal Responsibilities: Accountant Common Law Liabilities - Accountant Statutory Liabilities - Accountant Liabilities for Privileged Information - Accountant Criminal Liabilities - Employment Regulations - Environmental Regulations - Antitrust Regulations - Business Structures: Sole Proprietorships - Partnerships - Corporations

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Regulation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Regulation, Wiley
3. Internal Revenue Code: Income, Estate, Gift, Employment and Excise Taxes, CCH Tax Law Editors
4. Federal Income Tax: Code and Regulations--Selected Sections, Martin B. Dickinson, Wolters Kluwer
5. Federal Income Taxation by Katherine Pratt and Thomas D. Griffith, Wolters Kluwer

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503 (a) : AUDITING

Objective: to understand meaning and elements of auditing and gain knowledge for execution of audit.

UNIT-I: INTRODUCTION:

Auditing: Meaning – Definition – Evolution – Objectives – Importance - Types of Audit – Standards of Auditing – Procedure for issue of standards by AASB.

UNIT-II: AUDITOR AND EXECUTION OF AUDIT:

Appointment – Qualification and Disqualification – Qualities – Remuneration – Removal – Rights – Duties – Civil and Criminal Liabilities of Auditors – Commencement of Audit – Engagement Letter – Audit Program – Audit Note Book – Audit Workbook – Audit Markings.

UNIT-III: INTERNAL CONTROL, INTERNAL CHECK AND INTERNAL AUDIT: Meaning and Objectives of Internal Control – Internal Check and Internal Audit – Internal Check Vs. Internal Audit – Internal Control vs. Internal Audit.

UNIT-IV: VOUCHING:

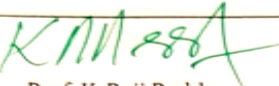
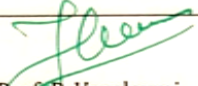





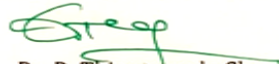

Meaning – Objectives – Types of Vouchers – Vouching of Trading Transactions – Vouching Cash Transaction – Auditing in an EDP Environment.

UNIT-V: VERIFICATION AND VALUATION OF ASSETS:

Meaning and Definition – Distinction – Verification and Valuation of various Assets and Liabilities – Audit Committee – Role of Audit Committee – Audit Reports.

SUGGESTED READINGS:

1. Principles and Practice of Auditing: RG Saxena, Himalaya Publishing House.
2. Auditing and Assurance for CA Integrated Professional Competence: SK Basu, Pearson.
3. Auditing : Mahitha HPH
4. Auditing: Dr. Nazia Sultana, PBP.
5. Auditing: Aruna Jha, Taxmann Publications.
6. Auditing Principles, Practices & Problems: Jagdish Prakash, Kalyani Publishers.
7. Auditing and Assurance: Ainapure & Ainapure, PHI Learning.
8. Principles and Practice of Auditing: Dinkar Pagare, Sultan Chand & Sons.
9. Fundamentals of Auditing: Kamal Gupta and Ashok Arora, Tata McGraw-Hill
10. A Hand Book of Practical Auditing: B.N. Tandon etal., S. Chand.

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503 (b) : ADVANCED CORPORATE ACCOUNTING

Objective: To gain knowledge of AS-19 & 21 and format accounts.

UNIT-I: HOLDING COMPANIES (AS-21):

Nature – Legal requirements – Capital and Revenue Profit/Reserves/Losses – Minority Interest – Cost of Control or Goodwill – Capital Reserve – Inter Company Transactions – Un-realized Profit on Unsold stock - Revaluation of Assets – Interim Dividend by Subsidiary Companies - Debentures in Subsidiary Companies – Consolidated Balance Sheet.

UNIT-II: ELECTRICITY COMPANIES (DOUBLE ACCOUNTING SYSTEM):

Meaning of Double Account System – Final Accounts - Calculation of Reasonable Return and Disposal of Surplus – Replacement of an Asset.

UNIT-III: ACCOUNTING FOR PRICE LEVEL CHANGES:

Introduction – History – Limitations – Profit measurement under different systems of accounting – Methods of Accounting for Price Level Changes: Current Purchasing Power (CPP) – Current Cost Accounting (CCA).

UNIT-IV: LEASE ACCOUNTS (AS-19):

Meaning – Terminology – Advantages and Disadvantages – Types: Financial and Operating Lease – Accounting Treatment in the books of both the parties.



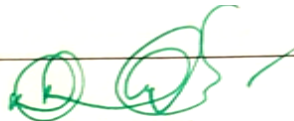




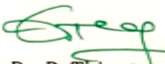

UNIT-V: HUMAN RESOURCE ACCOUNTING & SOCIAL RESPONSIBILITY ACCOUNTING:

Human Resource Accounting: Definition – Objectives – Assumptions – Advantages and Limitations – Approaches - Human resource accounting in India (Theory only).

Social Responsibility Accounting: Meaning – Nature – Need – Objectives – Accounting Concepts – Indicators of Social Performance (Theory only).

SUGGESTED READINGS:

1. Corporate Accounting: R.L.Gupta, M.Radha Swamy, Sultan Chand
2. Advanced Corporate Accounting: Srilatha Reddy, Himalaya
3. Advanced Corporate Accounting: Dr. Thangapandi, PBP
3. Advanced Accounting: Tulsania, TataMcGraw-hill Publishing Company
4. Corporate Accounting: Jain & Narang, Kalyani Publications
5. Advanced Accounting: S.M.Shukla, Sahitya Bhavan
6. Corporate Accounting: Prashanta Athma, Himalaya Publishers.
7. Advanced Accounting (Vol. II): Chandra Bose, PHI

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503 (c) : FINANCIAL MANAGEMENT

Objective: *To understand basics in Financial Management.*

UNIT-I: INTRODUCTION:

Financial Management: Meaning - Nature and Scope - Importance - Objectives - Profit Maximization vs Wealth Maximization - Traditional Functions of Finance Manager - Changing Role of Finance Manager - Relationship between Financial Management and Other Management Areas (Theory).

UNIT-II: FINANCIAL PLANNING:

Sources of Finance - Financial Planning: Meaning and Definition - Objectives - Characteristics - Process - Factors - Limitations (Theory).

UNIT-III: CAPITALIZATION:

Meaning of Capital and Capitalization - Sources of Capital - Theories of Capitalization - Over Capitalization: Meaning - Causes - Consequences - Remedies - Under Capitalization: Meaning - Causes - Consequences - Remedies - Comparison of Under and Over Capitalization - Watered Stock (Theory).

UNIT-IV: COST OF CAPITAL:

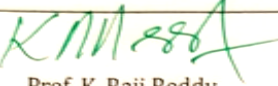
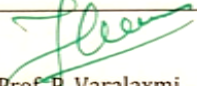





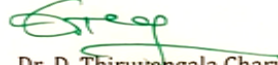

Meaning and Definition - Significance - Classification of Costs - Problems in Determination of Cost of Capital - Cost of Debt - Cost of Perpetual and Redeemable Debt - Cost of Preference Capital - Cost of Equity Capital - Cost of retained earnings - Weighted Average Cost of Capital (Simple Problems).

UNIT-V: CAPITAL STRUCTURE:

Meaning - Importance - Factors - Types - Optimal Capital Structure - Theories of Capital Structure: Net Income Approach - Net Operating Income Approach - Traditional Approach - Modigliani and Miller Approach (Simple Problems).

SUGGESTED READINGS:

1. Financial Management: I M Pandey, Vikas Publishing House Pvt Ltd.
2. Financial Management: M.Y. Khan & P.K. Jain, Tata McGraw-Hill
3. Financial Management: Shashi K. Gupta & R.K. Sharma, Kalyani Publishers,
4. Financial Management: Prasanna Chandra, McGraw Hill
5. Financial Management: Rustagi, Taxman Publications.
6. Financial Management: Tulsian, S. Chand.

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. V Semester - Paper DSE 503a: MANAGEMENT INFORMATION SYSTEM

(Only for B.Com. (Computer Applications))

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To equip the students with finer nuances of MIS.

UNIT-I: INTRODUCTION TO MIS:

The Technical and Business Perspective, Organization Structure, Evaluation of MIS through Information System, The Decision Making Process , System Approach to Problem Solving, The Structure of Management Information System, MIS Organization within the Company.

UNIT-II: INFORMATION SYSTEMS FOR DECISION MAKING:

Evolution of an Information System, Basic Information Systems, Decision Making and MIS, Decision Assisting Information System, Concepts of Balanced MIS Effectiveness and Efficiency Criteria.

UNIT-III: DEVELOPMENT OF MIS:

Methodology and Tools/Techniques for Systematic Identification, Evaluation and Modification of MIS. *Enterprise Resource Planning*: Introduction, Basics of ERP, Evolution of ERP, Enterprise Systems in Large Organizations, Benefits and Challenges of Enterprise Systems, *E-Enterprise System* : Introduction: Managing the E-enterprise, Organisation of Business in an E-enterprise, E-business, E-commerce, E-communication, E-collaboration.

UNIT-IV: ADVANCED MIS:

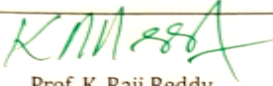
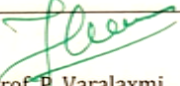







Concepts, Needs and Problems in Achieving Advanced MIS, DSS., Business intelligence + process management, systems development, and security.

UNIT-V: COLLABORATION, IMPACT & PITFALLS IN MIS:

Collaboration processes and information systems, Impact of Web 2.0 and social media on business process, Pitfalls in MIS Development: Fundamental Weakness, Soft Spots in Planning and Design Problems.

SUGGESTED READINGS:

- 1.Murdic, Rose and Clagett- Information Systems for Modern Management, PHI, New Delhi.
- 2.Process, Systems, and Information, David M. Kroenke,
3. MIS Cases Decision Making with Application Software, 4th Edition, Lisa Miller
- 4.Laudon-Laudon- Management Information Systems, Pearson Education, New Delhi.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503b: E-COMMERCE
(Only for B.Com. (Computer Applications))

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: to acquire conceptual and application knowledge of ecommerce.

UNIT-I: INTRODUCTION:

E-Commerce: Meaning - Advantages & Limitations - E-Business: Traditional & Contemporary Model, Impact of E-Commerce on Business Models - Classification of E-Commerce: B2B - B2C - C2B - C2C - B2E - Applications of Ecommerce: E-Commerce Organization Applications - E-Marketing - E-Advertising - E-Banking - Mobile Commerce - E-Trading - E-Learning - E-Shopping.

UNIT-II: FRAMEWORK OF E-COMMERCE:

Framework of E-Commerce: Application Services - Interface Layers - Secure Messaging - Middleware Services and Network Infrastructure - Site Security - Firewalls & Network Security - TCP/IP - HTTP - Secured HTTP - SMTP - SSL.

Data Encryption: Cryptography - Encryption - Decryption - Public Key - Private Key - Digital Signatures - Digital Certificates.

UNIT-III: CONSUMER ORIENTED E-COMMERCE APPLICATIONS:

Introduction - Mercantile Process Model: Consumers Perspective and Merchant's Perspective - Electronic Payment Systems: Legal Issues & Digital Currency - E-Cash & E-Cheque - Electronic Fund Transfer (EFT) - Advantages and Risks - Digital Token-Based E-Payment System - Smart Cards.

UNIT-IV: ELECTRONIC DATA INTERCHANGE:

Introduction - EDI Standards - Types of EDI - EDI Applications in Business - Legal - Security and Privacy issues if EDI - EDI and E-Commerce - EDI Software Implementation.

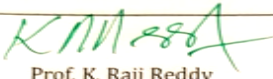
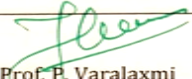





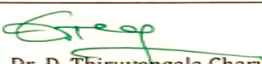
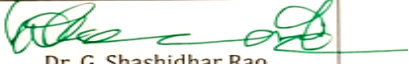
UNIT-V: E-MARKETING TECHNIQUES:

Introduction - New Age of Information - Based Marketing - Influence on Marketing - Search Engines & Directory Services - Charting the On-Line Marketing Process - Chain Letters - Applications of 5P's (Product, Price, Place, Promotion, People) E-Advertisement - Virtual Reality & Consumer Experience - Role of Digital Marketing.

Lab work: Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.

SUGGESTED READINGS:

1. Frontiers of Electronic Commerce: Ravi Kalakota, Andrew B Whinston, Pearson
2. E-Commerce: Tulasi Ram Kandula, HPH.
3. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
4. E-Commerce & Computerized Accounting: Rajinder Singh, Er. Kaiser Rasheed, Kalyani
5. E-Commerce & Mobile Commerce Technologies: Pandey, Saurabh Shukla, S. Chand

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. V Semester - Paper DSE 503C: MOBILE APPLICATIONS
(Only for B.Com. (Computer Applications))

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand and apply the mobile applications.

UNIT-I: INTRODUCTION:

What is Android, Android versions and its feature set The various Android devices on the market, The Android Market application store ,Android Development Environment - System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs), the Android Software Stack, The Linux Kernel, Android Runtime - Dalvik Virtual Machine, Android Runtime - Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings, Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files,


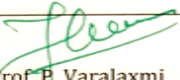







UNIT-II: MOBILE SOFTWARE:

Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project , Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application, Android Application Components, Android Activities: Defining the UI, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications Content Providers: Data Management, Android Intent Objects: Messaging for Components.

Android Manifest XML: Declaring Your Components, Designing for Different Android Devices, Views and View Groups, Android Layout Managers, The View Hierarchy, Designing an Android User Interface using the Graphical Layout Tool.

UNIT-III: MOBILE DISPLAY:

Displaying Text with Text View, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menus using views, Gallery, Image Switcher, Grid View, and Image View views to display images, Creating Animation, Saving and Loading Files, SQLite Databases, Android Database Design, Exposing Access to a Data Source through a Content Provider, Content Provider Registration, Native Content Providers

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Faculty of Commerce & Business Management,

UNIT-IV: MOBILE APPLICATIONS:

Intent Overview, Implicit Intents, Creating the Implicit Intent Example Project, Explicit Intents, Creating the Explicit Intent Example Application, Intents with Activities, Intents with Broadcast Receivers, An Overview of Threads, The Application Main Thread, Thread Handlers, A Basic Threading Example, Creating a New Thread, Implementing a Thread Handler, Passing a Message to the Handler. Sending SMS Messages Programmatically, Getting Feedback after Sending the Message Sending SMS Messages Using Intent Receiving, sending email

Introduction to location-based service, configuring the Android Emulator for Location-Based Services, Geo coding and Map-Based Activities, Playing Audio and Video, Recording Audio and Video, Using the Camera to Take and Process Pictures

UNIT-V: MOBILE APP DEVELOPMENT & INSTALLATION:








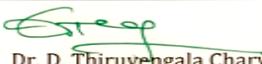

Introduction to Windows Phone App Development, Installing the Windows Phone SDK, Creating Your First XAML for Windows Phone App. Understanding the Role of XAP Files, the Windows Phone Capabilities Model, the Threading Model for XAML-Based Graphics and Animation in Windows Phone, Understanding the Frame Rate Counter, The Windows Phone Application Analysis Tool, Reading Device Information, Applying the Model-View-View Model Pattern to a Windows Phone App, Property Change Notification, Using Commands

SUGGESTED READINGS:

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015
3. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
4. AnubhavPradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2

Web Resource :

Google Developer Training, "Android Developer Fundamentals Course – Concept Reference", Google Developer Training Team, 2017.
<https://www.gitbook.com/book/google-developer-training/android-developerfundamentals-course-concepts/details> (Download pdf file from the above link)

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper PR : RESEARCH METHODOLOGY & PROJECT REPORT

Objective: To introduce the basics of conducting research in social sciences.

UNIT-I: INTRODUCTION, MEASUREMENT AND HYPOTHESIS TESTING:

Meaning of Research-Steps involved- Identification of Problem- Steps involved in the selection of problem-Research Design-Meaning and Types- Measurement Levels/Scales - Scaling Techniques-Hypothesis-Meaning - Types – Testing Procedure.

UNIT-II: PARAMETRIC AND NON-PARAMETRIC TESTS AND RESEARCH REPORT:










Introduction - t-Test - F-Test - Chi Square Test - Anova (One-Way Anova, Two-Way Anova).
Contents of a Research Report. (Concepts only)

SUGGESTED READINGS:

1. Research Methodology: Himalaya Publications.
2. Methodology of Research in Social Sciences: Krishna Swamy,
3. Research Methodology: Kothari & Garg, New Age Publication
4. Research Methodology: Paneerselvam R, PHI
5. Reading in Research Methodology in Commerce & Business Management: Achalapathi KV,
6. Research Methodology: Sashi.K Gupta, Praneeth Rangi, Kalyani Publishers.

GUIDELINES FOR PROJECT WORK

- 1) Project work is a part of the prescribed curriculum to B. Com students.
- 2) Project work is allotted to a group of 4 students.
- 3) During the IV semester, students are expected to undergo internship at a business firm/ Government Department /Software organization/Voluntary organization as per the guidance of teacher concerned.
- 4) Students should get a certificate from the organization.
- 5) At the end of Semester-VI, the project reports would be evaluated by the external examiner designated by the Controller of Examinations, from the panel submitted by the Board of Studies in Commerce. The Examiner would evaluate the project reports for a maximum of 35 marks and conduct Viva-Voce examination for 15 marks. The award lists duly signed would be sent the Controller of Examinations.
- 6) Examiners will examine the following in the project report: i) Survey/Analysis on the topic chosen; ii) Method of data collection; iii) Presentation: Style, Comprehensiveness, graphs, charts etc.; iv) Analysis and inference and implications of the study; v) Bibliography.
- 7) Students must ensure that they maintain **regular contact with their supervisor** and also that they provide the supervisor with drafts of their work at regular intervals.
- 8) Students are required to submit a project report on a topic related/connected with trade, industry & commerce. Project can be done by taking the information from the select organization focusing on areas like marketing, finance, human resource, operations, general management etc.
- 9) Project should be a practical, in-depth study of a problem, issue, opportunity, technique or procedure or some combination of these aspects of business. The Students are required to define an area of investigation, assemble relevant data, analyse the data, draw conclusions and make recommendations.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,

ORGANISATION OF PROJECT REPORT

1) Project report should be presented in the following sequence:

i) Title page; ii) Student's declaration; iii) Supervisor's certificate; iv) Internship certificate; V. Abstract; vi) Acknowledgements; vii) Table of contents; viii) List of tables; ix) List of figures; x) List of appendices.

2) Chapter Design should be as follows:

Chapter-I: Introduction: this chapter includes the research problem, need for study/significance of the project, objectives, methodology (hypotheses, statistical tools, data source, scope, sample, chapter design).

Chapter-II: Company Profile: this chapter should contain a brief historical retrospect about the entity of your study.

Chapter-III: Data Analysis and interpretation: this chapter should present the data analysis and inferences.

Chapter-IV: Conclusion and Suggestions: This Chapter should give an overview of the project, conclusions, implications, recommendations and scope for further research.

Bibliography: lists the books, articles, and websites that are referred and used for research on the topic of the specific project. Follow Harvard style of referencing.

Appendices: the data, used to prepare the tables for analysis, may not be feasible to incorporate as part of chapters, may given as appendices.

TECHNICAL SPECIFICATIONS OF THE PROJECT

1) Project should be typed on **A4 white paper**, and be **1.5 spaced**.

2) All pages should be **numbered**, and numbers should be placed at the centre of the bottom of the page.

3) **All tables, figures and appendices** should be consecutively numbered or lettered, and suitably labeled.


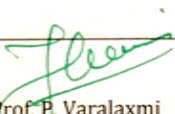
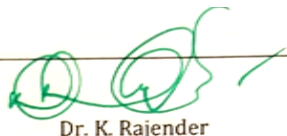




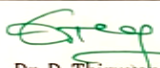

4) **3 bound copies & a soft-copy** should be handed in to the **principal/director of your college/institute** at the time of submission.

5) **bibliography and referencing: Referencing** is necessary to avoid plagiarism, to verify quotations and to enable readers to follow-up and read more fully the cited author's arguments. Reference is given within the text of the project as well as at the end of the project. The basic difference between citation and a reference list (bibliography) is that the latter contains full details of all the in-text citations.

Citation provides brief details of the author and date of publication for referencing the work in the body of the text.

Reference list is given at the end of the text and is a list of all references used with additional details provided to help identify each source.

Proper referencing is as crucial aspect of your project. You are therefore strongly advised to talk to your supervisor about this, in order to make sure that your project report follows the appropriate referencing system.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601 (a): COST CONTROL AND
MANAGEMENT ACCOUNTING

Objective: To be acquaint with Cost Control techniques, Managerial Accounting decision-making techniques and reporting methods.

UNIT-I: INTRODUCTION TO MANAGEMENT ACCOUNTING & MARGINAL COSTING:

Meaning and Importance of Management Accounting – Marginal Cost Equation – Difference between Marginal Costing and Absorption Costing – Application of Marginal Costing – CVP Analysis – Break Even Analysis: Meaning – Assumptions – Importance - Limitations. Marginal Costing for Decision Making-Make or Buy – Add or Drop Products – Sell or Process Further – Operate or Shut-down – Special Order Pricing – Replace or Retain. (Including Problems)

UNIT-II: BUDGETARY CONTROL AND STANDARD COSTING:

Budget: Meaning – Objectives – Advantages and Limitations – Essentials of Budgets - Budgetary Control - Classification of Budgets - Preparation of Fixed and Flexible Budgets. Standard Costing: Meaning – Importance – Standard Costing and Historical Costing - Steps involved in Standard Costing. Variance Analysis: Material variance - Labour variance - Overhead variance. (Including Problems)

UNIT-III: TECHNIQUES OF FINANCIAL STATEMENT ANALYSIS:

Meaning – Objectives - Techniques: Comparative Statement, Common Size Statement, Trend Analysis. Ratios- Meaning, Objectives and Classification—Computation of Activity, Liquidity, Solvency and Profitability Ratios. (Including Problems)

UNIT-IV: FUNDS FLOW ANALYSIS:

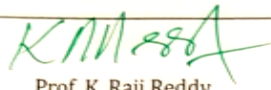
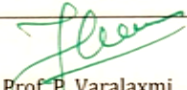







Concept of Funds – Meaning and Importance – Limitations – Statement of Changes in Working Capital – Statement of Sources and Application of Funds. (Including Problems)

UNIT-V: CASH FLOW ANALYSIS (AS-3):

Meaning – Importance – Differences between Funds Flow and Cash Flow Statements – Procedure for preparation of Cash Flow Statement. (Including Problems)

SUGGESTED READINGS:

1. Management Accounting- Principles & Practice: Sharma RK & Shashi K. Gupta, Kalyani
2. Advanced Managerial Accounting: Srihari Krishna Rao, Himalaya
3. Advanced Managerial Accounting: Dr. Sundaram, PBP
3. Advanced Management Accounting: Robert S. Kaplan & Anthony A. Atkinson, Prentice-Hall
4. Management Accounting: Rustagi R.P, Galgotia
5. Managerial Accounting: Ronald W. Hilton, TMH

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601 (b): FINANCIAL CONTROL

Objective: To make students to understand the Financial Control.

UNIT I: EXTERNAL FINANCIAL REPORTING DECISIONS (AS PER US GAAP & IFRS):

Financial Statements: Balance sheet - Income statement - Statement of Comprehensive Income - Statement of changes in equity - Statement of cash flows - Integrated reporting

UNIT II: RECOGNITION, MEASUREMENT, VALUATION, AND DISCLOSURE (AS PER US GAAP & IFRS) :

Assets, Liabilities & Equity: Asset valuation - Valuation of liabilities - Equity transactions
- Income: Revenue recognition - Income measurement - Major differences between U.S. GAAP and IFRS

UNIT III: COST MANAGEMENT:

Measurement concepts: Cost behavior and cost objects - Actual and normal costs - Standard costs - Absorption (full) costing - Variable (direct) costing - Joint and by-product costing - Costing Systems: Joint and by-product costing - Job order costing - Process costing - Activity-based costing - Life-cycle costing - Overhead costs: Fixed and variable overhead expenses - Determination of allocation base - Allocation of service department costs

UNIT IV: SUPPLY CHAIN MANAGEMENT AND BUSINESS PROCESS IMPROVEMENT:

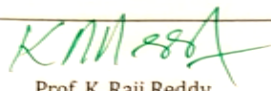
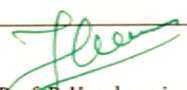







Supply chain management: Lean resource management techniques - Enterprise resource planning (ERP) - Theory of constraints - Capacity management and analysis - Business Process Improvement: Value chain analysis - Value-added concepts - Process analysis, redesign, and standardization - Activity-based management - Continuous improvement concepts - Best practice analysis - Cost of quality analysis - Efficient accounting processes

UNIT V: INTERNAL CONTROLS:

Governance, Risk & Compliance: Internal control structure and management philosophy - Internal control policies for safeguarding and assurance - Internal control risk - Corporate governance - External audit requirements - System Controls & Security Measures: General accounting system controls - Application and transaction controls - Network controls - Backup controls - Business continuity planning

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 1: Planning, Performance & Analytics
2. Intermediate Accounting, 17th edition; Kieso, Donald E., Weygandt, Jerry J., and Warfield, Terry D.; Wiley
3. Management Accounting: An Integrative Approach; McNair-Connolly, C.J., Merchant, Kenneth A.; IMA

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 601(c) : INTERNATIONAL FINANCIAL
REPORTING - II

Objective: *To make students to understand the International Financial Reporting.*

UNIT I: PENSIONS & POST-EMPLOYMENT BENEFITS (AS PER US GAAP & IFRS):

Defined contribution pension plans - Defined benefit pension plans: Pension obligations - Pension plan assets - Net pension expense - Other Post-retirement benefits

UNIT II: INCOME TAXES (AS PER US GAAP & IFRS):

Income tax expense: Current income tax expense - Deferred income tax expense - Deferred taxes on balance sheet: Deferred tax assets - Deferred tax liabilities - Specific accounting considerations: Net Operating Losses (NOL) - Investee's undistributed dividends

UNIT III: EQUITY (AS PER US GAAP & IFRS):

Equity accounts: Common Stock - Preferred Stock - Additional Paid-In Capital - Retained Earnings - Accumulated Other Comprehensive Income - Treasury Stock - Specific accounting considerations: Share-based Payments to Employees - Equity Securities Classified as Debt Presentation of Equity: On Balance sheet - On Statement of Changes in Equity - Earnings per Share (EPS): Basic EPS - Diluted EPS

UNIT IV: SELECT TRANSACTIONS (AS PER US GAAP & IFRS):


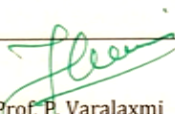
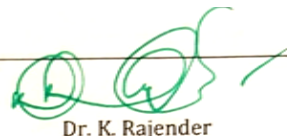




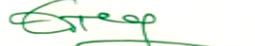

Business Combinations and Consolidations: Acquisitions - Non-controlling Interest - Intercompany Transactions - Variable Interest Entities (VIE) - Foreign currency: Remeasurement - Translation

UNIT V: NOT-FOR-PROFIT AND GOVERNMENTAL ACCOUNTING AND REPORTING (AS PER US GAAP):

Not-for-Profit (NFP) Entities: NFP Financial Statements - Contribution Revenue - Specific Accounting Considerations - Colleges and Universities - Voluntary Health and Welfare Organizations - Health Care Organizations - Governmental Entities: Fund types (Governmental funds, Proprietary funds, Fiduciary funds) - Modified Accrual Accounting - Inter-fund transactions - Government Financial Reporting

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Financial Accounting & Reporting, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Financial Accounting and Reporting, Wiley
3. IFRS & US GAAP Best Practices in Accounting World: GAAP Analysis, Rajesh Dhawan
4. Transparency in Financial Reporting: A concise comparison of IFRS and US GAAP 1st Edition, Ruth Ann McEwen, Harriman House Ltd.
5. IFRS and US GAAP: A Comprehensive Comparison, Steven E. Shamrock, Wiley

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Kakatiya University, Warangal.

Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602(a): THEORY AND PRACTICE OF GST

Objective: to equip the students with the knowledge regarding Theory and Practice of GST.

UNIT I: INTRODUCTION TO GST:

Introduction – GST - Taxes Subsumed under GST -Determination of Tax - Registration -Process of Registration - Cancellation and renovation of registration - Supply of Goods and Services - Transition to GST - Registered Business -Availed Input Tax Credit -Unavailed CENVAT credit and Input VAT on capital goods-Availing the input credit held in closing stock -Invoicing -Tax Invoice - Bill of Supply - Credit Note, Debit Note and Supplementary Invoice-Transportation of goods without issue of Invoice - Input Credit Mechanism - Input Tax - GST Returns - Payment of Tax.

UNIT II: GETTING STARTED WITH GST:

Introduction - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST - Intrastate Supply of Goods-Intrastate Inward Supply -Intrastate Outward Supply -Interstate - Interstate Outward Supply - Return of Goods -Purchase Returns -Sales Returns -Supplies Inclusive of Tax -Defining Tax Rates at Master and Transaction Levels - Defining GST Rates at Stock Group Level-Defining GST Rate at Transaction Level -Hierarchy of Applying Tax Rate Details –Reports.

UNIT III: RECORDING ADVANCED ENTRIES, GST ADJUSTMENT AND RETURN FILING:

Introduction -Accounting of GST Transactions -Purchases from Composition Dealer -Purchases from Unregistered Dealers-Exports -Imports -Exempted Goods -SEZ Sales -Advance Receipts and payments - Mixed Supply and Composite Supply under GST -Mixed Supply of Goods -Composite Supply of Goods -GST Reports - Generating GSTR- Report in ERP -Input Tax Credit Set Off -GST Tax Payment -Time line for payment of GST tax -Modes of Payment -Challan Reconciliation -Exporting GSTR- return and uploading in GST portal.

UNIT IV: GETTING STARTED WITH GST (SERVICES):

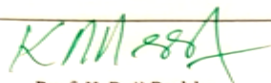
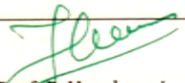







Introduction -Determination of supply of services -Determining the Place of Supply of Services - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods - Intrastate Inward Supply-Intrastate Outward Supply -Interstate Supply -Interstate Outward Supply - Interstate Inward Supply -Interstate Outward Supply of Services -Cancellation of Services - Cancellation of Inward Supplies -Cancellation of Outward Supply of Services -Defining Tax Rates at Master and Transaction Levels.

UNIT V: RECORDING ADVANCED ENTRIES AND MIGRATION TO ERP:

Introduction - Accounting Multiple Services in a Single Supply - Recording Partial Payment to Suppliers -Outward Supplies - Recording Outward Supply with Additional Expenses - Supply of services -Business to consumers - Time of Supply of Services - Place of Supply of Services - Determining place of supply of services - Exempt Supply of Services under GST -Export Supply of Services - Reverse Charge on Services under GST - Advance Receipts from Customers under GST - Advance Receipt and issuing Invoice on same month -Advance Receipt and issuing Invoice on different month - Reversal of GST on account of cancellation of advance receipt - Generating GSTR- Report in ERP - Input Tax Credit Set Off - Migration to ERP - Activate Goods and Services Tax (GST) in ERP - Set up GST rates - Update Masters - Update party GSTIN/UIN - Creation of GST Duty ledgers.

SUGGESTED READINGS:

1. Taxmann's Basics of GST
2. Taxmann's GST: A practical Approach
3. Theory & Practice of GST, Srivathsala, HPH
4. Theory & Practice of GST: Dr. Ravi M.N, PBP.

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602(b): FINANCIAL DECISION MAKING - II

Objective: To make students to understand the Financial Decision making.

UNIT I: DECISION ANALYSIS:

Cost/volume/profit analysis: Breakeven analysis - Profit performance and alternative operating levels - Analysis of multiple products - Marginal Analysis: Sunk costs, opportunity costs and other related concepts - Marginal costs and marginal revenue - Special orders and pricing - Make versus buy - Sell or process further - Add or drop a segment - Capacity considerations

UNIT II: PRICING:

Pricing decisions: Pricing methodologies - Target costing - Elasticity of demand - Product life cycle considerations - Market structure considerations

UNIT III: RISK MANAGEMENT:

Enterprise Risk: Types of risk - Risk identification and assessment - Risk mitigation strategies - Managing risk

UNIT IV: INVESTMENT DECISIONS:

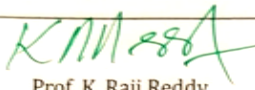
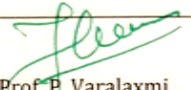







Capital budgeting process: Stages of capital budgeting - Incremental cash flows - Evaluating uncertainty - Capital investment method analysis: Net present value - Internal rate of return - Payback - Comparison of investment analysis methods

UNIT V: PROFESSIONAL ETHICS:

Business ethics: Moral philosophies and values - Ethical decision making - Ethical considerations for management accounting and financial management professionals: IMA's Statement of Ethical Professional Practice - Fraud triangle - Evaluation and resolution of ethical issues - Ethical considerations for the organization: Organizational factors and ethical culture - IMA's Statement on Management Accounting, –Values and Ethics: From Inception to Practice|| - Ethical leadership - Legal compliance - Responsibility for ethical conduct - Sustainability and social responsibility.

SUGGESTED READINGS:

1. Wiley CMAexcel Learning System, Part 2: Strategic Financial Management
2. Cost Management: A Strategic Emphasis, 6th edition; Blocher, Edward, J., Stout, David E., Juras, Paul E., and Cokins, Gary; McGraw Hill
3. Horngreen's Cost Accounting: A Managerial Emphasis, 16th edition; Charles T., Datar, Srikant, and Rajan, Madhav; Pearson
4. Principles of Corporate Finance, 11th edition; Brealey, Richard, A., Myers, Stewart C., and Allen, Franklin; McGraw Hill

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 602 (c): INTERNATIONAL AUDITING

Objective: To make students to understand the International Auditing.

UNIT I: ETHICS, PROFESSIONAL RESPONSIBILITIES AND GENERAL AUDITING PRINCIPLES:

Introduction to Auditing: Generally Accepted Auditing Standards (GAAS) - International Standards of Auditing (ISA) - Ethics, independence and professional conduct: AICPA Code of Professional Conduct - Sarbanes-Oxley Act (SOX), 2002 - Public Company Accounting Oversight Board (PCAOB) - Securities Exchange Commission (SEC) - International Standards - Engagement Understanding and Acceptance: Pre-Engagement Acceptance Activities - Engagement Letter - Auditor's communication with those charged with governance Quality Control: Statements on Quality Control Standards (SQCS) - Elements of a System of Quality control

UNIT II: ASSESSING AUDIT RISK AND DEVELOPING A PLANNED RESPONSE:

Audit Risk: Inherent Risk - Control Risk - Detection Risk - Fraud Risk: Fraudulent financial reporting - Misappropriation of assets - Fraud risk factors - Auditor's consideration of fraud
Planning the Audit: Audit Strategy - Audit Plan - Internal Controls: Auditor's Consideration of Internal Control - Operating Cycles - Internal Control Reports and Communications

UNIT III: PERFORMING FURTHER PROCEDURES AND OBTAINING AUDIT EVIDENCE:

Audit Evidence: Management's Assertions - Sufficient & Appropriate Audit Evidence - Audit Evidence determined by Risk of Material Misstatement (RMM) - Substantive Procedures: Revenue cycle - Expenditure cycle - Production cycle - Payroll cycle - Investing cycle - Financing cycle - Opening Balances - Illegal Acts - Related Parties - Contingencies - Estimates & Fair Value Measurements - Subsequent Events - Omitted Procedures & Subsequent Discovery of Facts - Using the Work of Others - Evaluating Audit Findings - Audit Documentation - Management Representation Letter - Audit Sampling: Sampling Risks - Attributes Sampling - Classical Variables Sampling - Probability Proportional to Size (PPS) Sampling

UNIT IV: AUDIT REPORTING:

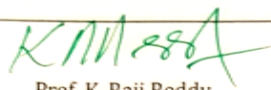
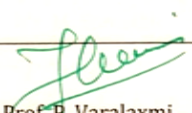
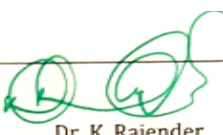





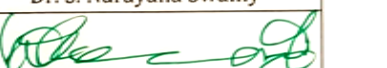
Audit Reports: Unmodified opinion - Unmodified Opinion with Emphasis-of-matter and/or Other-matter paragraph - Qualified Opinion - Adverse Opinion - Disclaimer of Opinion - Audit Reporting Considerations: Audit of Comparative financial statements - Supplementary Information - Audit of Group financial statements - Audit of Single financial statements & Specific financial statement elements, accounts or items - Audit of Special Purpose financial statements - Audit of financial statements prepared using financial reporting framework of another country

UNIT V: OTHER ENGAGEMENTS:

Accounting & Review Services: Preparation of financial statements - Compilation engagement - Review engagement - Attestation Engagements: Examination - Review Agreed-upon Procedures - Governmental Auditing: Governmental Auditing Standards - Single Audit Act

SUGGESTED READINGS:

1. Miles CPA Review Concept Book: Auditing and Attestation, Miles Education
2. Wiley CPA Excel Exam Review Course Study Guide: Auditing and Attestation, Wiley
3. Auditing: A Risk Based-Approach to Conducting a Quality Audit, Karla M Johnstone, Audrey A. Gramling and Larry E. Rittenberg, Cengage Learning

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 603(a): ACCOUNTING STANDARDS

Objectives: To make the students acquire the knowledge and application of Indian Accounting Standards.

UNIT-I: INTRODUCTON:

Introduction to Accounting – Concept of Accounting Theory – Role of accounting theory - Classification of Accounting Theory – Deductive and inductive approach in theory formulation – Accounting Principles: Concepts and Conventions - Accounting standard: Concept – Evolution. (Theory only)

UNIT-II: STANDARDS RELATING TO FINANCIAL REPORTING & DISCLOSURE:

Ind AS-101: First time adoption of Indian Accounting Standards – Ind AS-1: Presentation of Financial Statements – Ind AS-7: Cash Flow Statements (Including problems) – Ind AS-8:

Accounting Policies, Changes in Accounting Estimates and Errors – Ind AS-10: Events after the Balance Sheet Date – Ind AS-24: Related Party Disclosures – Ind AS- 34: Interim Financial Reporting - Ind AS-105: Non-current assets held for sale and discontinued operations – Ind AS- 108: Operating Segments.

UNIT-III: STANDARDS PROVIDING GUIDANCE ON FINANCIAL STATEMENT ITEMS:

Ind AS-2: Inventories (Including simple problems) -- Ind AS-11: Construction contracts (Including simple problems) - Ind AS-12: Income taxes – Ind AS-16: Property, Plant and Equipment – Ind AS-17: Leases (Including simple problems) - Ind AS-18: Revenue – Ind AS-20: Accounting for Government Grants and Disclosure of Government Assistance – Ind AS-23: Borrowing Costs – Ind AS-38: Intangible Assets.

UNIT-IV: STANDARDS RELATING TO BUSINESS ACQUISITIONS AND CONSOLIDATIONS:

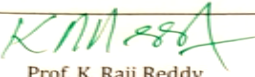
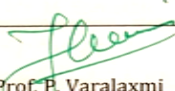





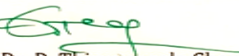

Ind AS-28: Investments in Associate and Joint Ventures - Ind AS-103: Business Combinations – Ind AS-110: Consolidated Financial Statements – Ind AS-111: Joint Arrangements – Ind AS- 112: Disclosure of interest in other entities

UNIT-V: FINANCIAL REPORTING:

Financial reporting – Concept -- Development in Financial reporting objectives: True blood Report (USA) – The Corporate Report (UK) – Stamp Report (Canada) - Objectives of Financial Reporting – Qualities of Financial Reporting - Recent trends in Corporate Reporting in India. (Theory only)

SUGGESTED READINGS:

1. Rawat D.S. –Ind ASs Converged IFRS|| Taxmann Allied Services Private Limited.
2. Accounting Theory and Practice: Jawaharlal, Himalaya Publishing Company
3. Accounting Standards: Rawat D.S, Taxmann Allied Services Private Limited
4. IFRS Concepts and Applications: Kamal Garg, Bharat Law House Pvt. Limited
5. Accounting Theory: Porwal L.S, TataMcGraw-Hill Publishing Company
6. Accounting Theory & Management Accounting: Jain S.P. &Narang K.L, Kalyani

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Faculty of Commerce & Business Management,

B.Com. VI Semester - PAPER DSE – 603 (B): CORPORATE GOVERNANCE

Objective: To acquaint the student with the finer nuances of Corporate Governance.

UNIT-1: CORPORATE GOVERNANCE: Evolution and Significance: Corporate Governance: Meaning – Definition - Evolution – Historical Perspective of Corporate Governance – Nature and Scope of Corporate Governance – Need for Corporate Governance – Essentials of Corporate Governance – Objectives of Corporate Governance - Benefits and Limitations of Corporate Governance - Structure – Theories.

UNIT – II: CORPORATE GOVERNANCE COMMITTEES AND MODELS:

CG Committees: Cadbury Committee, Greenbury Committee, Hampel Committee, Sarbanes-Oxley Act, 2002, Blue Ribbon Committee, King Committee, Kumara Mangalam Birla Committee, Narayana Murthy Committee, CII Task Force Committee – CG Models : Anglo-American, German, Japanese and Indian Model.

UNIT - III: CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY:

Corporate Social Reporting – Meaning – Types of CSR - Role of CSR towards Society – Employees, Government, Stakeholders and Consumers – Nature of CSR – CSR Principles and Strategies - Models – Best Practices of CSR - CSR: Indian Perspective – Sachar Committee Report.

UNIT - IV: ACCOUNTABILITY IN CORPORATE GOVERNANCE:

Definition – Importance - Accounts and Financial Reporting - Stakeholders Influence - Social Responsibility and Accountability - Reflection of Stakeholder's Accountability in Legislation.

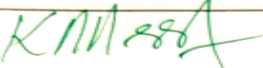
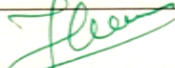






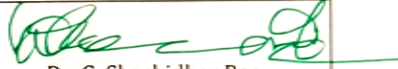
Guidance on Stakeholders and Shareholders Interest. Role of Top Management in Corporate Governance. Role of Auditors in Corporate. Role of Shareholders & Other Stakeholders in Corporate Governance.

UNIT – V: ISSUES IN CORPORATE GOVERNANCE :

Role of Promoters - Nominee Directors - Mismanagement –Corporate Frauds - Negligent Role of Auditors – Banks- Supervision and Control of Stock Exchanges – Whistle Blowing Policy - RBI – Ministry of Corporate Affairs – Towards Building Ethical and Sustainable Organization.

SUGGESTED READINGS:

1. Business Ethics and Corporate Governance, (2017) Prof. K. Viyyanna Rao, Dr. G. Nagaraju I.K., International Publishing House Pvt. Ltd,
2. Corporate Governance,(2014), Bholanath Dutta and S.K. Podder - Vision Book house,
3. Business Ethics,(2005)2ND Edition, R.V. Badi N.V. Badi,Vrinda Publication pvt Ltd
4. Business Ethics An Indian Perspective, 2015, A. C. Fernando - Pearson
5. Business Ethics and Corporate Governance, Reprint 2013, C.S.V. Murthy – Himalaya Publication
6. Corporate Governance,(2004) H.R. Machiraju, Himalaya Publication House

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Faculty of Commerce & Business Management,

B.Com. VI Semester - Paper DSE 603(C) : INVESTMENT MANAGEMENT

Objective: To familiarize with concepts of risk and return relating to Investment.

UNIT-I: INTRODUCTION:

Investment Management: Meaning and Definition – Objectives - Scope – Investment Vs Speculation – Investment Vs Gambling - Factors affecting Investment Decisions – Investment Alternatives - Types of Investors (Theory).

UNIT-II: RISK AND RETURN:

Meaning of Risk – Risk Vs Uncertainty – Causes of Risk – Types of Risks – Risk and Return of Single Asset – Ex-Ante and Ex-Post – Risk-Return Relationship – Risk-Return Trade off (Simple Problems).

UNIT-III: MARKET INDICES:

Concept of Index – Methods of computing stock indices – Leading Stock Price Indices in India – Sensex and Nifty – Uses of Market Index (Simple Problems).

UNIT-IV: TIME VALUE OF MONEY:

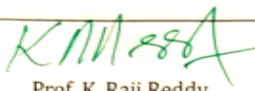
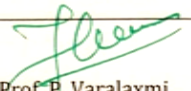






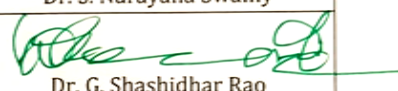
Concept - Techniques - Compounding Techniques - Doubling Period - Multiple Compounding Period - Present Value Techniques (Simple Problems).

UNIT-V: PORTFOLIO ANALYSIS:

Traditional Vs Modern - Rationale of Diversification - Markowitz portfolio theory - Effect of combining the securities - Measurement of expected return and risk of portfolio (Simple Problems).

SUGGESTED READINGS:

1. Investment Management (Text and Cases): V.K. Bhalla, S. Chand & Company.
2. Security Analysis and Portfolio Management: Shashi K. Gupta & Rosy Joshi, Kalyani Publishers.
3. Investment Management: Dr. V.A. Avadhani, Himalaya Publishing House.
4. Fundamentals of Investment Management: Preeti Singh, Himalaya Publishing House
5. Security Analysis and Portfolio Management: Kevin, PHI.
6. Investment Analysis and Portfolio Management: Prasanna Chandra, Tata McGraw-Hills
7. Investment Management, Prashanta Athma: Kalyani Publications.
8. Security Analysis and Portfolio Management: Madhumati Ranganathan, Pearson.
9. Investment Management: Mashewari, PHI.
10. Security Analysis and Portfolio Management: Dhanesh Khatri, Trinity Press.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE603a: MULTIMEDIA SYSTEMS
(Only for B.Com (Computer Applications))

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To acquire the knowledge of multimedia systems.

UNIT-I: MEDIA AND DATA STREAMS:

Properties of multimedia systems, Data streams characteristics: Digital representation of audio, numeric instruments digital interface Bark concepts, Devices, Messages, Timing Standards Speech generation, analysis and transmission.

UNIT-II: DIGITAL IMAGE&ANIMATIONS:

Digital Image: Analysis, recognition, transmission, **Video:** Representation, Digitalization, transmission.

Animations: Basic concepts, animation languages, animations control transmission.

UNIT-III: DATA COMPRESSION STANDARDS&STORAGE:

Data Compression Standards: JPEG, H-261, MPEG DVI

Optical storage devices and Standards: WORHS, CDDA, CDROM, CDWO, CDMO.

Real Time Multimedia, Multimedia file System.

UNIT-IV: MULTIMEDIA COMMUNICATION SYSTEM, DATABASES&SYNCHRONIZATION:

Multimedia Communication System: Collaborative computing session management, transport subsystem, QOS, resource management.

Multimedia Databases: Characteristics, data structures, operation, integration in a database model.

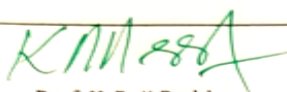
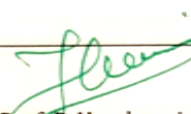
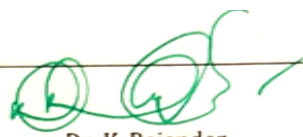




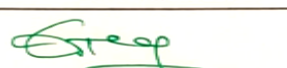

Synchronization: Issues, presentation requirements, reference to multimedia synchronization, MHEG.

UNIT-V: MULTIMEDIA APPLICATION:

Media preparation, Composition, integration communication, consumption, entertainment.

SUGGESTED READINGS:

1. Ralf Steninmetz, KlaraHahrstedt, *Multimedia: Computing, Communication and Applications*, PHI PTR Innovative Technology Series.
2. John F.KoegelBufford, *Multimedia System*, Addison Wesley, 1994.
3. Mark Elsom – Cook, *Principles of Interactive Multimedia*, Tata Mc-Graw Hill, 2001.
4. Judith Jefcoate, *Multimedia in Practice: Technology and Application*, PHI 1998.

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 603b: CYBER SECURITY
(Only for B.Com (Computer Applications))

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective To understand the cyber security, detection, network security, the law and cyber forensic.

UNIT-I: INTRODUCTION TO CYBER SECURITY, CYBER SECURITY VULNERABILITIES AND CYBER SECURITY SAFEGUARDS:

Introduction to Cyber Security: Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace.

Cyber Security Vulnerabilities: Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.

Cyber Security Safeguards: Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT-II: SECURING WEB APPLICATION, SERVICES AND SERVERS:

Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges.

UNIT-III: INTRUSION DETECTION AND PREVENTION:

Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

UNIT-IV: CRYPTOGRAPHY AND NETWORK SECURITY:

Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec.

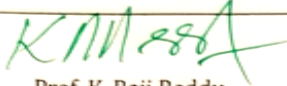
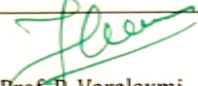







UNIT-V: CYBERSPACE AND THE LAW, CYBER FORENSICS:

Cyberspace and The Law: Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.

Cyber Forensics: Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

SUGGESTED READINGS:

1. Ramandeepkaurnagra, Cyber laws and Intellectual Property Rights, Kalyani Publishers, 7e,
2. Nina Godbole&SunitBelapureCyber Security, Wiley India Pvt Ltd, 2012.
3. Gerald. R. Ferrera, Reder and linchtenstein, Cyber laws – Text and Cases,3e, Cengage learning

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Kakatiya University, Warangal.
Faculty of Commerce & Business Management,
B.Com. VI Semester - Paper DSE 603c: DATA ANALYTICS
(Only for B.Com (Computer Applications))

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

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To learn the different ways of data Analysis, data streams, mining and clustering and visualization.

UNIT-I: INTRODUCTION TO BIG DATA:

Introduction to Big Data Platform – Challenges of conventional systems – Web data – Evolution of Analytic scalability, analytic processes and tools, Analysis vs reporting – Modern data analytic tools, Stastical concepts: Sampling distributions, resampling, statistical inference, prediction error.

UNIT-II: DATA ANALYSIS:

Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics – Rule induction – Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods.

UNIT-III: MINING DATA STREAMS:

Introduction to Streams Concepts – Stream data model and architecture – Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream – Estimating moments – Counting oneness in a window – Decaying window – Realtime Analytics Platform(RTAP) applications – case studies – real time sentiment analysis, stock market predictions.

UNIT-IV: FREQUENT ITEMSETS AND CLUSTERING:

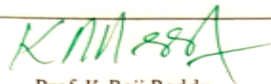
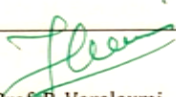







Mining Frequent itemsets – Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data – CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-euclidean space – Clustering for streams and Parallelism.

UNIT-V: FRAMEWORKS AND VISUALIZATION:

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases – S3 – Hadoop Distributed file systems – Visualizations – Visual data analysis techniques, interaction techniques; Systems and applications:

SUGGESTED READINGS:

1. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
2. AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge University Press, 2012.
3. Bill Franks, Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with advanced analytics, John Wiley & sons, 2012.

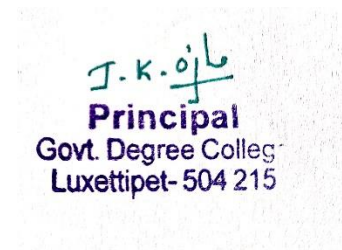
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GOVERNMENT DEGREE COLLEGE, LUXETTIPET

DEPARTMENT OF COMPUTERS

B.Sc(MPCS)

SYLLABUS



B.Sc. with Computer Science Syllabus

I Semester, DSC 1A

Object Oriented Programming with C++

Unit I

Algorithm and its characteristics, pseudo code / flow chart, program.

Object Oriented Programming: Introduction, Generation of programming Languages, Programming Paradigms, Features of Object Oriented Programming, Merits and Demerits of Object Oriented Programming Language.

Basics of C++ Programming: Introduction, History, Structure, Writing the First C++ Program, Files used in a C++ Program, Compiling and Executing, Using Comments, Tokens, Characters Set, Keywords, Identifier, Data Types, Variables, Constants, Input and Output, Statements, Operators, Type Conversion and Type Casting,

Decision Control and Looping Statements: Introduction to Decision Control Statements, Conditional Branching Statements, Iterative Statements, Nested Loops, Break Statement, Continue Statement, Goto Statement, Avoiding Usage of Break, Continue, and Goto Statements

Unit II

Functions: Introduction, Need for Functions, Using Functions, Function Declaration or function, Prototype, Function Definition, Function Call, Return Statement, Passing Parameters to the Function, Default Arguments, Return by Reference, Passing Constants as Arguments, Variables Scope, Storage Classes, Inline Functions, Function Overloading, Recursive Functions, Recursion Versus Iteration, Function with Variable Number of Arguments

Arrays: Introduction, Declaration of Arrays, Accessing Elements of the Array, Storing Values in Arrays, Calculating the Length of Array, Operations that can be Performed on Arrays, One Dimensional Arrays for Inter Function Communication, Two Dimensional Arrays, Multi Dimensional Arrays,

Pointers: Defining Pointers, Declaring Pointer Variables, Pointer Expressions and Pointer Arithmetic, Null Pointers, Generic Pointers, Passing Arguments to Function Using Pointer, Pointer and Arrays, Passing Array to Function, Differences Between Array Name and Pointer, Pointer to function, Arrays of Function Pointers, Memory Allocation in C++, Dynamic Memory Allocation,

Unit III

Structure, Union, and Enumerated Data Types: Structure Declaration, Typedef Declaration, Initialization the Structures, Accessing the Members of a Structures, Union, Union Inside Structures, Enumerated Data Types.

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Classes and Objects : Specifying a Class, Creating Objects, Accessing Object Members, Nested Member Functions, Making a Member Function Inline, Memory Allocation for Class and Objects, Returning Objects, this Pointer, Constant Parameters and Members, Pointers within a Class, Local Classes, Nested Classes in C++, Empty Classes, Friend Function, Friend Class, Bit-Field in Classes, Pointers and Class Members.

Constructors and Destructors: Constructor, Types of Constructors, Constructor with Default Arguments, Constructor Overloading, Destructors.

Unit IV

Operator overloading and Type Conversions : Scope of Operator Overloading, Syntax for Operator Overloading, Operators that can and cannot be Overloaded, Implementing Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Special Operators, Type Conversions.

Inheritance and Run-Time Polymorphism : Defining Derived Classes, Access Specifiers, Type of Inheritance, Single Inheritance, Constructors and Destructors in Derived Classes, Multi level Inheritance, Constructor in Multi Level Inheritance, Multiple Inheritance, Constructor and Destructor in Multiple Inheritance, Ambiguity in Multiple Inheritance, Hierarchical Inheritance, Constructors and Destructors in Hierarchical Inheritance, Hybrid Inheritance, Multi-path Inheritance, Virtual Base Classes, Object Slicing, Pointer to Derived Class, Run time Polymorphism, Virtual Functions, Pure Virtual Functions, Abstract Base Classes, Concept of Vtables, Virtual Constructor and Destructor.

Templates: Introduction, Use of templates, Function templates, Class templates.

Text Book:

1. Reema Thareja “Object Oriented Programming with C++” Oxford university Press, 2015

Recommended Books

1. E. Balagurusamy “Object Oriented Programming with C++” TMH, 6th edition, 2013.
2. Richard Johnson, *An Introduction to Object-Oriented Application Development*, Thomson Learning, 2006
3. B. Stroustrup, *The C++ Programming Language*, Addison Wesley, 2004.
4. Spoken Tutorial on “C++” as E-resource for Learning:- <http://spoken-tutorial.org>

B.Sc. with Computer Science Syllabus

Practical: Object Oriented Programming with C++

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

- 1) Write a program to test Arithmetic operators.
- 2) Write a program to Swap two numbers.
- 3) Write a program to demonstrate Switch statement.
- 4) Write a program to find roots of a quadratic equation.
- 5) Write a program to check whether the given number is palindrome or not.
- 6) Write a program to convert binary number to decimal number.
- 7) Write a program to print the following format.

```
1
2    3
4    5    6
7    8    9    10
```

- 8) Write a program to search an element in a given list.
- 9) Write a program to perform addition of two Matrices.
- 10) Write a program to perform multiplication of two Matrices.
- 11) Write a program to find factorial of a given number using recursion.
- 12) Write a program to demonstrate Pointer arithmetic
- 13) Write a program to demonstrate Call-By-Value, Call-By-Address, Call-By-Reference.

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- 14) Write a program to demonstrate Structure data type.
- 15) Write a program to demonstrate Enumerated data type.
- 16) Write a program to demonstrate inline functions.
- 17) Write a program to demonstrate Function Overloading.
- 18) Write a c++ program to demonstrate Class concept.
- 19) Write a c++ program on Constructor overloading.
- 20) Write a c++ program on Destructor.
- 21) Write a c++ program for copy constructor.
- 22) Write a c++ program to demonstrate Friend function.
- 23) Write a c++ program for Unary operator overloading (Friend function/Member function).
- 24) Write a c++ program for Binary operator overloading (Friend function/Member function).
- 25) Write a c++ program for Member Function overloading within a class
- 26) Write a c++ program for Single and Multilevel Inheritance.
- 27) Write a c++ program for Overriding of member functions.
- 28) Write a c++ program to demonstrate constructor calling mechanism in inheritance.
- 29) Write a c++ program for Multiple and Hybrid inheritance.
- 30) Write a c++ program to demonstrate pure virtual function implementation.

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II Semester, DSC 1B

Data Structures and File Processing

Unit I

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

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

Memory Management: Garbage collection algorithms for equal sized blocks, storage allocation for objects with mixed size, buddy systems

Unit II

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

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

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

Unit III

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

Searching and Sorting: Searching, Search Techniques, Sorting, Multiway Merge and Polyphase Merge, Comparison of All Sorting Methods, Search Trees: Symbol Table, Optimal Binary Search Tree, AVL Tree (Height-balanced Tree).

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Unit IV

Hashing: Introduction, Key Terms and Issues, Hash Functions, Collision Resolution Strategies, Hash Table Overflow, Extendible Hashing, Dictionary, Skip List, Comparison of Hashing and Skip Lists.

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

Indexing and Multiway Trees: Introduction, Indexing, Types of Search Trees
Files: Introduction, External Storage Devices, File Organization, Sequential File Organization, Direct Access File Organization, Indexed Sequential File Organization, Linked Organization.

Text books:

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

Recommended Books

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

B.Sc. with Computer Science Syllabus

Practical: Data Structures and File Processing

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Write C++ programs to implement the following using an array
 - a) Stack ADT
 - b) Queue ADT
2. Write a C++ program to implement Circular queue using array.
3. Write C++ programs to implement the following using a single linked list.
 - a) Stack ADT
 - b) Queue ADT
4. Write a C++ program to implement Circular queue using Single linked list.
5. Write a C++ program to implement the double ended queue ADT using double linked list.
6. Write a C++ program to solve tower of hanoi problem recursively
7. Write C++ program to perform the following operations:
 - a) Insert an element into a binary search tree.
 - b) Delete an element from binary search tree.
 - c) Search for a key in a binary search tree.
8. Write C++ programs for the implementation of BFS and DFS.
9. Write a C++ program that uses non-recursive functions to traverse a binary tree.

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- a)Pre-order
- b)In-order
- c)Post-order

10. Write a C++ program to find height of a tree.

11 Write a C++ program to find MIN and MAX element of a BST.

12 Write a C++ program to find Inorder Successor of a given node.

13. Write C++ programs to perform the following operations on B-Trees and AVL Trees.

- a)Insertion
- b)Deletion

14 Write C++ programs for sorting a given list of elements in ascending order using the following sorting methods.

- a)Quick sort
- b)Merge sort

15. Write a C++ program to find optimal ordering of matrix multiplication.

16. Write a C++ program that uses dynamic programming algorithm to solve the optimal binary search tree problem

17. Write a C++ program to implement Hash Table

18. Write C++ programs to perform the following on Heap

- a)Build Heap
- b)Insertion
- c)Deletion

19. Write C++ programs to perform following operations on Skip List

- a)Insertion
- b)Deletion

20. Write a C++ program to Heap sort using tree structure.

B.Sc. with Computer Science Syllabus

III Semester, DSC 1C

Database Management System

Unit I

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

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

Unit II

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

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional-Dependency Theory, Decomposition Using Multivalued Dependencies, More Normal Forms, Database-Design Process.

Unit III

Database-System Architectures: Centralized and Client –Server Architectures, Server System Architectures, Parallel Systems, Distributed Systems, Network Types.

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

Unit IV

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

B.Sc. with Computer Science Syllabus

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

Text book:

1. A. Silberschatz, H. Korth and S. Sudarshan, *Database System Concepts*, 6th Ed., Tata McGraw Hill, 2011

References:

1. J. Morrison, M. Morrison and R. Conrad, *Guide to Oracle 10g*, Thomson Learning, 2005.
2. Loney and Koch, *Oracle 10g: The Complete Reference*, Tata McGraw Hill, 2006.
3. David Flanagan, Java Script, *The Definitive Guide*, O'Reilly Media, 2006.
4. Marty Hall, Larry Brown, and Yaakov Chaikin, *Core Servlets and Java Server Pages: Core Technologies* (Vol. II), 2nd Ed., Sun Microsystems Press, 2006.
5. S.K. Singh, *Database Systems Concepts, Design and Applications*, Pearson Education 2006.
6. Spoken Tutorial on "MySQL" as E-resource for Learning:- <http://spoken-tutorial.org>

B.Sc. with Computer Science Syllabus

Practical: Database Management System

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

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

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

IssuedBooks (Accession number, Borrower)

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

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

Paper Details (Paper code, Name of the Paper)

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

- a) Identify primary and foreign keys. Create the tables and insert at least 5 records in each table.
 - b) Design a query that will return the records (from the second table) along with the name of student from the first table, related to students who have more than 75% attendance and more than 60% marks in paper 2.
 - c) List all students who live in “Delhi” and have marks greater than 60 in paper 1.
 - d) Find the total attendance and total marks obtained by each student.
 - e) List the name of student who has got the highest marks in paper 2.
3. Create the following tables and answer the queries given below:

B.Sc. with Computer Science Syllabus

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

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

BicycleModel (ModelNo, Manufacturer, Style)

Service (StartDate, BicycleID, EndDate)

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

EMPLOYEE (Person_Name, Street, City)

WORKS (Person_Name, Company_Name, Salary)

COMPANY (Company_Name, City)

MANAGES (Person_Name, Manager_Name)

- a) Identify primary and foreign keys.
 - b) Alter table employee, add a column "email" of type varchar(20).
 - c) Find the name of all managers who work for both Samba Bank and NCB Bank.
 - d) Find the names, street address and cities of residence and salary of all employees who work for "Samba Bank" and earn more than \$10,000.
 - e) Find the names of all employees who live in the same city as the company for which they work.
 - f) Find the highest salary, lowest salary and average salary paid by each company.
 - g) Find the sum of salary and number of employees in each company.
 - h) Find the name of the company that pays highest salary.
5. Create the following tables, enter at least 5 records in each table and answer the queries given below.

Suppliers (SNo, Sname, Status, SCity)

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

Project (JNo, Jname, Jcity)

Shipment (Sno, Pno, Jno, Qunatity)

- a) Identify primary and foreign keys.
- b) Get supplier numbers for suppliers in Paris with status>20.
- c) Get suppliers details for suppliers who supply part P2. Display the supplier list in increasing order of supplier numbers.
- d) Get suppliers names for suppliers who do not supply part P2.
- e) For each shipment get full shipment details, including total shipment weights.
- f) Get all the shipments where the quantity is in the range 300 to 750 inclusive.

B.Sc. with Computer Science Syllabus

- g) Get part nos. for parts that either weigh more than 16 pounds or are supplied by suppliers S2, or both.
- h) Get the names of cities that store more than five red parts.
- i) Get full details of parts supplied by a supplier in Delhi.
- j) Get part numbers for part supplied by a supplier in Allahabad to a project in Chennai.
- k) Get the total number of project supplied by a supplier (say, S1).
- l) Get the total quantity of a part (say, P1) supplied by a supplier (say, S1).

B.Sc. with Computer Science Syllabus

IV Semester, DSC 1D

Design and Analysis of Algorithms

Unit I

Fundamentals of the Analysis of Algorithm Efficiency: The Analysis Framework, Asymptotic Notations and Basic Efficiency Classes.

Divide-and-Conquer: maximum-subarray problem, Strassen's algorithm for matrix multiplication, The substitution method for solving recurrences, The recursion-tree method for solving recurrences, The master method for solving recurrences.

Dynamic Programming: Rod cutting, Matrix-chain multiplication, Elements of dynamic programming, longest common subsequence, Optimal binary search trees.

Greedy Algorithms: An activity-selection problem, Elements of the greedy strategy, Huffman codes, Matroids and greedy methods, task-scheduling problem as a matroid.

Unit II

Searching and Sorting Techniques: Review of elementary sorting techniques-selection sort, Bubble sort, insertion sort, more sorting techniques-quick sort, heap sort, merge sort, shell sort, external sorting.

Limitations of Algorithm: Lower-Bound Arguments, Decision Trees, P , NP , and NP -Complete Problems.

Polynomials and the FFT: Representing polynomials, The DFT and FFT, Efficient FFT implementations.

Number-Theoretic Algorithms: Elementary number-theoretic notions, Greatest common divisor(GCD), Modular arithmetic, Addition and Multiplication of two large numbers.

Unit III

String Matching: The naive string-matching algorithm, The Rabin-Karp algorithm, String matching with finite automata, The Knuth-Morris-Pratt algorithm.

B.Sc. with Computer Science Syllabus

NP-Completeness: Polynomial time, Polynomial-time verification, NP-completeness and reducibility, NP-completeness proofs, NP-complete problems.

Approximation Algorithms: The vertex-cover problem, The traveling-salesman problem, The set-covering problem, Randomization and linear programming, The subset-sum problem.

Unit IV

Elementary Graph Algorithms: Representations of graphs, Breadth-first search, Depth-first search, Topological sort, strongly connected components.

Minimum Spanning Trees: Growing a minimum spanning tree, the algorithms of Kruskal and Prim.

Single-Source Shortest Paths: The Bellman-Ford algorithm, Single-source shortest paths in directed acyclic graphs, Dijkstra's algorithm, Difference constraints and shortest paths, Proofs of shortest-paths properties.

Text book:

1. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, *Introduction to Algorithms*, MIT press, 3rd edition, 2009.
2. Anany Levitin, *Introduction to the design and analysis of algorithms*, 3rd edition, 2012.

References:

1. J. Kleinberg and E. Tardos, *Algorithms Design*, Pearson Education, 2006.
2. S. Baase, *Computer Algorithms: Introduction to Design and Analysis*, Addison Wesley, 1999.
3. A.V. Levitin, *Introduction to the Design and Analysis of Algorithms*, Pearson Education, 2006.

B.Sc. with Computer Science Syllabus

Practicals: Design and Analysis of Algorithms

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Sorting Algorithm:

1. To analyze time complexity of insertion sort
2. To analyze time complexity of Quick sort
3. To analyze time complexity of merge sort

Dynamic Algorithm:

4. To implement largest common subsequence
5. To implement optimal binary search tree
6. To implement martrix chain multiplication

Divide And Conquer:

7. Implement Binary Search Algorithm.
8. Implement Merge Sort Algorithm.
9. Implement Quick Sort Algorithm.
10. To implement strassen's martrix multiplication algorithm

The Greedy Method:

11. Implement activity selection problem
12. Implement fractional Knapsack Problem Algorithm.
13. Implement Job Sequencing with Deadlines Algorithm.

B.Sc. with Computer Science Syllabus

14. Implement Minimum-Cost Spanning Trees: Prim's Algorithm.
15. Implement Single Source Shortest Paths: Dijkstra's Algorithm.

Dynamic Programming:

16. Implement Single-Source Shortest Paths: Bellman-Ford's Algorithm.
17. Implement All-Pairs Shortest Paths: Floyd & Warshall's Algorithm.

Graphs:

18. Implement Dijkstra's algorithm
19. Implement Warshall algorithm
20. Implement Bellman Fords algorithm
21. Implement depth first search algorithm
22. Implement depth first search algorithm

String Matching Algorithm:

23. Implement Naïve string matching algorithm
24. Implement Rabin Karp string matching algorithm

Spanning Trees:

25. Implement prim's algorithm
26. Implement Kruskal's algorithm

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(SEC-3) Skill Enhancement Course-III
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

VERBAL REASONING FOR APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 50

Unit – I NUMBERS AND DIAGRAMS

1.1 Series Completion: Number series, Alphabet Series

1.2 Series Completion: Alpha Numeric Series, Continuous Pattern Series

1.3 Logical Venn Diagrams

1.4 Mathematical Operations: Problem solving by substitution, Interchange of signs and numbers

Unit – II ARITHMETICAL REASONING

2.1 Mathematical Operations: Deriving the appropriate conclusions

2.2 Arithmetical Reasoning: Calculation based problems, Data based problems

2.3 Arithmetical Reasoning: Problems on ages, Venn diagram based problems

2.4 Cause and Effect Reasoning

Text Book: A Modern Approach to Verbal & Non-Verbal Reasoning by Dr. R.S. Aggarwal

KAKATIYA UNIVERSITY
B.Sc. Final Year (Under CBCS)
SEMESTER – V
(GE-1) GENERIC ELECTIVE-I
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

PUBLIC HEALTH AND HYGIENE

Credits: 2

Theory :2 hours/week

Marks: 50

UNIT – I : NUTRITION AND ENVIRONMENT

- 1.1 Balanced diet and Malnutrition.
- 1.2 Nutritional deficiencies and disorders- Carbohydrates, proteins, lipids, vitamins and minerals.
- 1.3 Occupational, Industrial, agricultural and urban Health-Exposure at work place, urban areas, industrial workers, farmers and agricultural labourers, Health workers and health disorders and diseases.
- 1.4 Environmental pollution and associated Health hazards, Water borne diseases and Air borne diseases.

UNIT-II : DISEASES AND HEALTH CARE

- 2.1 Causes, Symptoms, Diagnosis, Treatment and Prevention - Malaria, Filariasis, Measles, Polio, Chicken pox, Rabies, Plague, Leprosy,.
- 2.2 Causes, Symptoms, Diagnosis, Treatment and Prevention of non communicable diseases - Hypertension, Coronary Heart diseases, Stroke, Diabetes, Obesity and Mental ill-health.
- 2.3 Health care legislation in India – Termination of pregnancy act, Maternity benefit act, Biomedical waste act, ESI act.
- 2.4 First Aid and Health awareness, personal health care record maintenance.

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U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Paper- : Programming in Java

Unit I

Introduction: Java Essentials, JVM, Java Features, Creation and Execution of Programs, Data Types, Type Conversion, Casting, Conditional Statements, Loops, Branching Mechanism, Classes, Objects, Class Declaration, Creating Objects, Method Declaration and Invocation, Method Overloading,

Unit II

Constructors – Parameterized Constructors, Constructor Overloading, Cleaning-up unused Objects. **Class Variables & Method-static Keyword**, this Keyword, One-Dimensional Arrays, Two-Dimensional Arrays, Command-Line Arguments, Inner Class.

Inheritance: Introduction, Types of Inheritance, extends Keyword, Examples, Method Overriding, super, final Keyword, Abstract classes, Interfaces, Abstract Classes Verses Interfaces.

Packages: Creating and Using Packages, Access Protection, Wrapper Classes, String Class, String Buffer Class.

Unit III

Exception: Introduction, Types, Exception Handling Techniques, User-Defined Exception.

Multithreading: Introduction, Main Thread and Creation of New Threads –By Inheriting the Thread Class or Implementing the Runnable Interface, Thread Lifecycle, Thread Priority and Synchronization.

Input/Output: Introduction, java.io Package, File Class, FileInputStream Class, FileOutputStream Class, Scanner Class, BufferedInputStream Class, BufferedOutputStream Class, RandomAccessFile Class.

Unit IV

Applets: Introduction, Example, Life Cycle, Applet Class, Common Methods Used in Displaying the Output.

Event Handling: Introduction, Types of Events, Example.

AWT: Introduction, Components, Containers, Button, Label, Checkbox, Radio Buttons, Container Class, Layouts. **Swing:** Introduction, Differences between Swing and AWT, JFrame, Japplet, JPanel, Components in Swings, Layout Managers, Jtable, Dialog Box.

Database Handling Using JDBC: Introduction, Types of JDBC Drivers, Load the Driver, Establish Connection, Create Statement, Execute Query, Iterate Resultset, Scrollable Resultset, Developing a JDBC Application.

Text Book:

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

References:

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

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Programming in Java Lab

Note:

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

1. Write Java programs to find the following
 - a) largest of given three numbers
 - b) reverses the digits of a number
 - c) given number is prime or not
 - d) GCD of given two integers
2. Write Java programs to implement the following
 - a) default constructor b) parameterized constructor c) constructor overloading
3.
 - a) Write a Java program to find the smallest from given list of integers using array and scanner class.
 - b) Write a Java program for multiplication of two matrices.
4.
 - a) Write a Java program for demonstrating an inner class or nested class.
 - b) Write a Java program to implement method overloading, method overriding, dynamic method dispatch
5. Write a Java program to implement single, multilevel, hierarchal, multiple, hybrid inheritances.
6. Write Java programs that demonstrate the use of abstract, this, super, static, final keywords
7.
 - a) Write a Java program for creating a package and using a package.
 - b) Write a Java program to demonstrate the use of wrapper classes.
8.
 - a) Write a Java program using all five keywords of exception handling mechanism.

- b) Write a Java program for creating customized (user) Exception
- 9.
- a) Write a Java program that checks whether a given string is a palindrome or not.
 - b) Write a Java program for sorting a given list of names in ascending order.
- 10.
- a) Write a Java program to create a file, write the data and display the data.
 - b) Write a Java program that reads a file name from user and displays its information.
- 11.
- a) Write a Java program for controlling main thread.
 - b) Write a Java program for creating new thread by extending Thread class.
- 12.
- a) Write a Java program for creating new thread by implementing Runnable interface.
 - b) Write a Java program for thread synchronization.
- 13.
- a) Write a Java program to create following AWT components: Button, Checkbox, Choice and List.
 - b) Write Java programs to create AWT application using containers and layouts.
- 14.
- a) Write Java programs to create a simple Applet.
 - b) Write a Java program to handle different types of events in a swing application.
15. Write Java programs to create a swing application using swing components and layouts.
16. Write a Java program to store and retrieve data from database using JDBC.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

A) Computer Networks

Unit I

Introduction: Data Communication Components, Line Configuration, Topologies, Transmission Mode, Categories of Networks, ISO Reference Model–Layered Architecture, Functions of Layers, TCP/IP Reference Model.

Transmission Media: Guided Media–Twisted Pair Cable, Coaxial Cable, Optical Fiber, Unguided Media– Satellite Communication, and Cellular Telephony. Multiplexing: Frequency–Division Multiplexing, Time–Division Multiplexing.

Unit II

Data Link Layer: Error Detection–VRC, LRC, CRC, Checksum, Error Correction–Hamming Code, Burst Error Correction, Line Discipline–ENQ/ACK, Poll/Select, Flow Control–Stop-and-Wait, Sliding Window, Error Control–Stop-and-Wait ARQ, Sliding Window ARQ Go-Back-n ARQ, Selective-Reject ARQ.

Unit III

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

Switching: Circuit Switching, Packet Switching, Message Switching.

Unit IV

Networking and Internetworking Devices: Repeaters, Bridges, Routers, Gateways, Routers, Switches, Distance Vector Routing Algorithm, Link State Routing Algorithm.

Transport Layer: Duties of Transport Layer, Connection. Upper OSI Layers; Session Layer, Presentation Layer, Application Layer.

Text Book:

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

References:

1. S.S. Shinde, Computer Networks
2. William Stallings, Data and Computer Communications
3. Andrew S. Tanenbaum, David J Wetherall, Computer Networks
4. Behrouz A Forouzan, Firouz Mosharrarf, Computer Networks A Top-Down Approach
5. James F. Kurose, Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

A) Computer Networks Lab

Note:

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

1. Write a program to create a socket and implement connect function.
2. Write a program to get MAC address.
3. Write a program to display hello world using signals.
4. Write a program for socket pair system call using IPC.
5. Write a program to implement the sliding window protocol.
6. Write a program to identify the category of IP address for a given IP address.
7. Write a program to print details of DNS host.
8. Write a program to implement listener and talker.
9. Write a program to implement TCP echo using client–server program.
10. Write a program to implement UDP echo using client–server program.
11. Write a UDP client–server program to convert lowercase letters to uppercase letters.
12. Write a TCP client–server program to convert a given string into reverse.
13. Write a UDP client–server program to convert a given string into reverse.
14. Write a program to implement TCP iterative client–server program.
15. Write a program to implement time service using TCP client–server program.
16. Write a program to implement time service using UDP client–server program.

Note: Write above program using ‘C’ or C++

KAKATIYA UNIVERSITY
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B.Sc. Final Year
SEMESTER - V:

Elective 1

B. Visual Programming

Unit I

Introduction to VB: Writing windows application with VB, Programming languages -procedural, object oriented, event driven; VB Environment, Writing first VB project, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Variables, constants, and Calculation: Data types, naming rules and conversion, constants-named and intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data Counting and accumulating Sums.

Unit II

Decisions and Conditions : If statement, Conditions comparing numeric variables and constants, comparing strings, compound conditions (and, or, not), nested if statements, using if statements with option buttons & check boxes, displaying message in message box, input validation. Calling event procedures, debugging VB projects, Debugging Step-by-Step Tutorial.

Modular programming: Menus, using common dialog box, writing general procedure.

Unit III

Forms Handling: Multiple forms, creating, adding, removing forms, hide, show method, load, unload statement, me keyword, referring to objects on a different forms, Variables and constants in Multiple-Forms.

Iteration Handling: Lists Boxes and Combo Boxes, Do/loops, for/next loops, using msgbox function, using string function

Arrays: control Arrays, the case structure, single-dimension arrays, for Each/Next statement, table lookup, using list boxes with array, multi dimensional arrays.

Unit IV

Database Connectivity: VB and database, using the data control, viewing a database file-step-by-step, Navigating the Database in code, using list boxes and comboboxes as data-bound controls, adding a lookup table and navigation-step-by-step, updating a database file, Record sets, working with database fields, creating a new Dynaset.

Advanced topics in VB: ActiveX controls, Dynamic link libraries (DLL), Multiple Document interface (MDI).

Text Book:

1. Programming in Visual Basic 6.0 by Julia Case Bradley, Anita C. Millispangh (Tata McGraw Hill Edition 2000 (Fourteenth Reprint 2004))

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

B) Visual Programming Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
 - External Vice-Voce is compulsory.
-
1. Print a table of numbers from 5 to 15 and their squares & Cubes.
 2. Print the largest of three numbers.
 3. Find the factorial of a number n.
 4. Enter a list of positive numbers terminated by zero. Find the sum and average of these numbers.
 5. A person deposits Rs. 1000 in a fixed account yielding 5% interest. Complete the amount in the account at the end of each year for n years.
 6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
 7. Read n numbers. Count the number of negative numbers, positive numbers and zeroes in the list(use arrays)
 8. Read a single dimension array. Find the sum and average of these numbers.
 9. Read a two dimension array. Find the sum of two 2D Array
 10. Write a program to Demonstrate Control Array.
 11. Write a Program to perform String Manipulation Operations.
 12. Develop a VB Application to check for Input Validations.
 13. Develop a VB Application to Demonstrate MDI.
 14. Develop a VB Application to Demonstrate Combobox and Listbox.
 15. Develop a VB Application to Demonstrate Option Buttons and Check Boxes.
 16. Develop a VB Application to deal the following Database Operations
 - a) Insert
 - b) Delete
 - c) Update
 - d) Display

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

C) Python

Unit I

Introduction to Python: Python, Features of Python, Execution of a Python Program, Viewing the Byte Code, Flavors of Python, Python Virtual Machine, Frozen Binaries, Memory Management in Python, Garbage Collection in Python, Comparisons between C and Python, Comparisons between Java and Python.

Writing Our First Python Program: Installing Python for Windows, Installing numpy, Setting the Path to Python, Writing Our First Python Program, Executing a Python Program, Getting Help in Python, Getting Python Documentation Help, Reopening the Python Program in IDLE.

Data types in Python: Comments in Python, Doc strings, How Python Sees Variables, Data types in Python, Built-in data types, bool Data type, Sequences in Python, Sets, Literals in Python, Determining the Data type of a Variable, What about Characters, User-defined Data types, Constants in Python, Identifiers and Reserved words, Naming Conventions in Python.

Unit II

Operators in Python: Arithmetic Operators, Assignment Operators, Unary Minus Operator, Relational Operators, Logical Operators, Boolean Operators, Bitwise Operators, Membership Operators, Identity Operators, Operator Precedence and Associativity, Mathematical Functions.

Input and Output: Output statements, Input Statements, Command Line Arguments. Control Statements: Control Statements, The if Statement, A Word on Indentation, The if ... else Statement, The if ... elif ... else Statement, The while Loop, The for Loop, Infinite Loops, Nested Loops, The else Suite, The break Statement, The continue Statement, The pass Statement, The assert Statement, The return Statement.

Unit III

Arrays in Python: Array, Advantages of Arrays, Creating an Array, Importing the Array Module, Indexing and Slicing on Arrays, Processing the Arrays, Types of Arrays, Working with Arrays using numpy, Creating Arrays using array(), linspace, logspace, arange(), zeros() and ones() Functions, Mathematical Operations on Arrays, Comparing Arrays, Aliasing the Arrays, Viewing and Copying Arrays, Slicing and Indexing in numpy Arrays, Dimensions of Arrays, Attributes of an Array, The reshape() Method, The flatten() Method, Working with Multi-dimensional Arrays, Indexing in Multi-dimensional Arrays, Slicing the Multi-dimensional Arrays, Matrices in numpy, Getting Diagonal Elements of a Matrix, Finding Maximum and Minimum Elements, Finding Sum and Average of Elements, Products of Elements, Sorting the Matrix, Transpose of a Matrix, Matrix Addition and Multiplication, Random Numbers.

Strings and Characters: Creating Strings, Length of a String, Indexing in Strings, Slicing the Strings, Repeating the Strings, Concatenation of Strings, Checking Membership, Comparing Strings, Removing Spaces from a String, Finding Sub Strings, Counting Substrings in a String, Strings are Immutable, Replacing a String with another String, Splitting and Joining Strings, Changing Case of a String, Checking Starting and Ending of a String, String Testing Methods, Formatting the Strings,

Working with Characters, Sorting Strings, Searching in the Strings, Finding Number of Characters and Words, Inserting Sub String into a String.

Unit IV

Functions: Difference between a Function and a Method, Defining a Function, Calling a Function, Returning Results from a Function, Returning Multiple Values from a Function, Functions are First Class Objects, Pass by Object Reference, Formal and Actual Arguments, Positional Arguments, Keyword Arguments, Default Arguments, Variable Length Arguments, Local and Global Variables, The Global Keyword, Passing a Group of Elements to a Function, Recursive Functions, Anonymous Functions or Lambdas, Function Decorators, Generators, Structured Programming, Creating our Own Modules in Python, The Special Variable name.

Lists and Tuples: List, Creating Lists using range() Function, Updating the Elements of a List, Concatenation of Two Lists, Repetition of Lists, Membership in Lists, Aliasing and Cloning Lists, Methods to Process Lists, Finding Biggest and Smallest Elements in a List, Sorting the List Elements, Number of Occurrences of an Element in the List, Finding Common Elements in Two Lists, Storing Different Types of Data in a List, Nested Lists, Nested Lists as Matrices, List Comprehensions, Tuples, Creating Tuples, Accessing the Tuple Elements, Basic Operations on Tuples, Functions to Process Tuples, Nested Tuples, Inserting Elements in a Tuple, Modifying Elements of a Tuple, Deleting Elements from a Tuple.

Text Book:

R. Nageswara Rao, Corer Python Programming, Dreamtech Press

References:

1. Mark Lutz, Learning Python
2. Tony Gaddis, Starting Out With Python
3. Kenneth A. Lambert, Fundamentals of Python
4. James Payne, Beginning Python using Python 2.6 and Python 3
5. Paul Gries, Practical Programming: An Introduction to Computer Science using Python 3

Note:

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

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

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year
SEMESTER - V:

Elective 1

C) Python Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
 - External Vice-Voce is compulsory.
1. Write a Python Program which accepts the radius of a Circle from the user and compute the Area.
 2. Write a Python program to solve $(x + y) * (x + y)$, accept x and y from the user.
 3. Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum.
 4. Write a Python program to find whether a given number (accept from the user) is even or odd, Print out an appropriate message to the user.
 5. Write a Python program to get the Fibonacci series between 0 and 50.
 6. Write a Python program to print alphabet pattern 'E'.

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

7. Write the Python programs for the following.
 - a. To find the length of a given string
 - b. To Concatenate N Strings
 - c. To find the given String is palindrome or not.
8. Write a Python program to check if a String is numeric.
9. Write a Python program to find the sum of positive numbers from a given list (using continue statement).
10. Write a Python program to reverse the order of the items in the array.
11. Write a Python function to find the Maximum of three numbers.
12. Write a Python function that takes a number as a parameter and check the number is prime or not.
13. Write a Python program to get the number of occurrences of a specified element in an array.
14. Write a Python Recursive function to calculate the Factorial of a number (a non-negative number).
15. Write a Python program to add an item in a tuple.
16. Write a Python program to check whether an element exists within a tuple

KAKATIYA UNIVERSITY
U.G. Skill Enhancement Course - IV
(Under CBCS)
B.Sc. Final Year
SEMESTER - VI
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

QUANTITATIVE APTITUDE TEST

Credits: 2

Theory: 2 hours/week

Marks - 40

Unit – I ARITHMETICAL ABILITY

1.1 Arithmetical Ability: Ratio & Proportion

1.2 Arithmetical Ability: Time & Work, Time & Distance

1.3 Arithmetical Ability: Simple Interest, Compound Interest

1.4 Arithmetical Ability: Stocks & Shares

Unit – II DATA INTERPRETATION

2.1 Data Interpretation: Tabulation

2.2 Data Interpretation: Bar Graphs

2.3 Data Interpretation: Pie Charts

2.4 Data Interpretation: Line Graphs

Text Book: Quantitative Aptitude by Dr. R.S.Aggarwal

KAKATIYA UNIVERSITY
U.G. B.Sc. Final Year (Under CBCS)
Semester – VI: Generic Elective Paper-II
(FOR ALL SCIENCE FACULTY DEPARTMENTS)

WATER RESOURCES MANAGEMENT

UNIT-I

1. Importance of Natural Resources – Different Types Resources
2. Significance of Water Resources and their uses
3. Conservation of water and recycling of the water – Global distribution of water
4. Water shed programmes and their management
5. Storing the rain water in tanks and recharging ground water.

Unit-II

6. Rain water harvesting in rural areas (chekdam, trenches etc.,)
7. Over use of surface and ground water and control measures.
8. Aims, objectives and implementation of Mission Bhagiratha (Telangana Government Drinking water programme)
9. Aims, objectives and implementation of Mission Kakatiya (Telangana Government minor irrigation programme)
10. Issues and challenges in Water Resources Management

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER - VI

Elements of Scripting Languages

Unit I

HTML, Browsers and their types, URL's, web sites, Domain Names, static and dynamic sites and active web pages, Files Creation, Web Server, Web Client/Browser Hyper Text Markup Language, HTML Tags, Paired Tags, Commonly used HTML Commands Titles and Footers, Paragraph Breaks, Line Breaks, Heading Styles, Drawing Lines, Text Styles, Other Text Effects, Indenting Text, Lists, Types of Lists.

Unit II

Using the Border attribute, Using the Width and Height Attribute, Using the Align Attribute, Tables - Header, Data rows, The Caption Tag, Attributes - Width and Border, BGCOLOR, COLSPAN, ROWSPAN, External Document References, Internal Document References, Images as Hyperlinks, Introduction to Frames, tag, <FRAME> tag.

DHTML Introduction, use and its elements, Cascading Style Sheets – Introduction, Using Inline Styles, Sample Examples, Defining Your Own Styles, Properties in Values in Styles, A worked example, Formatting Blocks of Information, Layers, Embedded Style Sheets, Linking external sheets.

Unit III

JavaScript, Advantages, JavaScript Syntax, Data Types and Literal, Type Casting, Variables, Incorporating variables in a Script, Array, Operators and Expressions, Arithmetic Operators, Logical Operators, Comparison Operators, String Operators, Assignment Operators, Conditional Expression, Ternary and Special Operators

JavaScript Programming Constructs, If - then - else, Immediate If, For Loop, Built-in Functions, User Defined functions, Declaring functions, Place of Declaration, Passing Parameters, Variable Scope, Return Values, Recursive Functions, Placing text in a Browser, Dialog Boxes - Alert dialog box, Prompt dialog box, Confirm dialog box.

Unit IV

The Form Object, The Form Object's Methods, Text Element, Password Element, Button Element, Submit Button Element, Reset Button Element, Checkbox Element, Radio Element, Text Area Element, Select and Option Element, Multi Choice Select Lists Element, Form Validations using JavaScript.

Built-In Objects in JavaScript - String, Math, Date Object, Creating a User Defined Object.

Text Books:

1. Web Programming –Chris Bates – Third Edition.(Wiley)
2. Internet & World Wide Web- H. M. Deitel, P.J. Deitel, A. B. Goldberg-Third Edition

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSC-1F)
SEMESTER - VI

Elements of Scripting Language Lab

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
 - Faculty must take care about UG Standard Programs.
 - In the external lab examination student has to execute two programs with compilation and deployment steps are necessary.
 - External Vice-Voce is compulsory.
1.
 - a. Write a HTML program using basic text formatting tags, <p>,
, <pre>.
 - b. Write a HTML page for Example Cafe using above text formatting tags.
 2.
 - a. Write a HTML program using presentational element tags , <i>, <strike>, <sup>, <sub>, <big>, <small>, <hr>
 - b. Write a HTML program using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
 3.
 - a. Write a HTML program using different list types.
 - b. Write a HTML page that displays ingredients and instructions to prepare a recipe.
 4.
 - a. Write a HTML program using grouping elements <div> and .
 - b. Write a HTML Menu page for Example cafe site.
 5.
 - a. Write a HTML program using images, audios, videos.
 - b. Write a HTML program to create your time table.
 6. Write a HTML program to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
 7. Write a HTML program to create frames and links between frames.
 8. Write a HTML program to create different types of style sheets.
 9. Write a HTML program to create CSS on links, lists, tables and generated content.
 10. Write a HTML program to create your college web site using multi column layouts.
 11. Write a HTML program to create your college web site using for mobile device.
 12. Write a HTML program to create login form and verify username and password.
 13.
 - a. Write a JavaScript program to calculate area of rectangle using function.
 - b. Write a JavaScript program to wish good morning, good afternoon, good evening depending on the current time.
 14.
 - a. Write a JavaScript program using switch case?
 - b. Write a JavaScript program to print multiplication table of given number using loop.
 15.
 - a. Write a JavaScript programs using any 5 events.
 - b. Write a JavaScript program using JavaScript built in objects.
 16. Write a JavaScript program to create registration Form with Validations.

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B.Sc. Final Year (DSC-1F)
SEMESTER - VI

Elective 2

A) Operating Systems

Unit I

Introduction: Computer-System Architecture, Computing Environments.

Operating-System Structures: Operating-System Services, User Interface for Operating-System, System Calls, Types of System Calls, Operating System Structure.

Process Management: Process Concept, Process Scheduling, Operations on Processes, Inter process Communication, Examples–Producer-Consumer Problem.

Unit II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.

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

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Unit III

Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging.

Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing.

Unit IV

Mass-Storage Structure: Overview, Disk Scheduling, RAID Structure.

File Systems: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, Protection. File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management.

Text Book:

Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts (9e)

References:

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

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

A.) Operating Systems Lab

Note:

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1.
 - a) Use vi editor to create different files, writing data into files, modifying data in files.
 - b) Use different types of Unix commands on the files created in first program.
2. Write shell programs using 'case', 'then' and 'if' & 'else' statements.
3. Write shell programs using while, do-while and for loop statements.
4.
 - a) Write a shell script that accepts two integers as its arguments and compute the value of first number raised to the power of the second number.
 - b) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.
5.
 - a) Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers..
 - b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
6.
 - a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
 - b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.
7. Write a program to simulate the UNIX commands like ls, mv, cp.
8. Write a program to convert upper case to lower case letters of a given ASCII file.
9. Write a program to search the given pattern in a file.
10. Write a program to demonstrate FCFS process schedules on the given data.
11. Write a program to demonstrate SJF process schedules on the given data.
12. Write a program to demonstrate Priority Scheduling on the given burst time and arrival times.
13. Write a program to demonstrate Round Robin Scheduling on the given burst time and arrival times.
14. Write a program to implementing Producer and Consumer problem using Semaphores.
15. Write a program to simulate FIFO, LRU, LFU Page replacement algorithms.
16. Write a program to simulate Sequential, Indexed and Linked file allocation.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

B) PHP with My SQL

Unit I

Introducing PHP – What is PHP? Why use PHP? Evolution of PHP, Installing PHP, Other ways to run PHP, Creating your first script.

PHP Language Basics – Using variables, Understanding Data Types, Operators and Expressions, Constants. Decisions and Loops – Making Decisions, Doing Repetitive Tasks with Looping, Mixing Decisions and Looping with HTML.

Unit II

Strings – Creating and Accessing Strings, Searching Strings, Replacing Text with Strings, Dealing with Upper and Lowercase, Formatting Strings. Arrays – Creating Arrays, Accessing Array Elements, Looping Through Arrays with for-each, Working with Multidimensional Arrays, Manipulating Arrays.

Functions – What is a Function? Why Functions are useful? Calling Functions, Working with Variable Functions, Writing your own Functions, Working with References, Writing Recursive Functions.

Unit III

Objects – Introduction OOP Concepts, Creating Classes and Objects in PHP, Creating and using Properties, Working with Methods, Object Overloading with `_get()`, `_set()` and `_call()`, Using Inheritance to Extend Power of Objects, Constructors and Destructors, Automatically Loading Class Files, Storing as Strings.

Handling HTML Forms with PHP – How HTML form works, Capturing Form Data with PHP, Dealing with Multi-Value Fields, Generating Web Forms with PHP, Storing PHP Variables in Forms, Creating File Upload Forms, Redirecting After a Form Submission.

Unit IV

Working with Files and Directories - Getting Information on Files, Opening and Closing Files, Reading and Writing to Files, Copying, Renaming, and Deleting Files, Working with Directories.

Introducing Databases and SQL – Deciding How to Store Data, Understanding Relational Databases, Setting Up MySQL, A Quick Play with MySQL, Connecting MySQL from PHP.

Retrieving Data from MySQL with PHP – Setting Up the Book Club Database, Retrieving Data with SELECT, Creating a Member Record Viewer. Manipulating MySQL Data with PHP – Inserting, Updating, and Deleting Records, Building a Member Registration Application.

Text Book:

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

References:

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

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

B.) PHP with My SQL Lab

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1.

- a) Write a PHP script to find the factorial of a given number.
- b) Write a PHP script to find the sum of digits of a given number.

2.

- a) Write a PHP script to find whether the given number is a prime or not.
- b) Write a PHP script to demonstrate the use of break, continue statements using nested loops.

3.

- a) Write a PHP script to display the Fibonacci sequence with HTML page.
- b) Write a PHP script to create a chess board.

4.

- a) Write a PHP script using built-in string function like strstr(), stripslashes(), substr_count(), etc...
- b) Write a PHP script to transform a string to uppercase, lowercase letters, make a string's first Character uppercase.

5.

- a) Write a PHP script that inserts a new item in an array in any position.
- b) Write a PHP function to check whether all array values are strings or not.

6.

- a) Write a PHP script to count number of elements in an array and display a range of array elements.
- b) Write a PHP script to sort a multi-dimensional array set by a specific key.

7.

- a) Write a PHP script using a function to display the entered string in reverse.
- b) Write a PHP script using function for sorting words in a block of text by length.

8.

- a) Write a PHP script for creating the Fibonacci sequence with recursive function.
- b) Write a PHP script using pass by value and pass by reference mechanisms in functions.

9.

- a) Write a PHP script to demonstrate defining and using object properties.
- b) Write a PHP script to demonstrate inheritance.

10.
 - a) Write a PHP script to demonstrate the object overloading with `_get()`, `_set()`, and `_call()`.
 - b) Write a PHP script to demonstrate the overloading property accesses with `_get()` and `_set()`.
11.
 - a) Write a PHP script to demonstrate the method overloading and method overriding mechanisms.
 - b) Write a PHP script to demonstrate the use of final classes and final methods.
12.
 - a) Write a PHP script to demonstrate the use of interfaces.
 - b) Write a PHP script using constructors and destructors.
13. Write a PHP application to handling HTML forms with PHP script.
14.
 - a) Write a PHP script to create a file, write data into file and display the file's data.
 - b) Write a PHP script to check and change file permissions, copying, renaming and deleting files.
15.
 - a) Write a PHP application for connecting to MySQL and reading data from database table.
 - b) Write a PHP application for inserting, updating, deleting records in the database table.
16. Write a PHP application for student registration form.

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SEMESTER - VI

Elective 2

C) Cryptography

Unit I

Introduction: Security Trends, Security Attacks, Security Services, Security Mechanisms, Model for Network Security, Symmetric Ciphers: Classical Encryption Techniques, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography.

Unit II

Data Encryption Standard: Block Cipher Principles, The Data Encryption Standard, The Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles. Advanced Encryption Standard: Evaluation Criteria For AES, The AES Cipher.

Unit III

Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, the RSA Algorithm, Public-Key Cryptosystems: Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic, Elliptic Curve Cryptography.

Unit IV

Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs.

Digital Signatures and Authentication Protocols: Digital Signatures, Kerberos, X.509 Authentication Service, Public-Key Infrastructure.

Text Books:

1. W. Stallings, Cryptography and Network Security Principles and Practices, 4th Ed., Prentice-Hall of India, 2006.

References

1. C. Pfleeger and S.L. Pfleeger, Security in Computing, 3rd Ed., Prentice- Hall of India, 2007.
2. M.Y. Rhee, Network Security, John Wiley and Sons, NY, 2002.

KAKATIYA UNIVERSITY
U.G. Computer Science (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER - VI

Elective 2

C) Cryptography Lab

Note:

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1. Implement various cryptography techniques.
2. Implement the Pure Transposition Cipher
3. Implement Additive cipher
4. Implement DES Encryption and Decryption
5. Implement double transposition cipher
6. Implement RSA Encryption Algorithm
7. Implement RSA algorithm to achieve confidentiality
8. Implement RSA algorithm to create Digital Signatures
9. Implementation of Hash Functions
10. Implement Diffie Hellman Key Exchange.

**** The above programs can be implemented either in 'C' or in C++ or in Java.**