BCA - 201
THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - I : Numerical Analysis

Max Marks : 50
NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Simple / Scientific calculator is allowed.

UNIT – I SOLUTION OF POLYNOMIAL AND TRANSCENDENTAL ALGEBRIAC EQUATIONS

Bisection method, Regula falsi method & Newton's method, Solution of Cubic & Biquadratic Equation.

UNIT – II SIMULTANEOUS EQUATIONS AND MATRIX

Gauss-Jordan method, Cholesky's method , Reduction to lower or upper Triangular forms , Inversion of matrix , method of partitioning , Characteristics equation of matrix , Power methods , Eigen values of matrix , Transformation to diagonal forms.

UNIT – III INTERPOLATION - SINGLE VARIABLE FUNCTIONS

Newton's Interpolation formula, Newton's Forward and Backward Difference Interpolation Formula, Langranges Interpolation formula, Newton's Divided Difference Interpolation Formula.

UNIT – IV NUMERICAL DIFFERENTIATION AND INTEGRATION

Newton - cotes integration formula, Trapezoidal Rule, Simpson's One-Third and Three-Eight Rule, Waddle's Rule.

UNIT – V NUMERICALS SOLUTION OF ORDINARY DIFFERENCTIAL AND INTEGRAL EQUATION

Numerical Solution of first order Ordinary Differential Equations, one step method, Euler's, Picard's and Taylor's series Methods, Picard's Methods for successive approximations, Runga-Kutta Method.

BCA - 201
THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - II : Differentiation and Integration

Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

Differentiation

UNIT - I

Successive Differentiation, Lebnitz's Theorem, Rolle's Theorem, Lagrange's and Cauchy Mean Value Theorem, Taylor's Theorem, Expansion by Taylor's and Maclaurin's series.

UNIT – II

Asymptotes, Curvature, Test of Convexity and Concavity, Point of Inflaxion,Tracing of Curves in Cartesian and Polar form.

UNIT - III

Partial and Directional Derivatives of functions of two and three variables, Jacobian's Theorem.

Integration

UNIT - IV

Integration of functions by parts, by substitution and by partial fraction; Definite Integral and its properties.

UNIT - V

Integration of functions of two and three variables, Change of order of Integration, Determination of Area and Length.

BCA - 201
THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - III : Data Structures

Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT – I INTRODUCTION -
Introduction, Basic terminology, Elementary data organization, Data structure, Data structure operation,

UNIT – II CONCEPTS OF ARRAYS, RECORDS AND POINTERS –
Basic Terminology, Linear Array; Sorting : Bubble Sort; Searching: Liner Search, Binary Search, Pointers : Pointer Array; Records: Record Structures.

UNIT – III LINKED LISTS, STACKS, QUEUES, RECURSION –
Link lists, Traversing a linked list, searching a linked list; Insertion into a linked List, Deletion from a Linked List, Stacks, Array Representation of Stack; Queues.

UNIT – IV TREES -
Types of Trees, Binary Trees, Representing Binary, Traversing binary tree, Searching and Inserting in Binary Tree, Deleting in Binary tree.

UNIT - V
SORTING AND SEARCHING –
Sorting, Insertion Sort, Selection Sort, Merging, Merge.

BCA -202
DBMS (Oracle, SQL)

Max Marks : 100 Min. Marks : 40

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT – I OVERVIEW OF DATABASE MANAGEMENT SYSTEM :
Database, Definition of DBMS, Purpose of Database System, Data abstraction, Instances and Schema, Data Independence, Data administration roles, Different kinds of DBMS users, Data Dictionary, Data base languages- DDL, DML, DCL Data Models- The Relational approach, The Network approach, The Hierarchical approach, DBMS storage structure and access method.

UNIT – II ENTITY-RELATIONSHIP MODEL:
Entity - Relationship model as a tool for conceptual design-entities attributes and relationships. ER diagrams; Concept of keys: candidate key, primary key, alternate key, foreign key; Strong and weak entities, Case studies of ER modeling Generalization; specialization and aggregation. Converting an ER model into relational Schema.

UNIT – III Structured Query Language
Relational Algebra : select, project, cross product different types of joins (inner join, outer joins, self join); set operations, Simple and complex queries using relational algebra. Integrity constraints: Not null, unique, check, primary key, foreign key.

UNIT – IV Relational Database Design-
Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms (1NF, 2NF, 3NF). Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF.

UNIT – V INTRODUCTION TO ORACLE :
Introduction to Commercial database query language, SQL & its environment. SQL as a data definition language- creating tables, altering tables, drop tables. SQL as data manipulation language- Inserting, Deleting ,Retrieving and updating data in a table. SQL as query language. Introduction to SQL constructs (SELECT…FROM, WHERE… GROUP BY… HAVING… ORDERBY….), Temporary tables, Nested queries

BCA - 203
Programming in C++ & Visual C++

Max Marks : 100 Min. Marks : 40

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT - I

Overview of Object Oriented Concepts

Need for Object Oriented programming; Procedural Languages; The Object Oriented approach; advantages of Object Oriented Programming; characterization of Object Oriented Languages; Objects; Classes; inheritance; reusability; New data types; Polymorphism and overloading.

UNIT - II

Object Classes and Inheritance

Object and Class, Using the class, class construct, class destructors, object as function argument, struct and classes, array as class member, operator overloading. Type of inheritance, Derive class, Base class. Access specifier: protected. Overriding, member function, String,

UNIT - III

Object Oriented Programming

In overview of C++ Programming; Loops and decisions; Structures and functions. Arrays and Pointers, Inheritance, Overloaded Function, Inline Function, Virtual Functions, pure virtual Functions Streams.

UNIT - IV

Object Oriented Design & Database

Object structure concepts; Object type; Attribute types; relationship type; Object behavioral concepts; Methodology for Object Oriented Design; Booch methodology Relational Vs Object Oriented Databases, The architecture of Object Oriented Databases.

UNIT - V

Introduction to VC++ - C under windows, Overview of VC++, VC++ workspace & projects, creating source code file, adding C++ code to a program.

Introduction to MFC - The part of VC++ programs, the application object, the main window object, the view object, the document object, Windows event oriented programming, what is device context.

BCA - 204
Computer Networking & Internet Technology

Max Marks : 100 Min. Marks : 40

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT - I

Introduction to Computer Networking-

Data Communication, Networks - Distributed Processing, Network Criteria, Applications; Protocols and Standards, Standard Organization, Line Configuration - Point to Point, Multi Point; Topology - Mesh, Star, Tree, Bus, Ring, Hibrid; Tansmission mode, Categories of Network - LAN, MAN, WAN, Inter Networks.

UNIT - II

The OSI Model -

The model - Layered architecture, functions of the layers-Physical layer, Data Link layer, Network layer, Transport layer, session layer, Presentation layer, Application layer; the TCP/IP reference model, comparison of TCP/IP & OSI, Novell Netware, Arpanet, NSFNET.

UNIT - III

Transmission of Digital Data -

Analog and Digital, digital data transmission - parallel transmission, serial transmission, DTE-DCE interface - data terminal equipment, data circuit terminating equipment, standards, modems- Transmission rate, Modem standards.

UNIT - IV

Introduction to Internet Technology - Architecture of Internet, Client server model, www, The concept of web publishing, The HTML Basics Review, Tables, frames, image maps, forms & Introduction to CGI Scripting.

UNIT - V

Scripting Language for Web Design :- What is java , Introduction to java applet, Adding applet to web page, JavaScript ,Structure of Java Script, Basic Commands of Java Script, dynamic html.

Cascading Style Sheets & Web Server – Defining styles within HTML tags. Features of Style sheet, Web server, Publishing website, Case Studies.

BCA - 205
LINUX

Max Marks : 50 Min. Marks : 20

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.

UNIT - I

Introduction to Linux

Introduction to Linux system, History and Emergence, Features of Linux system, Different Linux distributions, Hardware Requirements for the different versions of Linux, Architecture of the Linux, Features of the Kernel and Kernel Shell relationship.

Linux File System

Features of Linux file system, File types and permissions, Getting started, Logging in /out with the concept of home directory. File operations and links, Commonly used commands like GREP, Find, who, ls, pwd, mv, ls, cd, df, cat, head, tail, rm, sort, grip, ps, whoami, chmod, chonn,gunzip,date, bc, tar.

UNIT - II

Text Processing

Introduction to Text Processing, Vi editor, Vi Features, Vi Commands, Yanking, Running shell commands, from within Vi, Command macros, Set showmode, Set Auto Indent, Set number, Introduction to Exrc file.Emacs editor, Emacs feature, Emacs commands, Using cut, paste and copy in Emacs, Saving buffer in Emacs.

UNIT - III

Shell Programming

Introduction to Shell & Shell Programming: Features of a Shell, Different types of a Shell, Why use more shell, Shell treatment to the command line, the environment, set, setenv, path, home, ifs, mail, ps1, ps2, term, log name, profile, sty, profile file, login/logout file, setting environment, simple shell programs, for… do, case, do while construct.

UNIT - IV

X-windows

x-windows: what is X-windows, Microsoft windows verses x-windows, windows manager, FVWM and FVWM95, twn, the client server model of x-windows, starting and stopping an X-window session.

GNOME & KDE

Using the GNOME & KDE desktop environment : starting the GNOME desktop environment, the GNOME panel, using the main system menu, the Gnome file manager, getting help in GNOME, using the Gnome control. A history of KDE project, starting the KDE desktop environment, exploring the Kde desktop, KDE main system menu, using file manager window, setting wallpaper, screen savers in KDE

UNIT - V

System Administration of Linux

Installation & system Administration of Linux: responsibilities of a system administrator, startup and shutdown process, inittub and profile file importance, security file access permission, user and group related jobs, managing disk space, managing file system, backup and restart process. PRC- installation requisite, minimum hardware requirement for Red Hat Linux, Hard Disk Partitioning, installation of Red Hat Linux Installation of Printer, Scanner and Peripheral devices in Linux.

BCA - 206
Principles of Management

Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT - I
MANAGEMENT:

Concept, Nature and Scope of management. The evolution of Management thought, Approaches of management, New classical school, Modern organizational Theories, Behavourial Approach and Systems Approach, Tasks of a professional Manager, Responsibilities of a Professional Manager, Management Systems and Processes, Managerial Skills.

UNIT - II
PLANNING:

Significance, Objectives Types of Plans, Strategies & Polices, Proceedings methods & rules Project Management, Planning Evaluation, Feasibility Report, Planning Process Planning under systems approach.

UNIT-III
ORGANIZING

Significance, objectives, Major approaches to organizational theory, Organizational Structure and Design, the organizational Process, span of control or Departmentation, Delegation of Authority & Inter Department Coordination, Decentralization, Determinants of effective organizing, staffing, selection, appraisal and development of Managers.

UNIT-IV
DIRECTING

Significance and issue in managing human factors. Motivation, nature and significance theories and techniques, Leadership styles and influence process, Leadership challenges.
Managerial Communication, definition & Significance, Types of communication, the process and barriers, Building effective communication system, Supervision nature and function, determination of effective supervision.

UNIT-V
CONTROLLING & DECISION MAKING

Definition and elements, Control Techniques, Coordination and determinants of an effective control system.