

1. Write a C program to compute commission earned by a sales man according to the scheme given below

Sales Amount	Commission %
Upto Rs 1000	0
Above 1000 upto 5000	5
Above 5000	10

3. There are 10 students in a class. Their names and marks in three different subjects are given. If a student takes more than 40 marks in each subject, then he is declared PASS. Otherwise FAIL. Write a C program to do the above.
4. Write a C program that receives the data such as age and name of person to check the eligibility for voting. Take the condition that if a person is more than 18 years old he is eligible to vote. Else display the number of years, he has to wait for voting.
5. A man is paid at the hourly rate of Rs.15/- per hour for the first 45 hours worked. Thereafter, overtime is paid at 1.5 times the hourly rate for the next 25 hours and 2 times the hourly rate for further hours worked per week, calculate and print his gross weekly wage.
6. Write a C program to find the Biggest of 5Nos. Modify the program to find the biggest of 10 Nos.
7. Write a C program to sort 10 Nos. in Ascending order.
8. Write a C program to Accept Two strings. Assign a String to another variable, concatenate the two strings and find the length of concatenated string.
9. Write a C program to find the factorial of a given number using FUNCTION declaration.
10. Write a C program to find Simple & compound interest using FUNCTION declaration.

B.TECH - I (Full Time) Important Computer Applications

I Semester		Marks
Paper 1	Introduction to Information Technology	100
Paper 2	Digital Computer Organisation	100
Paper 3	Programming in C and C++	100
Paper 4	Relational Data Base Management Systems	100

Paper 5	Practical-I, PC Software lab	100
Paper 6	Practical-II Programming in C and C++ Lab	100

II Semester

Paper 7	Computer Networks	100
Paper 8	Java Programming	100
Paper 9	Internet and Web Designing	100
Paper 10	Software Engineering	100
Paper 11	Practical-III JAVA & Web Designing-Lab	100
Paper 12	Project work	100

Semester I

Paper 1. Introduction to Information Technology

Unit 1

Data and Information: Types of data simple model of a computer-Desktop computer, Acquisition of numbers and textual data: Introduction - Input data: internal representation of numeric data, representation of characters in computers-error detecting codes.

Unit 2

Acquiring graphical data: Introduction-Acquisition of textual data, pictures - Storage format for pictures-Image compression - Fundamentals-Image acquisition with digital camera. Acquiring audio data-Acquisition of video-Processing multimedia data- processing and displaying textual data.

Unit 3

Data Storage: Introduction- Memory cell-RAM, ROM, Floppy

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Disk Drive, CD ROM, Archival Memory-Central Processing Unit -Output Devices.

Unit 4

Computer software-Computer networks-Data organization

Unit 5

Some Internet applications-Email-WWW-Information Browsing Service-Information retrieved from World Wide Web-Audio on internet-Business information system: Introduction -Types of information needed by organization-Why should we use computer in business-Design of operational information system-System life cycle-computer systems for transaction processing.

Text Book

1. V.Rajaraman, "Introduction to Information Technology", Prentice Hall of India, 2003

Reference

1. Ajoy Kumar Ray & Tinku Acharya, "Information Technology-Principles and Application", Prentice Hall of India, 2004
2. Research and Development Wing IITL Education, "IT Tools and Applications", Macmillan India Ltd., 2004
3. SK Sarkar & AK Gupta, "Element of Computer Science", S Chand & Co., 2002

Paper 2. Digital Computer Organization

Unit I (Number System)

Digital Computer and Digital Systems-Binary Numbers-Number Base: Conversion-Octal and Hexa-Decimal Numbers-Complements-Binary Code's

Unit II (Boolean algebra)

Boolean Algebra and Logic Gates: Basic Definitions-Boolean Functions-Canonical and Standard Forms -Other Logical Operations-Digital Logic Gates-IC Digital Logic Families-Simplification of Boolean Functions-The KMap Method-Product of Sums-Sum of Products-simplifications- NAND and NOR implementation: Don't care conditions

Unit III (Combinational Logic and Sequential Logic)

Introduction-Adders-Subtractors-Binary Parallel Adder-De-

mal Adder-Decoder-Encoder-Multiplexers-De-Multiplexers, Flip Flops: Introduction-Flip Flop excitation tables-Design counters-Ripple counters-Registers-Shift Registers

Unit IV Computer Organization and Central Processing Unit

Organization of Computer-characteristics-machine language-assembly language-Register transfer language-Central Processing unit: ALU-General Register organizations-control word-examples of micro operations-stack organization-Instruction formats-addressing modes-Data transfer, manipulation & program control instructions.

Unit V (Input-Output Organization and Memories)

Peripheral devices- I/O interface-Synchronous and Asynchronous data transfer-DMA-IOP. Microcomputer memory-Auxiliary memories & primary memories: RAM ROM-PROM-EPROM-Associative memory-Cache memory.

Text Books

1. Morris Mano- "Digital Logic and Computer Design"-McGraw Hill 1998 (units I,II,III), First edition
2. Morris Mano- "Computer System Architecture"-McGraw Hill, 1998 (Units IV,V) First edition

Reference

1. Thomas C Bartee- "Computer Architecture and Logical Design" McGraw Hill International Edition-1998
2. John P Hayes "Computer Architecture and Organization"-McGraw Hill International 3rd edition-1998.

Paper 3. Programming in C and C++

Unit I

An overview of C - data types and sizes - declarations - variables - constants - operators - Expressions - storage classes- Program control structure - loop control structures - C formatted input/output -arrays-strings

Unit II

Function-Function Arguments- Function prototype- Recursion-Structure-Unions-Bit Manipulations and Enumerations-Self-Referential Structures-Dynamic Memory Allocation.

Unit III

Pointers - Introduction- Pointer and Arrays-Pointers and

Strings- pointers and structures - Pointers and Data Structures-File processing- C Preprocessors-Command line arguments.

Unit IV

Introduction to C++ -Input and output statement in C++ - Declarations-Control structures-functions in C++ - Classes and Objects- Constructors and Destructors- operators overloading-Type conversion - Inheritance-Pointers and arrays

Unit V

Memory management operators - Polymorphism-Virtual functions- Files- Exception handling- string handling - templates.

Reference

1. Yashvant P.Kanetkar, "Let Us C"
2. Yeswanth Kanetkar, "Pointers in C"
3. "Object oriented analysis and design with applications" - Grandy Booch, Second edition, Pearson education
4. "Object oriented Programming with ANSI & Turbo C++" - Ashok N.Kamthane, First Indian print 2003, Pearson Education.
5. E.Balagurusamy, "Programming in ANSI C", Tata McGraw Hill.
6. Deitel & Deitel, "C how to program", Third edition, Pearson Education Asia.
7. Samanta "Object oriented programming with C++ and Java", PHI
8. Balagurusamy "object oriented programming with C++", TMCH, second edition.

Paper -4. Relational DataBase Management Systems

Unit I - Introduction

Purpose of Database systems -View of data -Data models- Database Languages-Transaction management -Storage Management Database Administrator -Database Users-System structure - Entity relationship model: Basic concepts-keys-Entity Relationship Diagram, Weak Entity sets, E-Rfeatures. Specialization, Generalization. Codd's Rules. Relational Model:

Structure of Relational Databases-Relational Algebra-Views

Unit II

SQL-Background-Basic Structure-Set operations- Aggregate Functions-Null values-Nested Sub queries-Derived Relations- Views- Modification of the database-Joined Relations- Data Definition Language-Embedded SQL features.

Unit III

Integrity Constraints: Domain Constraints: Domain constraints-Referential Integrity-Assertions-Triggers-Functional Dependencies. Relational Database Design.Pitfalls- Normalization (upto 3rd normal form). Object Oriented Databases: New Database Applications-Object Oriented Data Model-Object Oriented Languages-Persistent Programming Languages.

Unit IV

Object Relational Databases: Nested Relations-Complex Types and Object Orientation -Querying with Complex Data Types-Creation of Complex values and objects- Comparison of Object-Oriented-Relational Databases.

Unit V

New Applications: Decision Support Systems-Data Analysis-Data Mining-Data Warehousing- Spatial and Geographic Databases- Multimedia databases-Mobility and Personal Databases-Information - Retrieval systems- Distributed Information Systems- The World Wide We.

Text Books

1. Abraham Silberschatz, Henry F.Korth and S.Sudharsan, "Database system concepts", 4th edn, Tata McGraw Hill, 2002

Reference

1. Alexis Leon and Mathews Leon, "Database management Systems" Vikas Pub
2. Elmasri Navathe, "Fundamentals of Database systems", Pearson Education pub, 1st editions, 2001
3. Bipin C.Desai, "An Introductoin to database systems", Galgotia Publ,2000, 1st edition
4. James Martin, "Principles of Data base Management", PHI-1st Edition, 1992

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Practical 1.
Paper-5. PC Software Lab

MS-WORD

Problem 1: Using the MSWord type out the Title page of your office automation book. Format the title page by the following formatting features:

1. a) Centre each line b) choose appropriate font size in each line c) choose fonttype where needed for a letter display
2. Draw border lines
3. Use color options as your feel appropriate.

Problem 2

Using the MS-Word type a circular letter to be posted to PGDCA candidates of Tamil University to attend Personal Contct Programmed (PCP)

Format the Circular Letter as it is and apply the suitable Font type and Font size.

MS-EXCEL

Problem 1: Sorting Data

Create the following worksheet in Excel:

A	B	C	D	E	F	G	H	I	J
1	sno	Regno	Name	Age	Maths	English	Tamil	Total	Ave Res
2									
3									
4									
5									
6									

Maximum
Minimum

- i. Fill the Total column
- ii. Fill the AVERAGE column
- iii. Replace the RESULT with PASS for AVERAGE >= 50 ELSE FAIL
- iv. Format AVERAGE column with 2 decimals
- v. Sort this list by REGNO
- vi. Sort first by NAME then AGE
- vii. Find the MAXIMUM mart foreachsubject

viii. Find the MINIMUM mark foreach subject

Problem 2: Filtering Data

Create the following worksheet in Excel

B	C	E	F	G	H
RegNo	Name	Maths	English	Science	Total
123	Ram	65	60	90	
124	Arun	45	63	49	
125	Kavitha	50	58	74	
126	Balu	72	38	82	
127	Suresh	48	40	81	

- i. Fill the Total column
- ii. Fill the candidates whose REGNO >= 124
- iii. Filter the candidate whose NAME = 'BALU'
- iv. Filter the candidate whose ENGLISH > 60

Problem 3: Data analysis using Cross-Tabulation (Data Tables)

Create the following worksheet in Excel:

A	B	C	E	F	G	H	I	J
1	Sales	Cost	Profit					
2	150	90	=A2					
			=B2					
3								
4	Data Table (What -If Analysis)							
5	Cost	Sales						
6		125	130	140	145			
7	100							
8	120							
9	125							
10	160							

Fill the Table by using DATA TABLE command:

Problem 4: Presentation Graphics

Create the following worskeet in Excel:

A	B	C	E	F	G	H
1	AMOUNT IN CRORES					

YEAR	SALES	EXPENSE
1990	20	9
1991	25	12
1992	35	38
1993	42	25

Draw the Graph and mention the appropriate headings.

- Exercise:
- Experiment with other types of graphs by changing your selections in step 3.
 - Include more columns (say PROFIT) with data values and create different types of graphs.

MS-POWERPOINT

Problem 1: Imagine that you are running a Computer Centre and offering several courses for various levels of students, training programs, software development and DTP works. Prepare a slide show to display about your centre profile, courses offered (with the content structure, fees, duration, eligibility) and details about Training programs and Software development and DTP work's tariff etc. Provide animation effect and sound effect as and where needed.

**Practical II
Paper -6 Programming in C and C++ Lab**

- Programs using Arrays
- Program using Structure
- Program to access the array elements using pointers
- Programs using file
- Programs using control structures
- Program using functions with pointers
- C++ Program using operator overloading functions
- C++ Program using Type conversion
- C++ Program using String manipulation functions
- C++ Program using friend functions
- C++ Program using inheritance
- C++ Program using Polymorphism
- C++ Program using files
- C++ Program using pointers

**Semester II
Paper 7. Computer Networks**

Unit I
Introduction: Uses of computer networks-Network hardware-Network Software -Reference Models

Unit II
The Physical layer: Guided transmission media-Communication satellites-The public switched telephone network: Structure of the telephone system-The local loop:modems, wireless local loops-switching

Unit III
The Data link layer: Data link layer design issues-error detection and correction.The Medium access control sub layer. The channel allocation problem-Multiple access protocols: Carrier sense multiple access protocols, collision-free protocols, Limited-Contention protocols-Blue tooth:Blue tooth architecture, Blue tooth applications. Data link layer switching: repeaters, hubs, bridges, switches, routers and gateways.

Unit IV
The Network layer: Network layer design issues-routing algorithms: The optimality principle, shortest path routing, flooding, distance vector routing, routing for mobile hosts.
The Transport layer: The Transport service: Services provided to the upper layers, transport service primitives, Berkeley sockets-Elements of Transport protocols.

Unit V
The Application layer: DNS-The Domain Name system-Electronic mail:Architecture and services, the user agent. Network Security: Cryptography-DES-Digital signatures:symmetric Key signatures, public-key signatures.

Text Book
1. Andrew S.Tanenbaum, "Computer Networks", 4th edition, Pearson education publ.2003

Reference
1. Behrouz A.Forouzan, "Data Communications and Network", Tata McGraw Hill-Second edition
2. William A.Shay, "Understanding data communications and networks", 2nd edition, Vikas publ.2001

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Paper 8. Java Programming

Unit I

JAVA Evolution: History-Features-How Java differs from C and C++ - Java and Internet-Java and WWW- Web Browsers, Overview of Java language: Introduction -simple java program-structure-java tokens-statments-Java virtual machine.

Unit 2

Constants-variables-Data types-Operators and expressions. Decision making and branching: If/ if/else, else if ladder, switch, ?: operator decision making and looping : While/ do for-jumps in loops- labelled loops/Classes, objects and methods

Unit 3

Arrays, Strings and Vectors- Interfaces- Multiple Inheritance- Packages-Putting classes together-Multi Threaded programming

Unit 4

Managing Errors and Exceptions-Applet programming-Graph-ies programming

Unit 5

Files: Introduction-concept of streams-stream/classes-Using streams, I/O classes-File class-I/O Exceptions-creation of files-Reading/writing characters/Bytes-Handling primitive data types- Random Access Files.

Text Book

- 1. E.Balagurusamy "Programming with Java-A Primer", TMH Publ, 2nd edition, 2000.

Reference

- 1. Patrick Naughton and Herbert Schildt "The complete reference java 2", 3rd edition, TMH Publ, 2000
- 2. C.Xavier "programming with java 2", Scitech Publ, 2000

Paper 9. Internet and Web Designing

Unit 1

Introduction: What is Internet-Using the Internet-A tour of the internet-Mail-Understanding the Web- Web Browsers-

Applications of browsers-Types of browsers. Applications of web-URL, Internet Addressing

Unit II

HTML-Introduction-Features of HTML, Elements-Tags-Formatting Features-Text and Images-List-Hyperlinks-Internal and External-Loading Images, Creating Tables-Setting color to table cells- Table layout-Div tags-positioning of text and Images-Frames-division into rows and columns-Creating Forms-Form Tags controls and Layout Color codes-Layout-Images, text.

Unit III

Style sheets: Writing style effect for pages, Creation of Cascading style sheets-Border, margin, text and paragraph style sheets-Web site designing and Management-Simple applications of website, web pages and home pages.

Unit IV

Java script-Introduction to scripting, Introduction-memory concepts-arithmetic decision making, java script Internet & www resources, Java script Arrays, Passing arrays to functions-Multiple Subscripted arrays.

Unit V

Java script control structures-Selection structure, If-If Else, Repetition structure: While-For-Do/while-Logical operators. Javascript functions: Introduction-program modules in javascript- programmer defined functions- Function definition- Duration of identifiers-scope rules- recursion -Javascript global functions.

Text Books

- 1. Deitel, Neito, "Internet and World Wide Web-How to program" - Pearson Education, Asia 2003
- 2. Harley Hahn-The Internet Complete Reference- Tata McGraw Hill Publishing Company, 1998, First Edition

Reference

- 1. Thomas A.Powell, "The complete Reference HTML", Tata McGraw Hill Publication, Second edition

Paper 10. Software Engineering

Unit I

Introduction-The evolving role of software Engineering-**Software Engineering**: crisis-Software Engineering myths- Software Engineering technology-the software Engineering process - Software Engineering process model-the prototyping model. Requirements engineering - System modeling- requirements analysis and elicitation for software engineering - Software Engineering prototyping-specification-mechanics of structured analysis - data dictionary-elements of analysis model-data modeling-functional modeling and information flow.

Unit II

Object oriented design - design for object- oriented subjects- the system design process- software engineering design and software engineering - the design process design principles- design concepts - effective modular design- design heuristics for effective modularity.

Unit III

Software quality assurance: quality concepts-quality-quality control-quality assurance-cost of quality-software quality assurance-background issues-SQA activities. Software reviews- cost impact of software defeats-defeat amplification and removal-formal technical reviews-review meeting-review reporting and record keeping review guidelines-statistical quality assurance-software reliability.

Unit IV

Mapping requirements into a Software Engineering architecture- transform mapping- transaction mapping-user interface design-interface design activities- Software Engineering testing techniques - Software Engineering testing fundamentals- White box testing-Basis path testing - control structure testing- Black Box testing

Unit V

Software testing strategies :-A strategic approach to Software Engineering testing-validation testing-system testing-the art of debugging- Software Engineering quality -Software Engineering reengineering - reverse engineering-Building blocks for CASE -a taxonomy of CASE tools.

Reference

1. R.S.Pressman, "Software Engineering", 5th Edition, 2001, TMH Publishers
2. Watts S humphrey, "A discipline for Software Engineering", Pearson Education Publ,2001
3. Ian Somerville, "Software engineering", 6th edition, Pearson Education Publ,2001
4. Richard Fairpy, "Software Engineering concepts", Tata McGraw Hill, 1997

Practical-III

Paper- 11. Java & Web Designing Lab

Java Programming Lab

1. Define a class with the following attributes:
1. name 2. date of birth 3. date on which leg injection-has to be given (60 days from date of birth) 4. date on which polio drops is to be given (45 days from date of birth) Write a constructor to construct the baby object. The constructor must find out the leg and polio drops dates from the date of birth. In the main program define a baby and display its details. 251
2. Write a program, which creates and displays a message on the window
3. Write a program to create an applet and draw grid lines
4. Write a java program to create a frame with two buttons called father and mother. When we click the father button the name of the father, his age and designation must appear, when we click mother similar details of mother appear
5. Write a java program to create four text fields for the name, street, city and pincode with suitable labels. Also add a button called my details, when you click the button your name, street, city and pin code must appear in the text fields.
6. Write a java program to demonstrate the multiple selection list box.
7. Write a java program to create a menu bar and pull down menus.

Web Designing Lab

1. Design a web page for your Department
2. Design a new web page, which shows your Biodata using CSS
3. Design a web page for a company using HTML formatting Tags.
4. Design a web page for computing student Mart List using Javascript
5. Design a web page for an Advertisement using Style Sheets
6. Design a web page with the following components using JavaScript a. image b. Hyperlink c. Scroll Bar d. Animation
7. Design a web page for Library system using HTML Tags
8. Design a web page for Payroll processing using Javascript
9. Design a web page for Electricity Bill Preparatin using Javascipt.

Paper-12. Project work

Java Programming Lab

1. Define a class with the following attributes: name, date of birth, sex, height, weight, blood group, etc. Write a program to construct the class object. The constructor method in the class should take the values of the attributes as arguments. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc.

2. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc.

3. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc. Write a program to create a class with the following attributes: name, age, sex, height, weight, blood group, etc.

Paper 9. Database Management Systems

Unit I Introduction

Database systems vs. File systems - View of data - Data models - Database Languages - Transaction management - Database systems structure - History of Database systems - Database systems applications - Entity relationship model.

Unit II Relational Databases

SQL - Basic Structure - Set operations - complex queries - Jointed Queries - DDL - Embedded SQL - dynamic SQL - other SQL functions - Query by Example - Integrity and Security of searching - Relational Database Design

Unit III Data Storage and Indexing

Storage & File Structure - Disks - Raid - File Organization - Indexing & hashing - B+TREE = BTree - Static Hashing - Dynamic Hashing - Multiple Key access.

Unit IV Query Evaluation & Optimization

Query processing - Selection operation - sorting - Join operation - evaluation of expressions - query optimization

Unit V Transaction management

Transaction concept - Static Implementation - Concurrency control - Protocols - Deadlock handling - Recovery systems - Recovery with concurrent transactions - shadow paging - buffer management - case studies - Oracle - Microsoft SQL Server.

Reference

1. Abraham Silberschatz, Henry F. Korth and S. Sudharsan, "Database system concepts", 4th edn, Tata McGraw Hill, 2002
2. Raghu Ramakrishnan & Johannes Gerhrke, "Data Base Management Systems", McGraw Hill International Edn, 2000

Paper 10. Accounting and Financial Management

Unit I Financial Accounting

Meaning and scope of accounting - Principles - Concepts - Conventions - Accounting standards - Final Accounts - Trial Balance - Trading Account - Profit and Loss Account - Balance Sheet - Accounting Ratio analysis - Funds Flow Analysis - Cash Flow Analysis

Unit II Accounting

Meaning - objectives - Elements of cost - cost sheet - Marginal costing and cost volume profit analysis - break even analysis - appli-

cations - limitations - Standard Costing and Variance Analysis - Material - Labor - Overhead - Sales - Profit variances.

Unit III Budgets and Budgeting control

Budgets and Budgetary control - Meaning - Types - Sales Budget - Production Budget - Cost of production Budget - Flexible Budgeting - Cash Budget - Master Budget - Zero Base Budgeting - Computerized Accounting

Unit IV Investment Decision and cost of capital

Objectives and Functions of Financial Management - Risk - Return Relationship - Time value of money concepts - Capital Budgeting - Methods of Appraisal - Cost of Capital Factors Affecting Cost of Capital - Computation for each source of finance and weighted average cost of capital.

Unit V. Financing decision and working capital management

Capital Structure - Factors affecting capital structure - Dividend policy - types of Dividend Policy - Concepts of working capital - Working Capital Policies - Factors affecting working capital - Estimation of working capital requirements.

Text books

1. S.N. Maheswari, "Financial and Management Accounting", Sultan Chand & Sons, 2003
2. I.M. Pandey, "Financial Management", Vikas Publications, 4th Reprint, 2002.

Reference

1. SP Iyengar, "Cost and Management Accounting" Sultan Chand & Co.
2. IM Pandey, "Elements of Management Accounting" Vikas Publishing House, 1993

Practical III

Object Oriented Programming in C++

1. Programs using constructor and destructor
2. Creation of classes and use of different types of functions
3. Count the number of objects created for a class using static member function.
4. Write programs using function overloading and operator overloading
5. Programs using inheritance
6. Program using friend functions

1. ...
 2. ...
 3. P. Dhan, An Introduction to Operating Systems: Concepts and Practice, Prentice Hall of India, 2004
 4. HMDittel, An Introduction to Operating Systems, 2nd Edition, Pearson Education, 2002

Paper 7. Design and Analysis of Algorithms

- Unit I. Introduction**
 Fundamentals of algorithmic problem solving- Important problem types-Fundamentals of the analysis of algorithm efficiency-analysis frame work-Asymptotic notations-Mathematical analysis for recursive and non-recursive algorithms.
- Unit II Divide and Conquer method and Greedy method**
 Divide and conquer methodology -Merge sort-Quick sort-Binary search-Binary tree traversal-multiplication of large integers-Strassen's matrix multiplication- Greedy method-Prim's algorithm-Kruskal's algorithm- Dijkstra's algorithm
- Unit III Dynamic programming**
 Computing a binomial coefficient - Warshall's and Floyd' algorithm-Optimal binary search tree- Knapsack prlbme-Memory functions.
- Unit IV Backtracking and Branch and Bound**
 Backtracking-N-Queens problem-Hamiltonian circuit problem-Subset sum problem-Branch and bound-Assignment problem-Knapsack problem- Traveling salesman problem
- Unit V NP-Hard and NP-Complete problems**
 P & NP problems - NPcomplete problems - Approximation algorithms for NP-hard problems-Traveling salesman problem Knapsack problem.

Reference

Paper 8 Object Oriented Programming (3111)

- Unit I**
 The object Model. The evolution of the object model. Elements of the object model-applying the object model. Classes and objects: The nature of an object-relationship among objects.
- Unit II**
 Classes and Object: Nature of class-Relationship among classes- The interplay of classes and objects. Classification: The importance of proper classification-identifying classes and objects - key abstractions and mechanism.
- Unit III**
 Introduction to C++ - Input and output statement in C++ - Declarations-Control structures - functions in C++.
- Unit IV**
 Classes and Objects-constructors and destructors-operators overloading-type conversion-inheritance-pointers and arrays.
- Unit V**
 Memory management operators-polymorphism-virtual functions- files-exception handling - string handling-templates.
- Text Books**
1. "Object Oriented Analysis and Design with applications", Grady Booch, Second edition, Pearson education.
 2. Object Oriented Programming with ANSI & Turbo C++", Ashok N.Kamthane, First Indian print-2003, Pearson Education.
- Reference**
1. Samanta "Object oriented programming with C++ and Java" PHI
 2. Balagurusamy "Object oriented programming with C++", TMCH, Second edition
 3. Stroutsrup, "The C++ Programming Language", (3rd edn), AW
 4. KR Venugopal T.Ravishankar, Rajkumar, "Mastering C++", Tata McGrawHill Publishing company ltd., 1977.

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TI BCA

PAPER X COMPUTER GRAPHICS

UNIT - I

A Survey of Computer Graphics – Overview of Graphics systems – output primitives: Points and Lines, DDA, Bresenham's Algorithms, properties of Circles & Ellipse, Pixel Addressing.

UNIT - II

Two Dimensional Geometric Transformations: Basic Transformations, Matrix representations, Composite Transformations – Line Clipping – Two dimensional viewing – Graphical user interfaces and interactive input methods.

UNIT - III

Three Dimensional Concepts – **Three Dimensional Object Representations:** Polygon surface – Curved lines and surface – Quadric surface – Super Quadrics Blobby objects – Spline Representations – Cubic spline interpolation.

UNIT - IV

Three-dimensional geometric and modeling transformations – Three dimensional viewing, viewing pipeline, viewing co-ordinates, projections clipping.

UNIT V

Visible – surface detection methods: Classification of visible – surface detection algorithms, back face detection, depth –buffer method, a-buffer method, scan line method, BSP-Tree method.

Illumination methods and surface – Rendering methods: Basic Illumination models – polygon rendering methods – Color models and color applications – Computer animation.

TEXT BOOKS

1. Donald Hearn, M.Pauline Baker, "Computer Graphics C Version" Second Edition, Pearson Education.

Reference Book

1. Zhigangxiang, Roy Phastock, "Computer Graphics", 2nd Edition TMCH.

7. Program using virtual function
8. Write a program using exception handling mechanism
9. Programs using files
10. Programs using function templates.

Practical IV. RDBMS Lab

1. Execute a single line and group functions for a table.
2. Execute DCL and TCL commands
3. Create and manipulate various DB objects for a table
4. Create views, partitions and locks for a particular DB
5. Write PL/SQL procedure for an application using exception handling.
6. Write PL/SQL procedure for an application using cursors.
7. Write a DBMS program to prepare reports for an application using functions
8. Write a PL/SQL block transaction operations of a typical application using triggers
9. Write a PL/SQL block for transaction operations of a typical application using package
10. Design and develop an application using any front end and back end tool (make use of ER diagram and DFD)

Paper II. Computer Networks

Unit I

Introduction: Use of computer networks-Network Hardware-Network software-Reference Models-Example of Networks

Unit II

The Physical Layer: The Theoretical basic for data communication guided transmission media-Wireless transmission-Communication satellites- the Public switched Telephone network-Cable Television-Mobile telephone system

Unit III

Data Link Layer: Data link layer design issues-Error detection and correction- elementary data link protocols-sliding windows protocols-protocol verification-example data link protocols

Unit IV

Network layer: Network layer design issues-routing algorithms-congestion control algorithms-Quality of service

Internetworking- network layer in the Internet. Transport Layer: the transport service-Elements of Transport protocol-A simple transport protocol-The Internet transport Protocols: UDP-The internet Transport Protocols: TCP-Performance issues

Unit V

Session layer: Design issues, synchronization-presentation layer: design issues, cryptography-application layer: Design issues, file transfer, E-mail

Text Book

1. Andrew S. Tanenbaum "Computer Networks", IV Edition, Pearson Education

Reference

1. P.Green, Computer Network architectures and protocols, Plenum Press, 1982
2. Harry Katzan-An Introduction to "Distributed Data Processing", A Petrocelli Book, New York/Princeton
3. Tittel-Theory and problem of Computer Networking, Schaum's outline series, TMH
4. Godbole-Data Communication & Networking, TMH
5. Lean Garcia-Communication Networks: Fundamental concepts & key architecture, TMH
6. Hari & Barani, "Projects in Networking", 2005, SCITECH Publications.

Paper 12. Software Engineering

Unit I

The evolving role of software-Software- software crises and myths-**Software Engineering**: Layered Technology-The software process model-Evaluating software process models- component based development-The formal methods model-4GT- Software project planning: Project planning objectives - Software scope-resource-Software project estimation -Decomposition Techniques - Empirical estimation models.

Unit II

Analysis concepts & Principles: Requirement analysis - Analysis principles-Software prototyping specification-**Analysis modeling**: Data modelling-Functional modeling & information flow-Behavioral modeling.

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III BCA Syllabus

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PAPER XIII

Software Engineering

UNIT 1: Software Engineering Concept : Definition – Software Product – Components and characteristics – Phases in Software development – Software Process Models: Linear Sequential – Prototyping – RAD – Spiral – Incremental – Formal methods – Fourth generation techniques,

UNIT 2: Project Management Concepts : People – Product – Process – Project Development Team Structures - Software Crisis – Role of System Analyst – Project planning and control : Planning objectives – Software scope – Resources – Project Estimation – Decomposition Techniques – Estimation Models – Project standards – Outsourcing – Risk Management : Risk – Identification – Projection – Refinement – Mitigation.

UNIT 3: Project Scheduling and Tracking : Basic concepts – Defining task set for the software project – Scheduling Plan – Software Quality Assurance : Quality concepts – Quality Assurance Activities

UNIT 4 Software Reviews – Formal Technical Reviews – Software Reliability – ISO 9000 quality standards – Software Configuration management. Software Analysis, Design and Testing : Analysis concepts and principles – Software prototyping –

UNIT 5 Specification Modeling and Information flow – Behavioural Modeling – Design Concepts and principles – Modular design – Architectural design and process – User Interface design – Software Testing : Principles – Test case design – White Box test – Block box testing – Testing Strategies : Unit – Integration – Validation – System – Art of debugging – Case study.

Reference Books :

1. Software Engineering Practitioner's Approach by Roger S. Pressman
2. Software Engineering Concepts by Richard and Fairlay
3. An integrated approach to Software Engineering by Pankaj Jalote

PAPER XIV

Management Principles and Techniques

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UNIT 1 : Management Principle : Concept - Definition of Management - Management functions - Planning : Definition - Planning process - Decision making - Organization : Structure - Delegation - Staffing - Direction - Communication - Motivation - Leadership - Control.

UNIT 2 Linear Programming : History of Operations Research - Meaning of OR - Application of OR - Principles of modeling - Formulation of LP models - Graphical solution - Algebraic solutions - Simplex method : Feasibility - Optimality - Artificial variables - Duality of LP - Dual Simplex Algorithm - Transportation Problem - Finding optimal solution - Assignment problem.

UNIT 3 : PERT/CPM : Network diagram - Representation - Time estimation - Critical path - Floats - Construction of time chart

UNIT 4 Resource leveling - Probability and cost consideration in project scheduling - Project control. Replacement Theory : Concepts - Replacement situations - Replacement policies -

UNIT 5 : Variable maintenance cost with fixed money value - Variable maintenance cost with variable money value - Individual replacement policy - Group replacement policy - Reliability.

Books for Reference :

1. Hamdy A. Taha
Operations Research An Introduction
Macmillan publishing company (1982)
2. Don. T. Philips, A. Ravindran, James. J. Solberg
Operations Research - Principles and practice
John Wiley & sons (1976)

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PAPER XV

Multimedia Systems

UNIT 1 : Multimedia Overview : Concept – Hardware for multimedia : CPU – Monitor – I/O devices – CD-ROM – Sound Card – Laser Disc – DVD – Software for multimedia – Multimedia Components: Textual Information – Images – Animation – Digital Audio – Video – Multimedia Design – Production of Multimedia – Distribution of Multimedia.

UNIT 2 : Applications of Multimedia : Introduction – Areas of applications: Entertainment – Edutainment - Business communications – Knowledge transfer – Public Access - Multimeida in Publishing Industry – Communication Technology and Multimedia Services – Multimedia in Business – Multimedia Pedagogues : Interactive systems for teaching and learning – Distributed learning environment – Case Study.

UNIT 3 : Multimedia Authoring tools : Development tools – Features of Authoring Software – Authoring tools : Aruthorware – Everest Authoring system – Icon Author – ImageQ – Macromedia Director – QuickTime.

UNIT 4 Hypertext – Elements of Hypertext - Applications of Hypertext: Computer, Business, Education and Entertainment. Multimedia development Issues and Suggestions : Learning interface design : Interface design – psychology of learning – Working with learning style – Considering interface design –

UNIT 5 : Planning the Multimedia Programme/Application : Defining the Goal – Outlining – Logic Flowchart – Program Storyboard – Planning for Creation of Multimedia building blocks – Copyright issue and its management – Development TIPS of multimedia building blocks : Text – Graphics in Multimedia – Sound and video in multimedia applications – Multimedia Authoring.

Reference Books:

1. Multimedia, An Introduction by John Villamit Casanova, Louis Molina, PHI.
2. Multimedia Making it work by Tay Vaughan, Tata McGraw Hill.
3. Multimedia Systems by John F Koegel Buford, Addison Wesley.

PAPER XVI

OPERATING SYSTEMS

UNIT-I

Introduction to Operations System - Generations of O.S. - Hardware, Software and Firmware - Process concepts - Asynchronous concurrent process.

UNIT-II

Deadlock and Indefinite Postponement - Real Storage Management - Virtual Storage Organisation and Management.

UNIT-III

Job and Processor scheduling - classification of sequential and parallel architecture - Pipelining - vector processing - array processors - Data flow computers and multiprocessors - Fault tolerance.

UNIT - IV

Auxiliary storage management - Disk performance optimization - File and Data Base systems.

UNIT-V

Operating system security - case studies: UNIX and WINDOWS. TEXT BOOK

* „ Operating system - H.M. Deitel Addison Wesley publishing company, 2nd edition.

REFERENCE BOOKS

* Operating System - Madnick S.E. and Donovan J.J. McGraw Hill.

* Operating System concepts - Peterson and Silberschatz. Addison Wesley publishing company, 3rd edition.

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PAPER XVII

Windows Programming

UNIT 1 : Introduction to Windows Programming and Visual Basic: Components of Windows Programming : Graphical User Interface – Window and its elements – Dialog Box – Drop-Down and Pop-Up menus – Visual Basic – Event-Driven Programming – Steps in Building a Project – User Interface Design – Writing Code – Visual Basic IDE – Creating and Running a simple project

UNIT 2 : Visual Basic Forms and Controls:

Form – Tool Box controls – Property window – Design and Run-time properties – Events – Keyboard, Mouse, Code and System events – Visual Basic Object oriented programming – Creating buttons at run-time through object declaration – Screen, Printer, Error Objects

UNIT 3 : Visual Basic Programming :

Visual Basic Data Types - Constants: predefined constants – User-Defined constants – Variables – Scope Rules – Control Structures – If – Select Case – Loops – FOR , DO, WHILE loops – Goto – On Goto statements – Event procedures – User defined procedures – Library functions – Numeric, String, Boolean and miscellaneous

UNIT 4 functions – Sub Main() procedure – User-defined functions – Public, Private Scope rules – Creating EXE files – Arrays – User-defined data type – Type statement – Control Arrays – Graphics handling – Using multiple forms – Activating a form – Multiple Document Interface – A simple MDI application

Block 5 : Visual Basic Advanced Features

Creating a Database in VB – Accessing an external database with Data Control – Object Linking and Embedding (OLE): Linking and embedding an excel worksheet with VB project – Using third-party controls in VB - Creating an Active X control project – Activating other applications from VB – Windows Application Program Interface functions (WINAPI)

Books of Reference :

“Visual Basic 6 from ground up” by Garry Cornell, TMH, 1999.