Annexure - 15

PERIYAR UNIVERSITY
SALEM 638 011

PERIYAR INSTITUTE OF DISTANCE EDUCATIONS (PRIDE)

MASTER OF COMPUTER APPLICATIONS (M.C.A)

NON SEMESTER

REGULATIONS AND SYLLABUS

(Effective from the Academic year 2008-2009 and thereafter)

PERIYAR UNIVERSITY, SALEM - 11

PERIYAR INSTITUTE OF DISTANCE EDUCATIONS
PRIDE

MASTER OF COMPUTER APPLICATIONS (M.C.A)

Regulations

Effective from the Academic year 2007 - 2008

1. OBJECTIVE OF THE COURSE

To transform graduates with sufficient strength in mathematics into software engineers that the industry requires from time to time. The course is designed to impact professional knowledge and practical skills to the students.

2. CONDITION FOR ADMISSION

A candidate who has passed any degree in any discipline of minimum three-year duration with mathematics at +2 level or any degree with at least one paper in mathematics / statistics / business mathematics / business statistics at degree level shall be permitted to appear and qualify for the Master of Computer Applications (M.C.A) degree examination of this University after a course of study of three academic years.

3. DURATION OF THE COURSE

The course for the degree of Master of Computer Applications shall consist of three Academic years.

4. COURSE OF STUDY

The Course of Study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time.

PRIDE
MASTER OF COMPUTER APPLICATIONS (M.C.A)

I YEAR

1. Computer Organization and Architecture
2. Data Structures using C
3. Object Oriented programming
4. Microprocessor and Applications
5. Design and analysis of Algorithms
6. Discrete Structures and Automata Theory
7. Computer Oriented Statistical and Numerical Methods
8. Managerial Accounting
9. Practical –I: C Programming Lab
10. Practical –II: C++ & JAVA Programming Lab
11. Practical –III: Multimedia Lab

II YEAR

12. Database Management Systems
13. Visual Programming
14. Operating Systems
15. Software Engineering
16. Computer Graphics
17. Computer Networks
18. Computer Based Optimization Techniques
19. Management Concepts and Communication
20. Practical –IV: RDBMS Lab
21. Practical –V: Visual Basic & VC++ Lab
22. Practical –VI: Graphics Lab

III YEAR

23.	Data Mining and Warehousing
24.	Internet and Web Programming
25	Distributed Computing and Linux
26.	Elective -1
27.	Elective -2
28.	Practical –VII: Internet and Web Lab
29.	Dissertation and Viva Voce

ELECTIVE -1:

Digital Image Processing
Compiler Design
E-Commerce
Artificial Intelligence and Expert Systems
Dot Net Technologies

ELECTIVE -2:

2.1	Advanced Java Programming
2.2	Wireless Application Protocol
2.3	Cryptography
2.4	Advanced Networks
2.5	Embedded Systems

5. EXAMINATIONS :

The examination shall be three hours duration to each paper at the end of the each year. The candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination.

One internal and one external examiner should conduct practical Examinations at the end of each year. At the end of third year viva-voce will be conducted on the basis of the Dissertation submitted by the student. It should be individual work. One internal and one external examiner will conduct the viva-voce jointly.

6. SCHEME OF EXAMINATIONS

The Scheme of Examinations for different years shall be as follows:

S. No	Paper Code	Title of the Paper	Duration	Int. Marks	Ext. Marks	Total Marks
I YEAR						
1.		Computer Organization and Architecture	3	25	75	100
2.		Data Structures Using C	3	25	75	100
3.		Object Oriented programming	3	25	75	100
4.		Microprocessor and Applications	3	25	75	100
5.		Design and analysis of Algorithms	3	25	75	100
6.		Discrete Structures and Automata Theory	3	25	75	100
7.		Computer Oriented Statistical and Numerical Methods	3	25	75	100
8.		Managerial Accounting	3	25	75	100
9.		Practical –I: C Programming Lab	3	40	60	100
10.		Practical –II: C++ & JAVA Programming Lab	3	40	60	100
11.		Practical – III: Multimedia Lab	3	40	60	100
II YEAR						
12.		Database Management Systems	3	25	75	100
13.		Visual Programming	3	25	75	100
14.		Operating Systems	3	25	75	100
15.		Software Engineering	3	25	75	100
16.		Computer Graphics	3	25	75	100
17.		Computer Networks	3	25	75	100
18.		Computer Based Optimization Techniques	3	25	75	100
19.		Management Concepts and Communication	3	25	75	100
20.		Practical –IV: RDBMS Lab	3	40	60	100
21.		Practical –V: Visual Basic & VC++ Lab	3	40	60	100
22.		Practical –VI: Graphics Lab	3	40	60	100

III YEAR

23.	Data Mining and Warehousing	3	25	75	100
24.	Internet and Web Programming	3	25	75	100
25.	Distributed Computing and Linux	3	25	75	100
26.	Elective -1	3	25	75	100
27.	Elective -2	3	25	75	100
28.	Practical –VII: Internet and Web Lab	3	40	60	100
29.	Project Work and Viva Voce [Evaluation –100 Viva Voce – 50]		50	150	200
					==========
	TOTAL				**3000**
					==========

ELECTIVE -1:

1.1.	Digital Image Processing
1.2.	Compiler Design
1.3.	E-Commerce
1.4.	Artificial Intelligence and Expert Systems
1.5.	Dot Net Technologies

ELECTIVE -2:

2.1.	Advanced Java Programming
2.2.	Wireless Application Protocol
2.3.	Cryptography
2.4.	Advanced Networks
2.5.	Embedded Systems

7. QUESTION PAPER PATTERN

a. For Theory

Time: 3 Hours Max. Marks: 75

Passing Min :38

PART – A: 5X5 = 25 Graphics Lab

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

PART – B: 5X10 = 50

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

b. For Practical

Time: 3 Hours Max. Marks : 60

One / Two Compulsory Problem(s) to be solved within 3 hours.

c. Distribution of the marks

(i) Practical :

- For Writing procedures/programs in the main answer book 40%
- For listing and debugging 40%
- For correct and formatted output 20%

(ii) Dissertation :

- Evaluation 100 marks
- Viva-Voce 50 marks

8. REGULATIONS OF DISSERTATION

a. Students should do their Project work in the Company / Institutions.
b. The Candidate should submit the filled in format as given in Annexure-I to the department for approval during the Ist Week of September in their Project year.
c. Each internal guide shall have maximum of eight Students.
d. Periodically the project should be reviewed minimum three times by the internal guide.
e. The Students should prepare three copies of the dissertation and submit the same to the PRIDE Center on **30th April** for the evaluation by examiners. After evaluation one copy is to be retained in the PRIDE Center library and one copy is to be submitted to the University (PRIDE Director) and the student can hold one copy.
f. A Sample format of the dissertation is enclosed in Annexure-II.
g. Format for the Title page and certificate are enclosed in Annexure III.
h. The Students should use OHP / Power Point Presentation during their Viva-Voce Examinations.

9. PASSING MINIMUM

Sessional marks will be awarded to the candidates for both theory and practical. It will be based on the attendance and assignments/lab reports for theory/practical. During the final year the students are asked to present the progress of their project at least thrice to the internal guide, based on which sessional mark is awarded.

The candidate shall be declared to have passed the examinations in a subject , if the candidate secures not less than 50% of the total prescribed marks for the subject in Sessional and University Examinations put together, subject to the candidate getting a minimum of 50% of the marks in the University examination .

10. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in **First Class**. All other successful candidates shall be declared to have passed in **Second Class**. Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed the examination in **First Class with Distinction** provided they pass all the examinations prescribed for the course at the first appearance.

11. MAXIMUM DURATION FOR THE COMPLETION OF THE PG PROGRAMME

The maximum duration for completion of the PG Programme shall not exceed five academic years from the year of admission.

12. COMMENCEMENT OF THIS REGULATION:

These regulations shall take effect from the academic year 2007-08, i.e., for students who are admitted to the first year of the course during the academic year 2007-08 and thereafter.

ANNEXURE - I

PERIYAR UNIVERSITY

Name of the PRIDE Center :

Course :

Student Name :

Register Number :

Title of the Dissertation :

Address of Organization / Institution :

Name of the External Guide :

Designation :

Place :

Date : Signature of External Guide

(with seal)

Name of the Internal Guide :

Qualification :

Teaching Experience :

Place :

Date : Signature of Internal Guide

Coordinator

[Approved or not Approved]

[University Use]

ANNEXURE II

BONAFIDE CERTIFICATE

COMPANY ATTENDANCE CERTIFICATE

ACKNOWLEDGEMENT

CONTENTS

Note : Based on the Dissertation on Work The Above Titles May Be Varied

ANNEXURE III

A. Format of the title page

TITLE OF THE DISSERTATION

A Dissertation submitted in partial fulfillment of

the requirements for the degree of

Master of Computer Applications

to the

Periyar University, Salem – 11

By

STUDENT NAME

REG. NO.

NAME OF THE CENTRE

(AFFILIATED TO PERIYAR UNIVERSITY)
PLACE with Pin Code

MONTH – YEAR

B. Format of the Certificate

Name of the Internal Guide
Designation
Department Name
College Address

CERTIFICATE

This is to certify that the dissertation entitled _____ submitted in partial fulfillment of the requirement for the degree of Master of omputer Applications to the PRIDE, Periyar University, Salem is a record of bonafide work carried out by _____ under supervision and guidance and that no part of the dissertation has been submitted for the award of any degree or diploma.

Date :

Place: Signature of the Guide

_____

Signature of the Coordinator

Submitted for the Viva-Voce Examination held on _____

Internal Examiner External Examiner

1. COMPUTER ORGANIZATION AND ARCHITECTURE

UNIT I

Number system Binary, Decimal, Octal, and Hexadecimal – Conversion from one to another – Complements – Binary Codes. Basic logic Gates – Basic Theorems and Properties of Boolean Algebra – NAND, NOR implementation – Sum of Products – Product of Sums – Karnaugh Map – Tabulation – Don't Care Conditions.

UNIT II

Combinational Logic Circuit Design: Multiplexers – Demultiplexers – Decoders – Encoders - Half Adder – Full Adder - Subtractor – Parallel Adder. Flip-flops: RS, D, JK Flip-flop – Registers – Shift Registers – Ripple Counters Synchronous Counters.

UNIT III

Register Transfer and Micro Operation : Arithmetic Register Transfer Language – Register Transfer, Logic Bus and Memory Transfers. Shift micro operations – Arithmetic Logic Shift unit – CPU: Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation, Program Control.

UNIT IV

Micro programmed Control: Control Memory – Address Sequencing Conditional Branching - Mapping of Instructions – Microprogram Example: Computer Configuration – Micro instructions format – Symbolic Micro Instructions – Fetch Routine – Symbolic Micro Programme – Binary Microprogram – Computer Arithmetic: Additional and Subtraction, Multiplication Algorithm – Division Algorithm – Floating Point Arithmetic Operation.

UNIT V

Input – Output Organization: Peripheral Devices – Input - Output Interface – Asynchronous Data Transfer (Strobe & Handshaking Method) – Modes of Transfer –

Priority Interrupt – DMA – IOP. Memory Organization: Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory.

TEXT BOOKS:

1. Morris Mano, “Digital Logic and Computer Design”, PHI/Pearson, 1995.(Unit I & II)
2. Morris Mano, “Computer System Architecture”, Third Edition, PHI/ Pearson Education 1995. (Unit III, IV & V)

REFERENCE BOOKS:

1. Malvino leech, “Digital Principles and Applications”, TMH, Edn.1991.
2. J. P. Hayes, ”Computer Organization and Architecture”, TMGH, Second Edition, 1988.
3. William Stallings, “Computer Organization & Architecture – Designing for Performance”, Pearson Education, Sixth Edition, 1997.

2. DATA STRUCTURES USING C

UNIT I

An Overview of C – Keywords and Identifiers - Constants – Variables -Data Types – Input – Output Operations – Operators and Expressions – Decision Making and Branching – Loop Control Structures. Function – Arrays – Strings.

UNIT II

Structures - Pointers – Introduction – Pointers and Arrays – Pointers and Strings – Pointers and Structures – Pointers and Functions – Dynamic Memory Allocation. File Handling : Introduction – Operations on Files – File I/O functions – Random Access – Error Handling – Command Line Arguments – Preprocessor – Graphics Primitives.

UNIT III

Introduction to Data Structures: Definitions – Concept of Data Structures – Overview of Data Structures – Implementation. Arrays: Definition – Terminology – One-Dimensional Array – Multi-Dimensional Arrays – Pointer Arrays. Linked Lists: Definition – Single Linked List – Circular Linked List – Double Linked List – Circular Double Linked List. Stacks: Introduction – Definition – Representation of Stack – Operations on Stacks – Applications of Stacks – Evaluation of Arithmetic Expression – Implementation of Recursion. Queues: Introduction - Definition – Representation of Queues – Various Queue Structures.

UNIT IV

Trees: Definition – Binary Trees – Properties – Representation – Operations – Threaded Binary Trees – Trees and Forest. Graphs: Introduction – Terminologies – Representation - Linked Representation – Matrix Representation – Operations on Matrix Representation of Graphs.

UNIT V

Sorting: Insertion Sort - Shell Sort – Heap Sort – Merge Sort – Quick Sort - Sorting Large Structures – Bucket Sort – External Sorting: Needs – Model For External Sorting – The Simple Algorithm – Multiway Merge. Search trees: The Search Tree ADT-Binary Search Trees – AVL Trees – B-Trees.

TEXT BOOKS:

1. M.T.Somashekara, “Programming in C”,PHI,2005. (UNIT I& II)
2. D.Samanta, “Classic Data Structures”, Prentice-Hall India Pvt Ltd, Sixth Printing, August 2005. (UNIT III,IV&V)

REFERENCE BOOKS:

1. Ashok N.Kamthane, “Programming with ANSI and Turbo C”, Pearson Education Asia, 2003.
2. T.Jeyapoovan, “A First Course in Programming with C”, Vikas 2002.
3. John Paul Tremlay and Paul G.Sorenson, “An Introduction to Data Structures with Applications”,TMH, 1995.
4. Horowitz.E. and Sahani, “Fundamentals of Data Structures”, Galgotia Pub-1982.

3. OBJECT ORIENTED PROGRAMMING

UNIT I

Basic Concepts of OOP – Structure of C++ - Data types - Variables – Control Structures – Functions – Classes and Objects – Constructors and Destructors.

UNIT II

Overloading: Function, Operator – Inheritance – Pointers – Virtual Function – Polymorphism.

UNIT III

Streams in C++ - Stream Classes – Formatted and Unformatted data – Manipulators – User Defined Manipulators – File Streams – Opening and Closing a File – File Pointer Manipulation – Template Classes and Functions – Exception Handling: Try, Catch, Throw.

UNIT IV

Introduction to Java – Features of Java – Methods and Classes – Array, Strings and Vector – Inheritance – Packages and Interfaces.

UNIT V

Exception Handling – Multithreading – Applets – Graphics Programming.

REFERENCE BOOKS:

1. E.balagurusamy, “Object Oriented Programming with C++”, TMH, Second Edition, 2001.

2. D. Ravichandran, “Programming with C++”, TMH, 1996.
3. Bjarne Stroustrup, “The C++ Programming Language”, Addision Wesley, 2004.
4. Patrick Naughton and Hilbert Schildt, “The Complete Reference Java 2”, TMH, 2003.
5. E.Balagurusamy, “Programming with Java A Primer”, TMH, Second Edition, 1999.
6. R.Krishnamoorthy, S.Prabhu, “Internet and JAVA Programming “, New Age International, 2005.
7. Debasish Jana, “Java and Object Oriented Programming Paradigm”, PHI, 2005.

4. MICROPROCESSOR AND APPLICATIONS

UNIT-I

Evolution of Microprocessor – Typical Micro Computer Architecture – Single Chip Microprocessor – Memory – Input/Output.

UNIT – II

Intel 8085: Introduction – Register Structure- Memory Addressing – 8085 Addressing modes – 8085 Instruction Set – Timing Methods- 8085 CPU pins and Associated Signals – 8085 Instruction Timing and Execution – Programmed I/O – Interrupt System – DMA – SID and SOD Lines – 8085 Based System Design.

UNIT – III

Interfacing Devices: Introduction – Types of Interfacing Devices – Addressing Decoding for I/O – Input/Output Ports – Programmable Interrupt Controller – Programmable DMA Controller: 8257 Programmable DMA Controller, Dynamic RAM Refresh using DMA – Communications Interface – Analog Input Devices – Analog Output Devices.

UNIT – IV

16-bit Microprocessor: Intel 8086:Introduction – Architecture – Addressing Modes – 8086 Input/Output. Motorola MC 68000:Introduction – Registers – Memory Addressing – Instruction Format – Addressing modes – Motorola 68000 I/O

Advanced Microprocessor – Pentium: Architecture and Addressing Modes.

UNIT - V

Peripheral Interfacing: Parallel versus Serial Transmission – Synchronous and Asynchronous Serial Data Transmission- Interfacing of Hexa Decimal Keyboard and Display unit to microprocessor – CRT (Cathode Ray Tube) Terminal Interfacing to a microprocessor- Applications of Microprocessor: A Temperature Monitoring System – Automotive Applications.

TEXT BOOKS

1 M.Rafiquzzaman, “Microprocessors Theory and Applications : Intel and Motorola”, Prentice Hall India, Revised Edition, 2004.

2. Aditya P. Mathur, “Introduction to Microprocessors”, Tata McGraw Hill, Third Edition, 1990.

REFERENCE BOOKS:

1. R.S.Gaonkar, “Microprocessor Architecture,programming and Applications with the 8085”, 1995.
2. M.Rafiquzzaman, “Microprocessor and MicroComputerBased System Design”,UBS, 1995.
3. N.K.Srinath, “8085 Microprocessor Programming and Interfacing”,PHI.

5. DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I

Introduction – Performance Analysis. Divide and conquer Method: Binary Search, Finding Maximum and Minimum, Merge Sort and Quick Sort.

UNIT II

Greedy Methods: Knapsack Problem, Minimum Cost Spanning Trees, Optimal Storage on Tapes and Single Source - Shortest Path Problem.

UNIT III

Dynamic Programming: Multistage Graphs, 0/1 knapsack and Traveling Salesman Problem. Basic Traversal and Search Techniques: Techniques for Binary Tree, Techniques for Graphs: Depth First Search and Breadth First Search - Connected Components and Spanning Tree - Biconnected Components and DFS.

UNIT IV

Backtracking: 8 Queens Problems, Sum of Subsets, Graph Colouring, Hamiltonian Cycle and Knapsack Problem.

UNIT V

Branch and Bound: 0/1 Knapsack Problem, Travelling Salesman Problem. Least Cost Search, 15 Puzzle Problem, FIFO Branch and Bound and LC Branch and Bound.

TEXT BOOK:

1. E.Horowitz and S.Sahani, “Fundamentals of Computer Algorithms”, Galgotia, 1985.

REFERENCE BOOKS:

1. S. K. Basu, “Design Methods and Analysis of Algorithms”, PHI, 2005.
2. Goodman and S. T. Hedetniem, “Introduction to the Design and Analysis of Algorithms”, MGH, 1977.
3. A.V. Aho, J.D. Ullman and J.E.Hospcraft, “The Design and Analysis of Computer Algorithms”, Pearson Education.

6. DISCRETE STRUCTURES AND AUTOMATA THEORY

Note: No Theorems required. Emphasis on Concepts and Applications.

UNIT I

Fundamentals and Logic: Set Theory – Set Operations – Computer Representation of Sets – Mathematical Induction – Logic – Normal Forms – Logical Inferences – Predicate Logic - Rules of Inference.

UNIT II

Relations: Introduction - Properties – Equivalence – Representation and Digraphs – Closures . Functions: Composition – Permutation – Recursion. Algebraic Structures: Algebraic Systems – Isomorphism and Homomorphism – Groups.

UNIT III

Automata Theory: Introduction –Alphabets – Strings – Languages – Problems. Finite Automata: Introduction – Deterministic Finite Automata – Non-Deterministic Finite Automata - Application: Text Search – Finite Automata with Epsilon-Transitions.

UNIT IV

Regular Expressions – Finite Automata and Regular Expressions - Algebraic Laws for Regular Expressions – Proving Languages not to be Regular – Decision Properties of Regular Languages – Equivalence and Minimization of Automata – Moore and Mealy Machines**.**

UNIT V

Context-Free Grammars: Definition – Derivations using a Grammar – Leftmost and Rightmost Derivations – The Language of a Grammar – Sentential Forms.

Pushdown Automata: Definition – Deterministic Pushdown Automata. Turing Machine: Introduction – Notation - Description – Transition Diagram – Languages – Turing Machines and Halting.

TEXT BOOKS:

1. Rm.Somasundaram, “Discrete Mathematical Structures”, Prentice-Hall of India Private Limited 2003. (unit I & II)
2. John E.Hopcroft, Rajeev Motwani, Jeffery D. Ullman, “Introduction to Automata Theory, Languages and Computation”, Pearson Education, 2001.(Unit III, IV & V)

REFERENCE BOOKS:

1. S.P.E.Xavier, “Theory of Automata, Formal Languages and Computations”, New Age International,2004.
2. J.P.Tremblay and R.Manohar, “Discrete Mathematical Structures with Applications to Computer Science”, McGraw-Hill Book Company, 1987.
3. E.V. Krishnamurthy, “Introductory Theory of Computer Science”, East-West Press Pvt. Ltd, 1983.
4. Bernard M.Moret, “The Theory of Computation”, Pearson Education, 1998.
5. A.M.Natarajan, A.Tamilarasi, P.Balasubramani, “Theory of Computation”, New Age International,2003.

7. COMPUTER ORIENTED STATISTICAL AND NUMERICAL METHODS

Note: No derivations required. Emphasis on Concepts and applications.

UNIT I

Statistical Methods: Probability and expected values – Correlation Analysis – Meaning – Types - Degrees of Correlation – Scatter diagram – Correlation graph – Karl pearson's coefficient of Correlation – Rank correlation. Regression Analysis – Meaning – Types of Regression – Regression equations – Regression equations from mean – Regression coefficients – Properties of Regression coefficients – correlation and Regression a comparison.

UNIT II

Theoretical distributions: Binomial, Poisson, Normal distributions – tests of hypothesis – types of errors – estimation – large sample tests – small sample tests – χ^2 test – F test.

UNIT III

Numerical Methods: Introduction - Errors - Machine computation - Transcendental and polynomial equation - Initial approximation - bisection, secant, Newton - Raphson, the muller, the chebyshev and multipoint iterative methods - polynomial equation - The Birge-vieta, Bairstow and Graeffe's root squaring methods.

UNIT IV

System of linear algebric equations and eigen value problems – Gauss elimination, Gauss Jordon, Triangularization, choleskey methods – Gauss Jacobi and Gauss Siedel methods.

UNIT V

Interpolation and approximation –Newton, Lagrange's methods – Numerical differentiation and Intergration – methods based on Interpolation – Trapezoidal rule – Simpson's rule – Romberg Integration.

TEXT BOOKS:

1. S.P.Gupta, "Statistical Methods", Sultan Chand & Sons, New Delhi, 2001. (Units I & II)
2. M.K.Jain, SRK Iyangar, R.K.Jain, "Numerical Methods for Scientific and Engineering Computation", weisly eastern ltd – New Delhi – 1997. (Units III , IV & V)

REFERENCE BOOKS :

1. Dr. M.K.Venkatraman, "Numerical methods for science & Engg", 1997.
2. Guptha kapoor, "Mathematics statistics", S. Chand & co.
3. Hozg R.V.Craiz a.t, "Introduction to Mathematical Statistics", macmillan publishing Inc. – 1997.
4. Kandasamy, Thilagavathy, Gunawathy, "Numerical Methods", S.Chand & Company Ltd EdYn, 2000.

8. MANAGERIAL ACCOUNTING

UNIT I

Accounting: Definition – Objectives - Branches of Accounting - Accounting Concepts and Conventions - Groups Interested in Accounting Information - Accounting Rules – Journal - Ledger - Trial Balance – Preparation of Final Accounts for Sole Trading Concerns.

UNIT II

Analysis and Interpretation of Financial Statements: Tools used - Comparative Statement - Common Size Statement and Trend Percentage. Ratio Analysis: Meaning - Advantages and Limitations - Classification of Ratios – Solvency – Profitability - Activity and Capital Structure Ratios**.**

UNIT III

Fund Flow Analysis: Concept of Funds - Fund Flow Statement - Uses and Limitation - Preparation of Fund Flow Statement. Cash Flow Analysis:_Computation of Cash from operation and Preparation of Cash Flow Statement.

UNIT IV

Rate of Budget and Budgetary Control: Meaning – Advantages and limitations - Classification of Budgets - Preparation of Production - Sales - Cash and Flexible Budgets. Capital Budget: Meaning and Importance - Methods of Ranking Investment Proposals - Pay-Back - Average of Return and Discounted Cash Flow Methods.

UNIT V

Marginal Costing: Meaning - Advantages and Uses - Cost Volume - Profit Analysis - Break-even Concept - Uses and Assumptions - Decisions Involving Alternative Choices.

TEXT BOOKS:

1. Shukla M.C. & Grewal T.S., , “Advanced Accounts”, S.Chand, 1991.(Unit I)
2. Dr.S.N.Maheswari, “Principles of Management Accounting”, Sultan Chand & sons,2005.(Unit II to Unit V)

REFERENCE BOOKS:

1. S.P.Jain & K.L.Narang,Kalyani, “Advanced Accountancy – Part-I ”, Publishers,1991.
2. Gupta R.L.& Radhasamy M., “Advanced Accounts (Vol.II)”, S.Chand, 1991.
3. R.K.Sharma & Shasi K.Gupta, “ Management Accounting – Principles And Pratices ”, Kalyani publishers, 1992.
4. Man mohan & S.N.Goyal, “Principles Of Management Accounting”, Agra, Sahithya Bhawan, 1987.
5. Hingorani N.L. & Ramanathan A.R., “ Management Accounting ”, S. Chand, Edn.2, 1982.

9. PRACTICAL – I
C PROGRAMMING LAB

1. Control Structures.
2. Arrays.
3. String Manipulations.
4. Function.
5. Recursion.
6. Structures.
7. Pointers and
    - Arrays.
    - Strings.
    - Structures.
8. File Manipulations.
9. Command Line Arguments.

10. PRACTICAL – II
C++ & JAVA PROGRAMMING LAB

C++:

1. Matrix Manipulation.
2. Implementation of stack using Arrays.
3. Implementation of queue using Arrays.
4. Implementation of Linear Linked List and its Operations.
5. Write a program to convert infix to postfix expressions using arrays.
6. Write a program to add two polynomials using pointers.
7. Implementation of Insertion Sort and Heap Sort.
8. Implementation of Sparse Matrix Addition.

JAVA:

Write a JAVA program to implement the following:

1. Classes and objects.
2. Arrays.
3. Inheritance.
4. Packages and Interfaces.
5. Exception Handling.
6. Threads.
7. Simple applet programs.

11. PRACTICAL III

MULTIMEDIA LAB

SOFTWARE: FLASH

1. Simple animation.
2. Tweened animation.
3. Creating movies.
4. Using action Scripts.

SOFTWARE: MACROMEDIA – DIRECTOR

1. Text handling [Size changing, Animation etc.,]
2. Play school teaching aid [Like alphabet teaching with pictures]
3. Company annual report presentation [should include any type of graph denoting the sales of the company and the other important features]
4. Advertisement for Products, Film, Institutions, Automobile Products etc., [Include appropriate pictures, text and Animation]
5. Animation of 3D object with sound.

SOFTWARE: FREEHAND

1. Designing the gate, grill, windows etc.,
2. Text handling [Moving, Duplicating, Scaling, Rotating, Changing the alignment and Orientation]
3. Greetings card design [Like scenery, group of birds, bunch of flowers, etc.,]

SOFTWARE: ADOBE –PHOTOSHOP

1. Editing the Images.
2. Design a Greeting Card, Invitation etc.,

NOTE:

The experiments listed are only samples. The concern centre can design or modify the samples.

12. DATABASE MANAGEMENT SYSTEMS

UNIT I

File Systems and Databases: Introducing the Database – The Historical Roots of the Database: Files and File Systems – A File System Critique – Database Systems – Database Models – Wrap-Up: The Evolution of Data Models. The Relational Database Model: A Logical view of data – Keys – Integrity Rules Revisited – Relational Database Operators – The Data Dictionary and the System Catalog – Relationships Within the Relational Database – Data Redundancy Revisited.

UNIT II

Entity Relationship (E-R) Modeling: Basic Modeling Concepts – Data Models: Degrees of data Abstraction – The Entity Relationship (E-R) Model – Normalization of Database Tables: Database Tables and Normalization – Higher-Level Normal Forms – Denormalization.

UNIT III

Relational Databases: Structured Query Language – Other Relational Languages - Transaction Management and Concurrency Control: What is a Transaction – Concurrency Control – Concurrency Control with Locking Methods – Concurrency Control with Time Stamping Methods – Concurrency Control with Optimistic Methods – Database Recovery Management. Distributed Database Management Systems: The Evolution of Distributed Database Management Systems – Distributed Processing and Distributed Databases – Functions of Distributed Database Management System- DDBMS Components – Levels of Data and Process Distribution – Distributed Database Transparency Features – Distribution Transparency – Transaction Transparency – Performance Transparency and Query Optimization – Distributed Database Design – Data Fragmentation – Data Replication – Data Allocation – Client/Server vs. DDBMS – C.J. Date's Twelve Commandments for Distributed Databases.

UNIT IV

Query Processing: Overview – Measures of Query Cost – Selection Operation – Sorting – Join Operation – Other Operations – Evaluation of Expressions. Query Optimization: Overview – Estimating Statistics of Expression Results –

Transformation of Relational Expressions – Choice of Evaluation Plans – Materialized Views. Distributed Databases: Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency control in Distributed Databases – Availability – Distributed Query Processing – Heterogeneous Distributed Databases – Directory Systems.

UNIT V

Object Oriented Databases: Object-Oriented Concepts - Characteristics of an Object-Oriented Data Model – OODM and Previous Data Models: Similarities and Differences – Object-Oriented Database Management Systems – How Object Orientation Affects Database Design – OODBMS: Advantages and Disadvantages – OO Concepts in Relational Model – The Next Generation of Database Management Systems. Advanced Data Types and New Applications: Motivation – Time in Databases – Spatial and Geographic data – Multimedia Databases – Mobility and Personal Databases.

TEXT BOOKS:

1. Peter Rob Carlos Coronel, "Database Systems – Design, Implementation and Management ", Thomson Course Technology, Fifth Edition – 2002. (Units I, II, III & IV).
2. Abraham Silberschatz, Henry F.Korth, S.Sudarshan, "Database System Concepts", McGraw-Hill, Fourth Edition-2002. (Units IV & V)

REFERENCE BOOKS:

1. Alexis Leon, Mathews Leon, "Essentials of Database Managements Systems", Vijay Nicole imprints PVT LTD, 2006.
2. C.J.Date, "An Introduction to Database Systems", 7th Edition, Pearson.
3. Raghu Ramakrishnan and Johannes gehrke, "Database Mangement System", Mc Graw Hill, 2000.
4. Gerald V.Post, "Database Management Systems –Designing & Building Business Applications", Mc Graw Hill, 2000.

13. VISUAL PROGRAMMING

UNIT – I

Windows: Introduction – Windows and Messages : A Window of One's Own: An Architectural Overview – Registering The Window Class – Creating The Window – Displaying The Window – The Message Loop – The Window Procedure - Processing the Messages – Playing a Sound File – The WM_PAINT Message – The WM_DESTROY Message – Painting and Repainting – An Introduction to GDI – Formatting Text – Scroll Bar Range and Position – Scroll Bar Messages – The Keyboard – The Mouse – Menus and Other Resources – Dialog Boxes – The Clipboard – Using the Printer – Text and Fonts – The Old Metafile Format - Dynamic-Link Libraries – Library Basics – Library: One Word, Many Meanings – A Simple DLL – The Library Entry and Exit Point – Shared Memory in DLLs – Dynamic Linking Without Imports – Resource-Only Libraries.

UNIT – II

VC++: Introduction – Microsoft Foundation Classes (MFC) Programming – MFC Window Messages – MFC Class Library – Resources – Keyboard – Mouse – Menus.

UNIT – III

Dialog Boxes , Controls , Common controls – Common Dialogs , Active x , Data base Applications.

UNIT – IV

VB: Introduction – Data Types – Constants , Variables , Statements , Procedures and Functions , Built in Functions – Forms – Tool Box – properties.

UNIT – V

Events – Menus – Dialog Boxes – Graphics – Ms Flexgrid – Datagrid – Accessing Backend Data using Data Controls, DAO, ADODB – Creating Active X Control.

REFERENCE BOOKS:

1. Charles Petzold,"Programming windows", Microsoft Corporation, fifth edition, 1999.
2. Hitesh Sanghavi, "Programming with vc++", Vikas Publishing house, 2002.
3. Steven Holzner, "Visual C++ 6.0", BPB publications, 2002.
4. Yashavant P.Kanetkar,"Visual c++ programming", BPB Publications 2002.
5. Chris. H.Pappas &William H.Murray,"The Complete Reference VC++ 6.0",Tata Mc Graw-hill, 1999.
6. Steven Holzner,"Visual Basic 6 programming-BlackBook", Coriolis Group, 2003.
7. Garry Cornel,"Visual Basic 6 from the Ground up",Tata McGraw-Hill,2005.

14. OPERATING SYSTEMS

UNIT I

Introduction: Definition – History of Operating Systems – Different Kinds of Operating System - Operating System Concepts – System Calls – Operating System Structure.

UNIT II

Process Management: Processes – Inter process Communication – The Dining Philosophers Problem. Scheduling: Introduction to Scheduling – Scheduling in Batch Systems – Scheduling in Interactive Systems – Scheduling in Real-Time Systems – Policy versus Mechanism - Deadlocks: Introduction – Ostrich Algorithm – Detection and Recovery – Deadlock Avoidance – Deadlock Prevention.

UNIT III

Memory Management: Logical versus Physical Address Space – Swapping – Contiguous Allocation – Paging – Segmentation. Virtual Memory: Demand Paging – Page Replacement – Page-Replacement Algorithms – Thrashing.

UNIT IV

Files – Directories – File System Implementation: File System Layout – Implementing Files – Implementing Directories – Shared Files – Disk Space Management - File System Reliability – File System Performance.

UNIT V

Principles of I/O Hardware: I/O Devices – Device Controllers. I/O Software Layers: Interrupt Handlers – Device Drivers – Device-Independent I/O Software – User-Space I/O Software. Security: The Security Environment – Basics of Cryptography – User Authentication – Attacks From Inside the System: Trojan Horses – Login Spoofing – Logic Bombs – Trap Doors. Attacks From Outside the System: Virus Damage Scenarios – How Viruses Work – How Viruses Spread - Antivirus and Anti-Antivirus Techniques.

TEXT BOOKS:

1. Andrew S.Tanenbaum, “Modern Operating Systems”, Pearson Education, Second Edition, 2004.

2. Silberscatz.A, Galvin.Pand Gagne.G, “Operating System Concepts”, John Wiley & Sons, Fifth Edition, 2002. (Unit – III).

REFERENCE BOOKS:

1. Andrew S.Tanenbaum, “Operating Systems-Design And Implementation”, Albert S.Woodhull, Second Edition, PHI/Pearson Education.
2. William Stallings, “Operating Systems”, Fifth Edition, Pearson Education Asia, 2005.

15. SOFTWARE ENGINEERING

UNIT – I

Socio-technical systems: Emergent system properties- Systems Engineering – Organisations, People and Computer Systems – Legacy Systems. Software Processes: Software process models – Process iteration – Process activities – The Rational Unified Process – Computer-Aided Software Engineering. Project Management: Management activities – Project planning – Project scheduling – Risk management.

UNIT – II

Software Requirements: Functional and non-functional requirements – User requirements – System requirements – Interface specification – The software requirements document. Requirements Engineering Process: Feasibility studies – Requirements elicitation and analysis – Requirements validation – Requirements management. System Models: Context Models – Behavioural Models – Data Models – Object Models – Structured Methods.

UNIT – III

Design: Architectural Design decisions - System organization – Modular decomposition styles – Control styles- Reference Architectures. Distributed Systems Architectures: Multiprocessor architectures – Client-Server Architectures – Distributed object architectures – Inter-Organisational distributed computing. Application Architectures: Data processing systems – Transaction processing systems – Event processing systems – Language processing systems. User Interface Design: Design issues- The UI design process – User Analysis – User Interface prototyping – Interface evaluation.

UNIT – IV

Rapid Software Development: Agile methods- Extreme programming – Rapid application development - Software prototyping. Component-based Software Engineering: Components and Component Models – The CBSE process – Component

composition. Software Evolution: Program evolution dynamics – Software maintenance – Evolution processes – Legacy system evolution.

UNIT – V

Verification and Validation: Planning verification and validation – Software inspections –Automated static analysis – Verification and formal methods. Software Testing: System Testing – Component Testing – Test case design – Test automation. Software Cost Estimation: Software productivity – Estimation techniques – Algorithmic cost modeling – Project duration and staffing. Configuration Management: System building – CASE tools for configuration management.

TEXT BOOK:

1. Ian Sommerville, " Software Engineering", Seventh Edition, Pearson Education, 2005

REFERENCE BOOKS :

1. Richard Fairly, "Software Engineering Concepts", TMGH, 1997
2. Roger S. Pressman, "Software Engineering a Practioner's Approach", Fifth Edition, Mc Graw-Hill Higher Education.
3. Rajib Mall, " Fundamentals of Software Engineering", PHI, Second Edition
4. Carlo Ghezzi, Mehdi Jazayeri, Dino Mandrioli, "Fundamentals of Software Engineering", Second Edition, PHI/ Pearson Education Asia.

16. COMPUTER GRAPHICS

UNIT I

A Survey of Computer Graphics - Overview of Graphics Systems : Video Display Devices – Raster-Scan Systems – Random-Scan Systems – Input Devices – Hard-Copy Devices

UNIT II

Output Primitives: Points and Lines – Line Drawing Algorithms - Loading the Frame Buffer – Circle-Generating Algorithms – Ellipse-Generating Algorithms – Other Curves – Parallel Curve Algorithms – Pixel Addressing and Object Geometry – Filled-Area Primitives - Character Generation – Attributes of Output Primitives : Line Attributes – Curve Attributes – Color and Grayscale Levels – Area-Fill Attributes – Character Attributes – Antialiasing.

UNIT III

Two-Dimensional Geometric Transformations : Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations - Other Transformations – Two-Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Windows-to-Viewport Coordinate Transformation – Clipping Operations – Point Clipping – Line Clipping : Cohen-Sutherland Line Clipping – Liang-Barsky Line Clipping – Polygon Clipping: Sutherland-Hodgeman Polygon Clipping – Weiler-Atherton Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

UNIT IV

Three-Dimensional Concepts : Three-Dimensional Display Methods - Three-Dimensional Geometric and Modeling Transformations : Translation – Rotation – Scaling – Other Transformations – Composite Transformations - Three-Dimensional Viewing : Viewing Pipeline – Viewing Coordinates – Projections – Clipping.

UNIT V

Graphical User Interfaces and Interactive Input Methods : The User Dialogue – Input of Graphical Data – Input Functions – Interactive Picture – Construction Techniques. Visible-Surface Detection Methods : Classification of Visible-Surface Detection Algorithms – Back-Face Detection – Depth-Buffer Method. Basic Illumination Models. Color Models and Color Applications : Properties of Light – Standard Primaries and the Chromaticity Diagram – Intuitive Color Concepts – RBG Color Model – YIQ Color Model – CMY Color Model – HSV Color Model.

TEXT BOOK:

1. Donald Hearn and M. Pauline Baker, " Computer Graphics C Version", Second Edition, Pearson Education, 2005.

REFERENCE BOOK:

1. William M.Newman,Robert F Sproul,"Principles of Interactive computer Graphics",Tata McGraw-Hill,Singapore,2002.
2. StevenHarrington, "Computer Graphics- A Programming Approach" McGraw-Hill Book Company,1988.
3. Foley James D.,Vandam Andries and Huges John F.,"Computer Graphics:Principles and Practices", Pearson Education.
4. Roy.A.Plastock and Gordon Kalley,"Theory and Problems of Computer Graphics",Schaum's Outline Series,McGraw Hill,2000.

17. COMPUTER NETWORKS

UNIT I

Introduction: Uses of Computer Networks – Network Hardware – Network Software – Reference Models - The OSI Reference Model – The TCP/IP Reference Model – A Comparison and Critique of the OSI and TCP/IP Reference Models – The Physical Layer: Transmission Media: Twisted Pair – Coaxial Cable – Fiber Optics – Wireless Transmission – Communication Satellites: Geostationary Satellites - Satellites versus Fiber – The Public Switched Telephone Network: Structure of the Telephone System - Modems – Trunks and Multiplexing – Switching – The Mobile Telephone System: Analog Voice – Digital Voice – Digital Voice and Data.

UNIT II

The Data Link Layer: Design Issues – Error Detection and Correction – Elementary Data Link Protocols – Sliding Window Protocols – Protocol Verification - The Medium Access Control Sublayer: Bluetooth – Data Link Layer Switching: Local Internetworking – Spanning Tree Bridges – Remote Bridges – Repeaters, Hubs, Bridges, Switches, Routers and Gateways.

UNIT III

The Network Layer: Design Issues – Routing Algorithms – Congestion Control Algorithms – Quality of Service – Requirements – Techniques for Achieving Good Quality of Service – Internet Working – The Network Layer In The Internet: The IP Protocol – IP Addresses – Internet Multicasting – Mobile IP.

UNIT IV

The Transport Layer: The Transport Service – Elements of Transport Protocols – The Internet Transport Protocols: UDP – TCP: Introduction – The TCP Service Model – The TCP Protocol – The TCP Segment Header – TCP Connection Establishment – TCP Connection Release – Wireless TCP and UDP – Transactional TCP.

UNIT V

The Application Layer: DNS-The Domain Name System – Electronic Mail: Architecture and Services – The User Agent, SMTP, POP3. Network Security: Cryptography: Introduction to Cryptography – Substitution Ciphers – Transposition Ciphers – Symmetric-Key Algorithms: The Data Encryption Standard – Public-Key Algorithms: RSA – Social Issues: Privacy – Freedom of Speech – Copyright.

TEXT BOOK:

1. Andrew S. Tanenbaum, "Computer Network", Fourth Edition, PHI 2002.

REFERENCE BOOKS:

1. William Stallings, "Data and Computer Communications", PHI, 2000.
2. R.S. Rajesh, K.S.Eswarakumar, R.Balasubramanian, "Computer Networks – Fundamentals & Applications", Vikas Publishing House PVT LTD, 2002.
3. Behrouz A. Forouzan, "Data Communication and Networking", 2nd Edition, TMH, Reprint 2002.
4. Brijendra Singh, "Data Communications and Computer Networks", PHI.
5. Charlie Kaufman, Radia Perlman, Mike Speciner, "Network Security – Private Communication in aPublic World", PHI, 2005

18. COMPUTER BASED OPTIMIZATION TECHNIQUES

Note: Only the conceptual understanding of the topics in this paper together with simple application is envisaged.

UNIT - I

Linear Programming – Formulation –Graphical solution [2 variables only] of LPP – Development of simplex method – Artificial variable Techniques –
Big M method – Two phase method – Revised simplex method.

UNIT – II

Duality in linear programming and its formulation – Dual simplex method – Bounded variables method – Applications of LPP- Transportation Problem – Assignment Problem – Traveling Salesman Problems.

UNIT – III

Integer Programming Problem [IPP] – Cutting plane Algorithms – Branch and Bound Method of solving IPP – Dynamic programming problem and its characteristics – Deterministic Dynamic programming problem.

UNIT – IV

Sequencing problem- Processing n jobs through two machines and three machines processing n jobs through M machines – processing 2 jobs through M machines – project scheduling by PERT/CPM – Difference between PERT and CPM – Constructing the network- critical path analysis – Float of an Activity – Three time Estimated for PERT _ Project cost by CPM.

UNIT – V

Stochastic Processes – Classification of stochastic processes – Discrete parameter Markov chains – continuos parameter Markov chains – Birth and death processes – Queuing models and its characteristics – classification of queuing models

and its characteristics – classification of queuing models – [M/M/1]: [FCFS] Birth and death model – [M/M/1] :[N/FCFS] finite queue length models – [M/M/C]: [FCFS] Multiserver Model – and [M/M/C]: [N/FCFS] Multi server with finite queue length.

TEXT BOOK:

1. Kanti Swarup , P.K.Gupta , Man Mohan , “Operations Research”, Sultan Chand & Sons, Edn , 11 , 2003.

REFERENCE BOOKS

1.A.M.Natarajan, P.Balasubramani and A.Tamilarasi, “Operations Research”, Pearson Education.

2.Hiller F.S & Liberman G.J., “Introduction to Operation Research”, Holden Day Inc., 1974.

3.Sharma J.K., “Mathamatical Models in Operations Research” , TMH., 1989.

4.Trivedi K.S “Probability and statistics with Reliability , Queuing and Computer Science Applications: , PHI , 1994.

5.Taha H.A., “Operation Research”, Edn., 7, PHI / Pearson.

6.Beightler c.s. & Philips D.T., “Foundations of Optimization”, Edn.2, Wiley series, 1979.

7.McMillan Claude Jr., “Mathematical Programming”, Edn.2, Wiley series, 1979.

8.Gillet B.G., “Introduction to Operation Research – A Computer Oriented Algorithmic Approach”, MGH, 1976.

19. MANAGEMENT CONCEPTS AND COMMUNICATION

UNIT I

Management: Meaning and definition – Features – Functions – Importance – Difference between Administration and Management – Management hierarchy. Planning: Meaning – Nature – Objectives – Importance – Steps in planning – Advantages and limitations – Management by objectives.

UNIT II

Organization: Meaning – Functions – Principles – Types of organization – Merits and demerits – Delegation of authority – Decentralization – Advantages and disadvantages. Departmentation: Meaning – Process – Basis types of Departmentation – Importance.

UNIT III

Staffing: Definition – Processing of staffing – Recruitment – Sources of recruitment – Stages in selection procedure – Trading and development. Motivation: Meaning and importance – Types – Theories of motivation – Maslow, McGregor, Herzberg. Leadership – Need and importance – Qualities of leadership – Leadership styles.

UNIT IV

Controlling: Definition – Steps in control process – Requirements of effective control system. Advantages and limitations – Budgetary and non-budgetary control techniques. Communication: Meaning and importance – Process of communication – Principles – Types – Barriers to communication - Overcoming barriers.

UNIT V

Written communication – Business letters – Layouts of business letter – Drafting letters for sales and collection. Oral communication – Interviews – Telephone conversation – Instruction - dictation. Conducting meetings: notice, agenda, minutes.

REFERENCE BOOKS:

1. L.M. Prasad, "Principles and Practice of Management", Sultan Chand and sons.
2. Rajendran paul and Korala Kalli, "Essentials of Business communication", Sultan Chand & sons.
3. Tripathy and Reddy, "Principles of Management", TMH.
4. Koontz and Werich, "Essentials of Management".

20. PRACTICAL –IV
RDBMS LAB

1. Creation of tables - executing All Queries.

PACKAGES IN D2K.

2. Library Management systems.
3. Payroll.
4. Tourist Information System.
5. Banking System.

Note: **Use Triggers, Procedures, Menus and Reports.**

21. PRACTICAL –V
VISUAL BASIC & VC++ LAB

VISUAL BASIC:

Note:

***Each Package should contain atleast 3 Forms and 2 Reports.**

***Include appropriate validations wherever necessary.**

***Validate with at least 5 records.**

***Prepare summarized and Query based Report.**

1. Student Information System.
2. Stock Management System.
3. Reservation System for any one of the following

   (i).Bus,(ii)Airline,(iii)Railways.
4. Employee Information System.
5. Hospital Management System.

VC++:

1. Console Application.
2. Case Conversion using Edit Control.
3. Programs using Common Dialog Controls and Dialog Boxes.
4. Creating Simple Active X Control.
5. Simple Database Application using Data Control.
6. Graphics and Animation.

24. PRACTICAL – VI

GRAPHICS LAB

GRAPHICS USING C:

1. Drawing a line, circle and ellipse using Bresenham's Algorithm.
2. 2D Transformations.
3. Windowing and Clipping.
4. 3D Transformations.
5. Simple Animation. (Bouncing ball, Blinking eyes etc.,)
6. Histogram and Bar Chart.
7. Free hand drawing.
8. Displaying text in different fonts.

23. DATA MINING AND WAREHOUSING

UNIT I

Introduction to Data Mining – Knowledge Discovery in Databases - Data Mining Issues - Data Mining from a Database perspective - Data Mining Tasks - Applications - Data Processing - Data Cleaning - Data Integeration and Transformation - Data Reduction - A Statistical Perspective on Data Mining - Similarity Measures.

UNIT II

Classification: Introduction - Statistical Based Algorithm - Distance based Algorithm - Decision Tree Based Algorithm - ID3 - NN based Algorithm - Propagation - Rule Based Algorithm - Generating Rules for DT - Combining Techniques.

UNIT III

Clustering - Introduction - Similarity and Distance Measures - Outlines - Hierarchical Agglomerative - Divisive Clustering - Partitional - K-means Clustering Large db - BIRCH - Clustering with Categorial Attributes - Rock.

UNIT IV

Association Rules - Large Itemsets - Basic Algorithm - A Priori Algorithm - Partitioning - Advanced ARtec - Correlation Rules - Measuring the Quality of Rules - Advanced Topics - Concepts of Web Mining - Text Mining - Spatial Mining.

UNIT V

Data Warehousing: Introduction - What is a Data Warehouse - Definition - Multidimensional Data Model - OLAP Operations - Warehouse Schema - Data

Warehousing Architecture - Warehouse Server - Metadata - OLAP Engine - Data Warehouse Backend Process.

TEXT BOOKS:

1. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Harcourt India Pvt Ltd., New Delhi, 2001. (Unit I)
2. Dunham, "Data Mining – Introducing and Advanced Topics", Pearson Education, New Delhi, 2003. (Unit I, II, III & IV)
3. Arun K. Pujari, "Data Mining Techniques", Universities Press India Pvt Ltd., New Delhi, 2002. (Unit V)

REFERENCE BOOKS:

1. Hand, Mannila and Smyth, "Principles of Data Mining", PHI, New Delhi, 2004.
2. K.P.Soman, Shyam Diwakar, V.Ajay, "Insight into Data Mining Theory and Practice", PHI, New Delhi ,2006.
3. C.S.R Prabhu, "Data Warehousing Concepts, Techniques, Products and Applications", PHI, Second Edition.

24. INTERNET AND WEB PROGRAMMING

UNIT I

Introduction to Computers and the Internet: History of the World Wide Web – Hardware Trends – The key Software Trend: Object Technology – Java Script: Object-Based Scripting for the Web - Browser Portability - Hyper Text Markup Language : Introduction – Markup Languages – Editing HTML – Common Tags – Headers – Text Styling – Linking – Images – Formatting text with <FONT>-Special Characters, Horizontal rules and more line Breaks – Intermediate HTML: Introduction – Unordered Lists – Nested and Ordered Lists – Basic HTML Tables – Intermediate HTML Tables and Formatting – Basic HTML Forms – More Complex HTML forms – Internal Linking – Creating and Using Image maps <META> Tags -<FRAMESET> Tags.

UNIT II

Java Script: Introduction – Memory Concepts – Arithmetic – Decision Making: Equality and Relational Operators – Selection Structures: if, ifelse, switch – Repetition Structures: while, for, do/while - Break and Continue Statements – Labeled Break and Continue Statements – Logical Operators - Functions: Introduction – Program Modules in Java Script – Programmer – Defined Functions – Function Definitions – Duration of Identifiers – Scope Rules – Recursion – Recursion Vs Iteration – Java Script Global Functions.

UNIT III

Arrays: Introduction – Arrays – Declaring and Allocating Arrays – References and Reference Parameters – Passing Arrays to Functions –Sorting Arrays – Searching Arrays – Multiple Subscripted Arrays - Objects: Introduction – Math, String, Date, Boolean and Number Objects - Dynamic HTML: Cascading Style Sheets: Introduction – Inline Styles – Creating Style Sheets with the STYLE Element – Conflicting Styles – Linking External Style Sheets – Positioning Elements – Backgrounds – Element Dimensions – Text Flow and the Box Model – User Style Sheets.

UNIT IV

Object Model and Collections: Introduction – Object Referencing – Collections all and Children – Dynamic Styles – Dynamic Positioning – Using the frames Collection – navigator Object - Event Model: Introduction – Event ONCLICK – Event ONLOAD – Error Handling with ONERROR – Tracking the Mouse with Event ONMOUSEMOVE – Rollovers with ONMOUSEOVER and ONMOUSEOUT – form processing with ONFOCUS and ONBLUR – more form processing with ONSUBMIT and ONRESET - event Bubbling - Filters and Transitions: Introduction – Flip Filters: flipv and fliph – Transparency with the chroma Filter – Miscellaneous Image Filters: invert, gray and xray – Adding shadows to Text – Creating Gradients with alpha – Making Text glow – Creating Motion with blur – Using the wave Filter – Advanced Filters: dropShadow and light – Transitions Filter – Filter blendTrans - Filter

revealTrans - Client Side Scripting with VBScript: Introduction - Operators – Data Types and Control Structures – VBScript Functions – Arrays – String Manipulation Classes and Objects.

UNIT V

Active Server Pages: Introduction – Work – Client–Side Scripting Versus Server-Side Scripting – Using Personal Web Server or Internet Information Server – Server-Side ActiveX Components – File System Objects – Session Tracking and Cookies – Accessing a Database from an ASP - CGI and Perl: Common Gateway Interface – Introduction to Perl – Configuring Personal Web Server for Perl / CGI – String Processing and Regular Expressions – Viewing Client/Server Environment Variables – Form Processing and Business Logic – Server-Side Includes – Verifying a user name and password – Sending E-Mail from a Web Browser – Using ODBC to Connect to a Database – Cookies and Perl - Extensible Markup Language: Introduction – Structuring Data – Document Type Definitions – Customized Markup Languages – XML Parsers –XHTML.

TEXT BOOK:

1. H.M.Deitel, P.J.Deitel and T.R.Nieto, “Internet and World Wide Web – How to Program”, Pearson Education Asia, 2003.

REFERENCE BOOKS:

1. Thomas A. Powell, “The Complete Reference HTML and XHTML”, Fourth Edition, Tata McGraw Hill Pub. Company Ltd.
2. Achyut S. Godbole, Atul Kahate, “Web Technologies – TCP/IP to Internet Application Architectures”, Tata McGraw Hill Pub. Company Ltd, 2003.
3. Ivan Bayross, “Web enabled Application Development using HTML, DHTML, JAVASCRIPT, PERL, CGI”, BPB 2000.

25. DISTRIBUTED COMPUTING AND LINUX

UNIT I

Introduction - Definition of a Distributed System: Goals - Connecting Users and Resources – Openness – Scalability – Hardware Concepts: Multiprocessors – Homogeneous Multicomputer Systems – Heterogeneous Multicomputer Systems – Software Concepts: Distributed Operating Systems – Network Operating Systems – Middleware – The Client-Server Model: Clients and Servers – Application Layering – Client-Server Architectures.

UNIT II

Processes: Threads – Clients – Code Migration: Approaches to Code Migration – Migration and Local Resources – Migration in Heterogeneous Systems – Software Agents – Naming: Naming Entities: Names, Identifiers and Addresses – Name Resolution – The Implementation of a Name Space – Locating Mobile Entities: Naming versus Locating Entities – Simple Solutions – Removing Unreferenced Entities.

UNIT III

Synchronization: Clock Synchronization – Physical Clock Synchronization Algorithms – Use of Synchronized Clocks – Logical Clocks – Global State – Election Algorithms – Mutual Exclusion – Distributed Transactions - Consistency and Replication – Data-Centric Consistency Models: Linearizability and Sequential Consistency – Weak Consistency – Distribution Protocols: Replica Placement – Update Propagation – State versus Operations - Epidemic Protocols – Consistency Protocols: Remote-Write Protocols – Local - Write Protocols – Active Replication – Cache Coherence Protocols.

UNIT IV

Fault Tolerance: Introduction to Fault Tolerance – Process Resilience: Design Issues – Failure Masking and Replication – Reliable Client-Server Communication: Point-to-point Communication – RPC Semantics in the Presence of Failures – Reliable Group Communication: Basic Reliable – Multicasting Schemes – Distributed Commit: Two-Phase Commit – Recovery: Introduction – Stable Storage – Distributed Object

Based Systems: Distributed COM - Distributed File Systems: Sun Network File System.

UNIT V

LINUX Operating System: Introduction – History of Linux and Unix – System Features – Software Features – Differences Between Linux and Other Operating System – Hardware Requirements – Sources of Linux Information – Linux Startup and Setup: User Accounts – Accessing the Linux System – Unix Commands – Linux File Structure: Linux File Types – File Structures – Managing Files – Managing Directories – File and Directory Operation – File Management Operations: File and Directory Permissions – Jobs – System Administration – Shells in Linux – Shell Operations: Command Line – Standard Input/Output Redirection – Pipes – Shell Scripts – Shell Variables – Arithmetic Shell Operations – Control Structures.

TEXT BOOKS:

1. Andrew S. Tanenbaum, Maarten van Steen, " Distributed Systems – Principles and Paradigms ", PHI, 2004.
2. Richard Petersen, " The Complete Reference – LINUX ", TMH, 1998.

REFERENCE BOOKS:

1. Pradeep k. Sinha," Distributed Operating Systems", PHI, 2001.
2. George Coulouris, Jean Dollimore and Tim Kindberg, "Distributed Systems-Concepts and Design", 3rd Edition, Pearson Education, 2002.
3. Mukesh Singhal and Niranjan G. Shivarathri, " Advanced Concepts in Operating Systems", TMH, 2001.
4. NIIT, " Operating System – Linux ", PHI, 2003.
5. Grant Taylor, " Linux Compute ", BPB, 2000.

26. ELECTIVE – 1

27. ELECTIVE - 2

28. PRACTICAL –VII
INTERNET AND WEB LAB

Simple Web Page and website design for a department, college, company etc.,

1. Using HTML
2. Using Java Script
3. Using DHTML
4. Using ASP
5. Using Perl and XML

ELECTIVE - 1

E1.1. DIGITAL IMAGE PROCESSING

UNIT – I

Introduction – Problems and Applications – Two Dimensional Systems and Mathematical Preliminaries – Linear Systems and Shift Invariance - Fourier Transform – Properties – Fourier Series – Matrix Theory Results – Block Matrices and Kronecker Products .

UNIT-II

Image Perception – Light, Luminance, Brightness and Contrast – MTF of Visual System – Monochrome Vision Models – Image Fidelity Criteria - Color Representation. Image Sampling and Quantization - 2D Sampling Theory – Bandlimited Images - Image Reconstruction from Samples - Nyquist Rate, Aliasing and Foldover - Sampling Theorem – Image Quantization - Optimum Mean Square or Lloyd-Max Quantizer.

UNIT –III

Image Enhancement – Point Operations – Contrast Streching, Clipping and Thresholding – Histogram Modeling – Spatial Operations – Spatial Averaging and Low-pass Filtering, Directional Smoothing, Median Filtering, Magnification and Interpolation [Zooming], Replication, Linear Interpolation, - False Color and Pseudo Color .

UNIT –IV

Image Restoration – Image Observation Models – Inverse and Wiener Filtering – Least Square Filters. Image Analysis: Edge Detection - Boundary Extraction - Boundary Representation - Region Representation - Image Segmentation - Classification Techniques.

UNIT – V

Image Data Compression - Pixel Coding: PCM, Entropy Coding, Run-Length, Bit-Plane Encoding – Predictive Techniques - Delta Modulation - Line by Line DCPM – Interframe Coding – Coding of Two Tone Images .

TEXT BOOK:

1. Anil K.Jain,"Fundamentals of Digital image Processing", PHI Pearson Education.

REFERENCE BOOKS:

1. B.Chanda, D. Dutta Majumder, "Digital Image Processing and Analysis", PHI, 2005.
2. Rafael C. Gonzalez, Richard E.Woods, "Digital Image Processing", Second Edition, PHI/Pearson Education.

ELECTIVE - 1

E1.2. COMPILER DESIGN

UNIT I

Introduction to compilers: Compilers and Translators – The structure of a compiler – Lexical Analysis – Syntax Analysis – Intermediate code generation – Optimization – Code generation – Bookkeeping – Error Handling – Compiler-Writing tools – Lexical Analysis: The role of the lexical Analyzer – A simple approach to the design of lexical analyzers - Regular Expressions – Implementation of a lexical analyzer .

UNIT II

Basic Parsing Techniques: Derivations and parse trees. Parsers – Shift-reduce parsing – Operator-precedence parsing – Top-down parsing – Predictive parsers – Automatic construction of efficient parsers : LR parsers – The Canonical collection of LR(0) items – Constructing SLR parsing tables – Constructing canonical LR parsing tables – Constructing LALR parsing tables – Using ambiguous grammars – An automatic parser generator – Implementation of LR parsing tables – Constructing LALR sets of items.

UNIT III

Syntax-Directed translation: Syntax-directed translation schemes – Implementation of syntax-directed translators – Intermediate code – Postfix notation – Three address code, quadruples, and triples – Postfix translations.

UNIT IV

Symbol tables: The contents of a symbol table – Data structures for symbol tables – Representing scope information – Error detection and recovery: Errors – Lexical- phase errors – Syntactic-phase errors – Semantic errors.

UNIT V

Introduction to Code optimization: The principal sources of optimization – Loop optimization – The DAG representation of basic blocks – Code generation : Object programs – Problems in code generation – A simple code generator – Peephole optimization.

TEXT BOOK:

1. Alfred V. Aho and Jeffrey D. Ullman, "Principles of Compiler Design", Narosa Publishing House, 1987.

REFERENCE BOOKS :

1.Alfred V. Aho, Ravi Sethi, Jeffery D. Ullman, "Compilers", Narosa Publishing House, 1990

2.Jean-Paul Tremblay and Paul G. Sorenson, "Compiler Writing", McGraw Hill International Editions, 1987.

ELECTIVE - 1

E1.3. E – COMMERCE

UNIT I

E–Commerce in the Beginning: What is E-Commerce – Advantages and Limitations of E-Commerce – The Role of Strategy in E-Commerce – Value Chains in E-Commerce - Integrating E-Commerce – Managerial Implications – The Internet and the World Wide Web: The Internet Today - In the Beginning – Unique Benefits of the Internet – Searching Online – Bulletin Board Systems (BBSs) and Pay Services – Some Web Fundamentals – The Language of the Internet – Managerial Implications.

UNIT II

Launching a Business on the Internet: The Lifecycle Approach – The Business Planning and Strategizing Phase – Hardware, Software, Security, and the Setup Phase – The Design Phase – The Marketing Phase – The Fulfillment Phase – The Maintenance and Enhancement Phase – Designing Web Sites: What does a Web Site

Do – The Lifecycle of Site Building – How to Build a Web Site – Web Navigation Design – Design Criteria – Hiring a Web Designer – Website Evaluation and Usability Testing: Anatomy of a Site – What's the Big Fuss Over Cookies – What Makes a Web Site Usable – Web Site Content and Traffic Management.

UNIT III

Payment Systems: From Barter to Money – Requirements for Internet-based Payments – Electronic Payment Media – Issues and Implications – E-Security: Security in Cyberspace – Designing for Security – How Much Risk Can You Afford - The Virus: Computer Enemy Number One – Security Protection and Recovery – How to Secure Your System.

UNIT IV

Marketing on the Internet: The Pros and Cons of Online Shopping – Internet Marketing Techniques – The E-Cycle of Internet Marketing – Marketing Your Presence - Attracting Customers to Your Site – Tracking Customers – Customer Service – Managing Implications – Web-Based Business-to-Business E-Commerce: What Is B2B E-Commerce ? – B2B Models – B2B Tools-EDI – Beyond B2B:A2Z – Management Implications.

UNIT V

Intranets and Extranets: Intranets: The Basics – The Technical Infrastructure – Planning an Intranet – E-Mail and the Intranet – Extranets – Management Implications – Legal and Ethical Issues.

TEXT BOOK:

1. Elias M. Awad, " Electronic Commerce (From Vision to Fulfillment), PHI, 2003.

REFERENCE BOOKS:

1. Kamalesh K. Bajaj, Debjani Neg," E-Commerce the Cutting Edge of Business", TMH, 2000.
2. S. Jaiswal ," Doing Business on the Internet E-Commerce ", Galgotia.
3. Charles Trepper, " Microsoft E-Commerce Strategies ", PHI.
4. Gary P. Sehneider, James T. Perry, Electronic Commerce, Thomson, 2002.
5. Greenstein and Feinman, "Electronic Commerce-Security, Risk Management and Control", TMH, 2000.

ELECTIVE - 1

E1.4 ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

UNIT I

Introduction: AI Problems – AI Techniques – The level of model – Criteria for success. Problems, Problem Spaces and Search: Production Systems – Problem Characteristics – Production System characteristics – Issues in Design of Search.

UNIT – II

Heuristic Search Techniques: Generate-and-Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint satisfaction – Means-Ends Analysis. Knowledge Representation Issues: Representations and Mappings – Approaches to knowledge representation – issues in knowledge representation – Frame Problem.

UNIT – III

Using Predicate Logic: Representing Simple Facts in Logic – Representing Instance and Isa Relationships – Computable functions and Predicates – Resolutions – Natural Deduction. Representing knowledge using Rules: Procedural versus Declarative knowledge – Logic programming – Forward versus Backward reasoning – Matching – Control knowledge.

UNIT – IV

Game Playing: The Minimax Search Procedure – Adding Alpha-Beta Cutoffs. Natural Language Processing: Introduction – Syntatic Processing – Semantic Analysis. Learning.

UNIT – V

Expert Systems: Expert System and Conventional Program – Expert System Organization – Knowledge Engineering: Knowledge Representation Techniques – Knowledge Acquisition – Acquiring Knowledge from Experts. Building an Expert System: Architecture of an Expert System – Difficult in Developing an Expert System.

TEXT BOOKS

1. Elaine Rich and Kevin Knight, “Artificial Intelligence”, Mc Graw Hill
2. Donald A. Waterman, “A Guide to Expert Systems”, Pearson Education

REFERENCE BOOKS

1. Russell, “Artificial Intelligence – A Modern Approach”, 2/e, Pearson Education
2. P.H. Winston, “Artificial Intelligence”, Pearson Education
3. N.J.Nilson, “Principles of Artificial Intelligence”, Spring Verlag.
4. Fedrick Hayes Roth, Donald A. Waterman and Doughlas B.Leant, “Building Expert System”, Addison Wesley.
5. Luger, “Artificial Intelligence”, 4/e, Pearson Education.

ELECTIVE - 1

E1.5. DOT NET TECHNOLOGIES

UNIT I

Introduction to .NET: Vision and goals of .NET, Overview of .NET applications, XML and .NET, Highlights of .NET framework, .NET Evolution, .NET framework architecture-CTS, metadata CLS, CLR, .NET class framework, Memory management in CLR.

UNIT II

C# Programming: Creation of C#, Overview of C#, Data types, Literals and variables Operators, Program control statements.

UNIT III

Introducing Classes, Objects and Methods, Arrays and Strings, Operator Overloading.

UNIT IV

Indexes and properties, Inheritance, Interfaces, Structures, Enumerations, Exceptional Handling.

UNIT V

Introduction to ASP.NET: Features, Anatomy of ASP.NET, Introducing web forms, VS.NET web application and other IDE basics, Separating concurrent code, Application configuration, Using HTML controls, Using web controls. Web controls for: Displaying and formatting data, Creating buttons, Inputting text, Selecting choices, Creating lists, Basic controls, Creating a simple ASP.NET application.

REFERENCE BOOKS:

1. Kevin Hoffman, Jeff Gabriel, Christian Homm, Thiru Thangarathinam, Jonathon Ortiz , “Professional.NET framework”, Wroz press Ltd, First Indian reprint 2002.ISBN: 81-733666-40-3
2. Matt.J.Crouch, “ASP.NET and VB.NET web programming”, Pearson Education, and First Indian reprint 2002.
3. Herbert Scildt, “C# : The complete reference”, by TataMcgraw hill edition 2002.ISDN:0-07-048675-1
4. C.Xavier, “C#”, Scitech,2001.

ELECTIVE - 2

E2.1. ADVANCED JAVA PROGRAMMING

UNIT – I

Java Utilities: Collections – I/O streams – Networking – Event Handling.

UNIT – II

AWT: Windows, Controls, Layout Managers and Menus – Swing. Multimedia: Images, Animation and Audio – JDBC.

UNIT – III

Java Servlets: Design – Life Cycle – Constituents of javax.servlet package – cookies – session tracking – Java Server Pages: Overview – Implicit Objects – Scripting – Standard actions – Directives.

UNIT – IV

Remote Method Invocation: Remote Interface – The Naming Class – RMI Security Manager Class – RMI Exceptions – Creating RMI Client and Server classes – RMI – I IOP.

UNIT – V

Java Beans: Events – Customization – Introspection – Persistence – EJB: Introduction – EJB Container – Classes – Interfaces – Deployment description – Session Bean – Entity Java Bean – Jar file.

REFERENCE BOOKS:

1. Herbert Schildt, "The Complete Reference – JAVA 2 ", Fourth Edition, 2001
2. Muthu, "Programming with Java", Vijay Nicole Imprints Private Ltd., 2004
3. Deitel H.M. & Deital P.J, "Java How To Program", Prentice-Hall of India, Fifth Edition, 2003.
4. Cay.S. Horstmann, Gary Cornel, "Core Java 2 – Vol. II- Advanced Features", Pearson Education, 2004.
5. Tom Valsky, "Enterprise JavaBeans – Developing component based Distributed Applications", Pearson 1999.

ELECTIVE - 2

E2.2. WIRELESS APPLICATION PROTOCOL

UNIT –I

Introduction – Market Convergence – Enabling Convergence – Key Services for the Mobile Internet – Business Opportunities. Making the Internet "Mobile ": Challenges and Pitfalls – The Origins of WAP – WAP Architecture – Components of the WAP Standard – Network Infrastructure services Supporting WAP Clients – WAP Architecture Design Principles – Relationship to other Standards .

UNIT – II

The Wireless Markup Language: Overview – The WML Document Model – WML Authoring – URLs Identify Content - Markup Basics – WML Basics - Basic Content – Events , Tasks and Bindings – Variables – Controls – Miscellaneous Markup – Sending Information – Application Security - Document Type Declaration – Errors and Browser Limitations .

UNIT – III

Web Site Design: Computer Terminals versus Mobile Terminals – Designing a usable WAP Site – Structured Usability Methods – User Interface Design Guidelines – Design Guidelines for Selected WML Elements.

UNIT –IV

Tailoring Content to the Client – Push Messaging: Overview of WAP Push – Push Access Protocol – WAP Push Addressing – Push Message – MIME media types for Push Messages - Push Proxy Gateway – Push Over – the Air Protocol – Push Initiator Authentication and Trusted Content .

UNIT - V

Wireless Telephony Applications: Overview of the WTA Architecture – The WTA Client Framework - The WTA Server and Security – Design Considerations - Application Creation Tool Box – Future WTA Enhancements –Mapping the Deployment Chain to the Business value chain – Security Domains – Linking WAP and the Internet – WAP Service Design – The Mobile Internet Future .

TEXT BOOK :

1. Sandeep Singhal , Thomas Bridgman, Lalitha Suryanarayana and Others, “The Wireless Application Protocol”, Pearson Education.

REFERENCE BOOK :

1. CharlessArehare , Nirmal Chidambaram and others , “Professional WAP”, Wrox press Ltd ., Shroff pub . And Dist – Pvt. Ltd., 2001.

ELECTIVE - 2

E2.3. CRYPTOGRAPHY

UNIT I

Overview : Services , Mechanisms , and Attacks – The OSI Security Architecture – A Model for Network Security – Classical Encryption Techniques : Symmetric Cipher Model – Substitution Techniques – Transposition Techniques – Rotor Machines – Steganography.

UNIT II

Block Ciphers and the Data Encryption Standard : Simplified DES – Block Cipher Principles – The Data Encryption Standard – The Strength of DES – Differential and Linear Cryptanalysis – Block Cipher Design Principles – Block Cipher Modes of Operation.

UNIT III

Advanced Encryption Standard : Evaluation critetria for AES - The AES Cipher - Contemporary Symmetric Ciphers : Triple DES – Blowfish – RC5 – Characteristics of Advanced Symmetric Block Ciphers – RC4 Stream Cipher.

UNIT IV

Confidentiality Using Symmetric Encryption : Placement of Encryption Function – Traffic Confidentiality – Key Distribution – Random Number Generation – Public-Key Cryptography and RSA : Principles of Public-Key Cryptosystems – The RSA Algorithm.

UNIT V

Key Management – Diffie-Hellman Key Exchange – Authentication Requirements – Authentication Functions – Digital Signatures and Authentication Protocols : Digital Signatures – Authentication Protocols – Digital Signature Standard.

TEXT BOOK :

1. William Stallings , “Cryptography and Network Security - Principles and Practices” , Pearson Education / PHI , 3rd Edn , 2005.

REFERENCE BOOKS :

1. C.P.Pfleeger , S.L.Pfleeger , Security in Computing” , Pearson , 3rd Edn , 2003.
2. Bruce Schneier , Niels Ferguson , “Practical Cryptography” , Wiley , 2003.

ELECTIVE - 2

E2.4. ADVANCED NETWORKS

UNIT I

ISDN Over view :The Integrated Digital Network – A Conceptual Overview of ISDN – ISDN Standards – ISDN Interfaces and Functions: Transmission Structure – User-Network Interface Configuration – ISDN Protocol Architecture – ISDN Connections – Addressing – Inter working .

UNIT II

ISDN Physical Layer: Basic User-Network Interface – Primary Rate User-Network Interface – U Interface – ISDN Data Link Layer: LAPD – Terminal Adaption – Bearer Channel Data Link Control Using I.465/V.120,207.

UNIT III

ISDN Network Layer: Overview – Basic Call Control – Control of Supplementary Services – ISDN Services: Service Capabilities – Bearer Services and Teleservices – Basic and Supplementary Services – B-ISDN network concept: General Architecture of the B-ISDN – Networking Techniques – Signaling Principles – Broadband network Performance – Traffic management aspects – Operation and maintenance aspects – Customer network aspects.

UNIT IV

B-ISDN user-network interfaces and protocols: B-ISDN protocol reference model – General aspects of the user-network interface – Physical layer of the user-network interface at 155/622 Mbit/s Additional user-network interfaces – Equipment-internal interfaces – ATM layer – ATM adaptation layer.

UNIT V

Operation and maintenance of the B-ISDN UNI: Network configuration for OAM of the customer access – OAM functions and information flows – Implementation issues – Integrated local management interface – Traffic management: Traffic control procedures and their impact on resource management – Mechanisms to achieve a specified QoS – Statistical multiplexing in ATM networks – Congestion control Signaling , routing and addressing - ATM switching: Switching elements – Switching networks – Switches and cross-connects.

TEXT BOOKS:

1. William Stallings , "ISDN and BroadBand ISDN with Frame Relay and ATM" , Pearson Education , Fourth Edition , 2003.
2. Rainer Handel , Manfred N Huber , Stefan Schroder , "ATM Networks Concepts Protocols Applications" , Pearson Education Asia , Third Edition , 2002.

REFERENCE BOOKS:

1. John M.Griffiths , "ISDN Explained" , 2e , March 1995 , Willey & Sons.
2. Koji Kobayashi , "Computers and Communications" , The MID Press (a Version of c and C) 1986.
3. Walter , J., Gooralski , J., "Introduction to ATM networking " , MCGraw-Hill Inc.,

ELECTIVE - 2

E2.5. EMBEDDED SYSTEMS

UNIT I

Introduction to Embedded System: An Embedded System – Processor in the System – Other Hardware Units – Software Embedded into a System – Exemplary Embedded Systems.

UNIT II

Processor and Memory Organization: Structural Units in a Processor – Processor Selection for an Embedded System – Memory Selection for an Embedded system – Direct Memory Access – Devices and Buses for Device Networks: I/O Devices – Timer and Counting Devices – Serial Communication and Parallel Communication – Device Drivers and Interrupts Servicing Mechanism: Device Drivers – Device Drivers for Internal Programmable Timing Devices – Interrupt Servicing (Handling) Mechanism – Context, Latency and Deadline.

UNIT III

Programming Concepts and Embedded Programming in C and C++: Software Programming in Assembly Language (ALP) and in High Level Language 'C' – Embedded Programming in C++ - Embedded Programming in Java – Optimisation of Memory needs – Inter-Process Communication and Synchronisation of Processes, Tasks and Threads: Multiple Processes in an Application – Problem of Sharing Data by Multiple Tasks and Routines – Inter Process Communication.

UNIT IV

Real Time Operating Systems: Real-Time and Embedded System Operating Systems – Interrupt Routines in RTOS Environment: Handling of Interrupt Source Call by the RTOSs - RTOS Task Scheduling Models, Interrupt Latency and Response Time of the Tasks as Performance Metrics – Performance Metric in Scheduling model for Periodic, Sporadic and Aperiodic Tasks – List of Basic Actions in a Preemptive Scheduler and Expected Times taken at a Proccessor – Fifteen-Point Strategy for Synchronisation between the Processors, ISRs, OS Functions and Tasks

and for Resource Management – Embedded Linux Internals: Linux Kernel for the Device Drivers and Embedded System – OS Security Issues.

UNIT – V

Case Study of an Embedded System for a Smart Card – Hardware-Software Co-Design in an Embedded System: Embedded System Project Management – Embedded System Design and Co-Design Issues in System Development Process – Design Cycle in the Development Phase for an Embedded System – Users of Target System or its Emulator and In-Circuit Emulator(ICE) – Use of Software Tools for Development of an Embedded System – Use of Scopes and Logic Analysers for System Hardware Tests – Issues in Embedded System Design.

TEXT BOOK:

1. Raj Kamal, ”Embedded Systems – Architecture, Programming and Design”, Tata McGraw-Hill,2003.

REFERENCE BOOKS:

1. David E. Simson, “An Embedded Software Primer”, Addisons-Wesley-2001.
2. Steve Heath, “Embedded Systems Design “, Elsevier, 2003.
3. Frank Vahid and Tony Givargis, “Embedded System Design “, John Wiley And Sons, Inc, 2002.

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69.	P.NAVANEETHAM S.G Lecturer in CS	RVS College Coimbatore
70.	B.VALLIMAYEIL S.G Lecturer in CS	Vellalar College Erode
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