

MANONMANIAM SUNDARANAR UNIVERSITY
DIRECTORATE OF DISTANCE AND CONTINUING EDUCATION
Scheme and Syllabus
Master of Computer Application MCA – Lateral Entry

I YEAR	
Paper 1	Fundamentals of Computer
Paper 2	Object Oriented Programming using C++
Paper 3	System Analysis and Design
Paper 4	Internet and its Applications
Paper 5	Visual Programming using VB
Paper 6	Client/Server Computing with Oracle
Paper 7	Advanced Data Structure
Paper 8	E. Commerce Applications
Paper 9	M.S. Office & OOPs Lab
Paper 10	VB & Oracle Lab
II YEAR	
Paper 11	Introduction to Computer Architecture
Paper 12	Mathematics – 1 (Discrete Mathematics)
Paper 13	Advanced Java Programming
Paper 14	Accounting and Financial Management
Paper 15	Operating System
Paper 16	Web Design Using ASP
Paper 17	Software Engineering
Paper 18	Management Information System & Data Processing
Paper 19	Java & Multimedia Lab
Paper 20	Web Programming With Scripting Lab
III YEAR	
Paper 21	Computer Networks
Paper 22	Numerical Methods
Paper 23	.Net Programming
Paper 24	Data Mining & Data Warehousing
Paper 25	PC Trouble Shooting & Management
Paper 26	Mini Project: Any Real Application Using Front And ASP JSP Back End: MS Access, Oracle
	Major Project: Any Real Applications Using Net Programming
	Total No. of Credits

Eligibility : (i) B.C.A. / B.Sc. Comp. Science Year exemption only :

All 3 years papers should be written

(ii) UG + P.G.D.C.A. - II & III years papers only

I YEAR
PAPER 1.1. FUNDAMENTALS OF COMPUTERS

Unit I: Components of a computer – Input Devices – Central Processing Unit – Output Devices – Memory – Secondary Storage – Hardware and Software – Operating system.

Unit II: DOS Commands – Internal Commands – External Commands – GUI-GUI concepts – Character User Interface.

Unit III: Desktop – My computer – Network Neighbourhood- Recycle Bin – The Task Bar- Start Button – Running Programs – What's New in Windows' 95- Graphical Device Interface- Dynamic Data Exchange (DDE_ - Object Linking & Embedding (OLE) – Networking.

Unit IV: Programs – Documents – Settings – Find – Help – Run – Shut down- Working with Start Button – Programs item – Close a program – Toggle Between programs – settings, item – Control Panel – Display Option – Find item- Shut down.

Unit V: Working with Files and Folders – Windows Explorer item – What is there on my computer Create a new folder Copy a file to floppy – Delete a file or folder – Recycle Bin- Multiple Selection- Printers- Setup Printer- Document Printing – Installing Application Programs – Installing Hardware System Tools – Scan Disk option – Data Compression Option – Defragmenting Disk option – Paint Brush.

Reference Book: Computer Fundamentals and windows with Internet Technology – N. Krishnan – Scitech publications India (P) Ltd.,

PAPER -1.2 : OBJECT ORIENTED PROGRAMMING USING C++

Unit – I

Data types, operators and statements: Identifiers and Keywords- constants C++ Operators – Type Conversion, Declaration of variables – statements – simple C++ programs – Manipulator functions- Input and Output (I/O) Stream flags, Control Statements, Conditional expressions – Switch Statement – Loop Statement – Breaking Control Statements.

Unit-II

Functions and Program Structures: Defining a function- Types of functions – Actual and formal arguments- local and global variables – default arguments – multifunction program – storage class specifiers – Recursive function- Preprocessors- Header files – Standard functions- Arrays and Functions – Multidimensional Arrays.

Pointers: Declaration – Pointer Arithmetic – Pointers and Functions – Pointers and Arrays – Pointers and Strings- Pointers to Pointers.

Unit –III

Structures, Unions and Bit Fields- Nested Structure – Unions – Bit fields – Enumerations – Classes and Objects : Declaration of class – Member functions- Defining the object of a class – accessing a member of

class- arrays of class objects – pointers and classes – Unions and classes – Constructors – Destructions – Inline member functions – Static class members – friend functions – Dynamic Memory Allocations.

Unit IV- Inheritance – Single Inheritance – Types of Base Classes – types of derivations – Ambiguity in single inheritance – multiple inheritance – container classes – Overloading – function overloading – operator overloading – overloading of binary operators – overloading of unary operators.

Unit V

Polymorphism- Polymorphism with pointers – virtual functions – late binding abstract classes – constructor under inheritance – destructors under inheritance – virtual destructors – Virtual base classes – templates and exception handling – function template – class template – exception handling Data file Operations- Opening and closing of files – stream state member functions – Reading /writing a character from a file – binary file operations – classes and file operations – Array of class objects and fill operations-Nested classes and file operations – Random Access File Processing.

Reference Book :Programming with C++ - D. Ravichandran – Tata McGraw Hill Publishing Company Limited – 1999.

PAPER 1.3 – SYSTEM ANALYSIS AND DESIGN

Unit I: System Concepts and Information System Environment – Business System Concepts – Information – System Development life cycle- Introduction to CASE tools – Role of system Analysis – Communication skills.

Unit II: Requirement Analysis and methodologies- Sampling – Interviews- Questionnaires- Observing the office environment – Prototyping – Structured system analysis techniques and practices – Cost Benefit Analysis.

Unit III: System Design- The process and stages of system design- Input/Output and Forms design- File organization – Database design.

Unit IV: System Implementation-Software Maintenance- Review Plan – Hardware, Software selection and the computer contract – Project scheduling.

Unit V: System Testing – Quality Assurance- Test Plan – Quality Assurance Goals – Audit trail – Security, Disaster/ Recovery and Ethics in System Development.

PAPER – 1.4 : INTERNET AND ITS APPLICATIONS

Unit I What is Internet – History of Internet – How the Web works ? –Web Servers and Clients – Looking at connection as ISP – ISDN – Dial up or Leased Connection – Domain Naming System – Registering our own Domain Name – Intranet – Overview of Web Browsers – hypertext – Hyper Text Markup Language- Basic Components – Formatting the text HTML- URL- Protocol – Server name – Port – Relative URLs Absolute URLs – Linking to other HTML Documents – Linking Inside the same Documents – Linking to other internet services – File Transfer Protocol(FTP)- Gopher.

Unit II

List in HTML – Displaying Text in lists – Ordered List – Using Ordered Lists – Using Netscape Extensions – Unordered Lists – Using Tag – Directory Lists – Definition Lists – Combining Lists Types – Graphics and Web Pages – Image Format and Browsers – Graphics and HTML Documents – Images and Hyperlink anchors – Images Maps – HTML Tables- Aligning Table Elements – Row and Column Spanning – Netscape Table- Enhancements- Frames in HTML – Frameset Container – HTML Forms – The <Input> Tag – Dynamic Documents – Background Graphics and colour – Microsoft Internet Extensions – Font Tag Enhancements – Scrolling Marquees.

Unit III – Data – Steps in Programming Process – Programming Specification – Problem Definition – Requirement Analysis – Design a Program Model – Determine or correctness of an Algorithm – Code Program- Test and Debug – Debugging – Documentation – Structured Programming Techniques Program Tools – Flow chart – Why Structured Programs? – Structures – Sequence Program Flow – Decision Structure – Iteration Structure – Tools for Structured Programming – Structure Charts – Pseudo Codes – Structured Programming issues – Maintenance – Portability – Readability – Program verification – Modularity – Problem solving – Approaches – Top – Down Approach – Brute – Force Approach – Testing Methods – Black – Box Approach – Glass Box Approach.

Unit – IV

Client – Side and Server – Side Programming Languages n- Declaring Variables Commenting – Adding Data and Time Functions to Scripts – Using Mathematical Operators and Functions – Using Conditional Statements.

Unit – V

String Functions – Creating Subroutines – Creating Functions – Using Logical Connectives and Operators – Using Loops to Repeat Code – A Simple Page – VBScript and Forms – Hiding Errors.

Reference : Graham – HTML 4.0 Source Book – Ackermann- Learning to use the Internet, - Mary Jane Mara – VB Script Source Book; Paul Lomax and Ronald Petruscha – Learning VBScript.

PAPER 1.5. VISUAL PROGRAMMING USING VB

Unit I : Introduction to Window's 2000 – Operating System Features – Basic Operations – Fundamental of Visual Basic : Anatomy of Visual Basic Program – The Code Window – Statements in Visual Basic – Assignment and property setting – Variables – Strings – Number constants, repeating operations, making decisions.

Unit II: Working with object at run time – Projects with multiple forms – Displaying information. The Printer object – Advanced programming techniques – Arrays – Pointers – Built in functions – User defined functions & procedures.

Unit III: Objects – Manipulation of objects in Visual Basic – Collections – Creating an object in Visual Basic- Building classes – Files- Sequential files – Random access files – Binary files – Sharing files.

Unit IV: Communicating with other windows application: Clip board-Activity windows application-Dynamic data exchange & OLE 2.

Data base features: Modern databases – data manager – Using the data control-Programming with data control-Monitoring changes to the database – SQL basics-Data base objects ADO.OLE. DB.

Unit V: Printing – Reports – Writing – Error handlers – Debugging Techniques – DHTML- Internet/ Intranet Applications using Visual Basic- Active X documents – Winsock Control.

Reference Book: Visual Basic 6.0 in 30 days- N. Krishnan and N. Saravanan – SCITECH publications India(P) Ltd.,

PAPER -1.6: CLIENT/SERVER COMPUTING WITH ORACLE

Unit – I Basic Concepts

Introduction to Oracle Server – Data Dictionary – Table spaces and Data files – Data Blocks, Extents and Segments: - Schema Objects.

Unit- II SQL SQL*PLUS:-Basic SQL:

Unit –III – Schema Objects

Data Integrity – Creating and Maintaining Tables – Indexes Sequences Views – Users, Privileges and Roles – Synonyms.

Unit-IV – PL/SQL.

PL/SQL – Triggers – Stored Procedures and Functions – Packages – Cursors – Transaction.

Unit –V – Distributed Processing. Distributed Processing – Replication.

Text Book: Jose.A. Ramalho- Learn Oracle1, BPB Publications, 2000

PAPER 1.7: ADVANCED DATA STRUCTURE

Unit I

Introduction : Mathematics Review – A brief introduction to recursion. Algorithm analysis, Mathematics background – Model – What to analyze – Running time calculations.

Lists, Stacks, Queues: Abstract Data Types(ADTs) – The List ADT- The Stack ADT – The Queue ADT.

Unit II

Trees: Implementation of Trees – Tree Traversals with an application – Binary Trees – The Search Tree ADT – Binary Search Trees.

Hashing : General Idea – Hash function – Separate Chaining.

Priority Queues (Heaps): Model – Simple implementations – Binary Heap.

Unit III

Sorting : Preliminaries –Insertion Sort – Shellsort – Heapsort- Mergesort – QuickSort.

Unit IV

Graph Algorithms: Definition Topological Sort Shortest – Path Algorithms – Network Flow Problems – Minimum Spanning Tree – Applications of Depth – First Search.

Unit V

Algorithm Design Techniques: Greedy Algorithms – Divide and Conquer – Running Time of Divide and Conquer Algorithms – closest – Points problem – The Selection problem – Theoretical improvement for Arithmetic Problems.

Reference Book:

1. Mark Allen Weiss – Data Structures and Algorithm Analysis in C++, Addison Wesley, Chapters – 1.2 (1.2.1 to 1.2.4. only) 1.3, 2.1 or 2.4, 3.1, 3.2 (3.2.1 to 3.2.6 only), 3.3, 3.4, 4.1, 4.2, 4.3, 5.1 to 5.4, 6.1, 6.2, 6.3, 7.1 to 7.7, 9.1 to 9.6, 10.1, 10.2.

PAPER 1.8 : E. COMMERCE APPLICATIONS

Unit 1: Introduction to E-Commerce: The Scope of E-Commerce – Definition – Internet – commerce – Electronic Markets – Electronic Data Exchange – Business Strategy in an Electronic Age: The value chain – supply chains – Porters value chain Model – Inter Organisational value chains – competitive Advantages using e-commerce.

Unit 2. : Statigic implications of IT –Business capability – Strategy formulation and Implementation Planning – e-commerce implementation – e-commerce evaluation. Case Studies: Airline booking systems – Web Booking Systems – Competitive outcomes.

Unit 3.: Business to Business Electronic Commerce: Inter-organisational Transactions- Electronic Markets- Advantages and Disadvantages of Electronic Markets – Advantages and Disadvantages of Electronic Markets and its future, Electronic Markets and is future. Electronic data Interchange (EDI): Definitions: Examples- EDI Technology-EDI- Communications – Implementation – EDI Agreements – Security, Purchasing On-line.

Unit 4: Business to Consumer Electronic Commerce: The e-shop – e-commerce technologies – consumer e-commerce advantages and disadvantages – Internet Concepts – TCP/IP- uses of Internet – Internet Age Systems.

Unit 5. : A Page on the web – HTML Basics – Client Side Server side Scripting. The elements of e-commerce: Internet e-commerce security- A web site Evaluation Model – Internet Bookshops – Internet Banking – online share dealing – e-diversity- Technology Adoption.

Text Book : 1. E-commerce Logistics and Fulfillment – Debroah L. Bayles – Pearson Education Asia – Addison Wesley Longman (Singapore) Pte. Ltd.

Reference : 1. E-Commerce Logistics and Fulfillment – Deborah L. Bayles- Pearson Education Asia – Addison Wesley Longman(Singapore) Pte. Ltd.

2.Managing your e-commerce business – Brenda Kienan – 2nd edition – Prentice Hall of India, New Delhi – 2001.

PAPER 2.1: INTRODUCTION TO COMPUTER ARCHITECTURE

Unit I

Introduction – Performance and cost Instructions set Architecture – Qualitative analysis of ISA – Addressing modes – Quantitative analysis of ISA – Reduced instruction set Computer Architecture – Pipe line architecture – MIPS series – Motorola 88000 – SPARC Micro channel architecture – I/o subsystem architecture – architecture of I/o Bus – PCI bus – Micro channel architecture – Data Flow architecture – Parallel Architecture for control Driven Machine – Pipe line Hazards – The cross bar – switched systems- Multiprocessor with single and multi-stage- inter connections Network- Switch lattice Architecture.

Unit II

Programming Languages- Assembly Language – Assembler – Subroutines – Input / Output Programming – Register transfer language Inter – Register transfer – Data transfer and manipulation – program control – Microprocessor organization of 8086.

Unit III

Microprogramming – Arithmetic Micro – operations – Logic Micro operations – shift Micro operations – control functions – Control Memory – Address sequencing – Micro Program sequencer – Micro instruction formats- Advantages and Applications of Micro Programming.

Unit IV

Arithmetic processor design – comparison and subtraction of unsigned binary numbers- Addition and subtraction, multiplication and division algorithm – Floating point arithmetic operations – Decimal Arithmetic operations.

Unit V

Peripheral Devices –I/O interface – Asynchronous data transfer – Direct Memory Access – Priority interrupts – Input/Output processor – Memory hierarchy – Associative memory – virtual memory – Cashe memory – Memory management hardware.

Text Books: M. Morris Mano – Computer System Architecture – Prentice Hall of India Private Limited.

Reference: 1. Vincent P. Heuring & Harry F. Jordon – Computer Systems Design and Architecture – Addison- Wesley.

1. P. Paul Chauduri- Computer Organization and Design – Prentice Hall of India Private Limited, 1999.

PAPER 2.2: MATHEMATICS -1 (DISCRETE MATHEMATICS)

Unit I

Mathematical Logic – Statements and Notation – Connectives: Negation, Conjunction, Disjunction, Statement Formulae and Truth tables – Logical capabilities of programming languages – Conditional and Biconditional well –formed Formulae Tautologies – Equivalence of Formulae – Duality law Tautological Implications.

Unit II

Sets, Relations and Functions: Definition of Sets and Subsets: Intersection, Union and Complements DeMorgan's Law; cardinality; Relations- Equivalence relations etc., Mapping One – one; Onto etc.,

Unit III

Algebraic structures: Semigroups and monoids. Groups: Definitions and examples – subgroups and Homomorphisms- Permutations Groups – Cosets and Lagrange's theorem- Normal subgroups – Rings: Definition, types, Matrix, Manipulations, Determinants: Properties of determinants: Grammer's rule: Determinants to transpose and inverse. Properties – canonical forms of a matrix – Cayley – Hamiltonian Theorem – Characteristic Polynomical – Problems.

Unit IV

Graph Theory: Definition – Examples of graphs – walks – paths – Circuits – trees and fundamental circuits – cutset and cut vertices – Matrix representation of graphs.

Unit V

Colouring, Partitioning and covering – Planar Graphs – Directed Graphs – Chromatic Polynomial – Five Colour Theorem.

Text:

Discrete Mathematics – Mangaladoss and Glory. Presi-Presi Publications.

Reference: 1. Discrete Mathematical structures with applications to computer science – Trembly J.P. and Manohar R. – McGraw Hill International Editions, 1987.

2. Preparata F.P. Yeh R.T. – Introduction to Discrete Structures. Addison – Wesley 1973.

3. Graph Theory with applications to Engineering and Computer Science, Applications – Narsingh Deo.

PAPER 2.3: ADVANCED JAVA PROGRAMMING

Unit I

Features of Java: History- Characteristics of Java – Developing and Running a java program – structure of a java program – variables – features of java-datatypes-type conversion and casting – arrays- operators –

Bitwise operators – leftshift-right shift- unsigned right shift operators – relation- Boolean logic – ternary operators.

Unit II

Branching and Looping Statements: If, If – else, nested-if-else, if else it statement- switch case- while loop – do while – for loop – break, continue and return statements. Classes methods and objects: examples- declaring objects – methods in classes – constructors – this keyword – class structure.

Unit III

Extension to classes and methods: Methods overloading passing objects to methods – passing arguments – returning objects – recursion- nested classes – string handling – command line execution. Inheritance: basic concepts – multilevel hierarchy – method overriding abstract classes, packages and interfaces.

Unit IV

Errors and exception Handling: Compile time, runtime errors exceptions – try and catch, multiple catch-throw – java's built-in- exceptions. Multiple thread programming : java threads –creating several threads- deadlock – controls on treads.

Unit V

Input-Output operations reading characters, sentences writing to console, file processing , copying files, Applets: Various appelets: Chkr, cs,de, font, ga, lbg, rc, rrc, sp, common.html file.Graphics and Text: lines, rectangle, ellipse, arcs, polygons paintmode, fonts, text.

Text Book: Programming in Java 2 – R. Rajaram, SCITECH Publications (India) Pvt. Ltd., Chennai.

PAPER 2.4 – ACCOUNTING AND FINANCIAL MANAGEMENT

Unit I

Accounting Basic Concepts : Principles of financial accounting. Relationship with cost and management accounting. Principles of Double entry book keeping – Difference between entry and double entry. Preparation of Journal – Ledger- Trail balance and financial accounts with adjustments – including company final accounts – problems and solutions. Costing – Cost accounting concepts – costs classification – methods of costing – preparation of cost sheet – problems and solutions.

Unit II

Depreciation – meaning, types problems and solutions. Financial statements – analysis purpose procedures for interpretation – tool for analysis. Ration analysis: Classification of Ratios – application of ratios, problems and solutions.

Unit III

Funds flow and cash flow statements – uses – preparations – difference between FFS/CFS- problems and solutions. Working capital analysis- forecasting methods problems and solutions. Marginal costing – break even analysis –uses- application of marginal costing in managerial decisions making – problems and solutions.

Unit IV

Butgetting, Budgetary control – classification and preparation of budgets – uses of budgets – capital budgeting different methods- objectives – uses- difference between standard costing and budgetary control – problems and solutions.

Unit V

Computer Accounting and Algorithms: Introduction to Computer accounting – coding – master Files – transaction files – documents used for data collection – processing of different files – outputs obtained – reports – types and uses of report.

Text Books: Accounting and Financial Management – T. Ramachandran, SCITECH Publications (India) Pvt.Ltd.

Reference:

1. S.P. Jain and K.L. Narang – Advanced Accounting, Kalyani Publishers, New Delhi.
2. S.P. Iyengar- Advanced Accounting, Sultan Chand and Sons, New Delhi.
3. Financial Management – S.N. Maheswari and C.B. Gupta, Sultan Chand and Sons., New Delhi.
4. Management Accounting – S.N. Maheswari and C.B. Gupta, Sultan Chand and Sons, New Delhi.
5. R.L. Gupta and M. Radhaswamy – Advanced Accounting, Sultan Chand Sons., New Delhi.

PAPER 2.5. OPERATING SYSTEM

Unit I

Operating systems objectives and functions – different services of the operating system- operating system as a user/ computer interface, operating system as a resource manager, History of the operating systems – Serial processing, simple batch systems, multiprogrammed batch systems, Time Sharing systems. Process description and control – process status – process description – process control – processes and threads. Interprocess communication.

Unit II

Memory Management –Memory management requirements single contiguous memory management, Fixed partitioned memory management, variable partitions, Non- contiguous allocation, paging, segmentation, virtual memory management systems.

Unit III

Concurrency – Principles of concurrency, Mutual exclusion, software support, Dekkers algorithm, mutual exclusion, hardware support, mutual exclusion, operating system support, semaphore implementation, Deadlock – deadlock prevention, deadlock detection, deadlock avoidance.

Unit IV

I/O Management and Disk scheduling – Disk scheduling algorithms. File management – Files – File Management systems- File system Architecture – Functions – File sharing – File directories – File allocation. Security polices and Mechanisms – Protection and access control.

Unit V

Case studies the Unix operating system – Command language user's view of Unix, System call user's view of unix, implementation of unix. PC Dos operating system – command language user's view of PC-Dos, system – call user's view of PC-Dos, PC-Dos implementation, Netware – Communications Management in Netware, History of Netware, Netware 386 architecture, Netware features.

Text Book : Milam Milenkovic – Operating Systems- TATA McGraw Hill Book Company 1992.

Reference:

1. Achyut S. Godbole – Operating systems – Tata McGraw Hill Book company 1998.
2. William stalling- Operating Systems – Prentice hall of India 1997.
3. H.M. Dental- An Introduction to operating systems Addison Wesley Publishing Company 1990.

PAPER 2.6 WEB DESIGN USING ASP

Unit 1: Introduction to ASP: What is ASP? – ASP Model – Scripting Languages – Delimiters single expressions- statements – including other files. Understanding objects: Application object-lock – unlock – events- application on end – application on start – request object – Properties of the Response object – Methods of the Response object – Session object – The global.asa file.

Unit 2: Understanding components: The advertisement rotator component – the text stream component – properties of the textstream object. Working with users; The input function – Retrieving form data – using text boxes and text areas.

Unit 3: Cookies: Working with Cookies – Application of Cookies – created by ASP page – Drawbacks of using cookies – Web Browser Compability Issues – Using Cookies in ASP Applications – An ASP application that uses cookies.

Unit 4: Working with files and the File system: Considering Performance and Data Protection – Executing a SQL Statement with the connection Object- Understanding session and connection pooling – Working with recordsets – Recordset cursor and locking types – Understanding ADO cursors – Advanced Methods and Properities of the Recordset Object – Paging Through a recordset. Working with the command object.

Creating stored Procedures – Executing stores procedures with the connection object – Receiving Parameter information.

Text Book : Practical ASP – Ivan Bayross- BPB Publications, New Delhi, 2000.

Reference: 1. Essential ASP (for Web Progrssionals) – Elijath Lovejoy – Pearson Education Asia 2001.

2. Internet 101-Wendy G. Lehnert, University of Massachusetts at Amherst – Addison Wesley.

3. Web programming with ASP and COM – Matt J. Crouch, Addison Wesley 2000.

PAPER -2.7 SOFTWARE ENGINEERING

Unit – 1: Introduction: Software Crisis – Software Myths – Software Life Cycle Models: Build and Fix Model Waterfall Model – Prototyping Model- Iterative Enhancement Model – Evolutionary Development Model – Spiral Model – Capability Maturity Model – ISO 9000, 9001 and 9002. Software Metrics.

Unit-2: SoftwareProject Planning: Cost Estimation- The constructive Cost Model – The Putnam Resource Allocation Model – Software Risk Management – Software Requirements Analysis and Specification. Requirements Engineering –Problem Analysis – Aproaches – Software Requirements Specification (SRS)- Behavioural Requirements – Non- behavioural requirements.

Unit-3: Software Design: Conceptual and Technical Designs – Modularity – Dependence Matrix – Strategy of Design: Bottom – Up Design – Top – down design- Hybrid design – Function oriented design – Object Oriented Design.

Unit -4: Software Reliability: Importance – Software reliability – Hardware reliability – Failures and Faults – Reliability concept – Reliability Models – Reliability allocation. Software Testing: Testing Process-Functional Testing – Structural Testing – Test activities –Debugging – Testing tools.

Unit-5: Software Maintenance: Categories of Maintenance- Problems during maintenance –solutions –the maintenance process- Maintenance Models – Reverse Engineering – Software Re-engineering-Estimation of Maintenance costs- Configuration management- Documentation: User Documentation –System Documentation-Classification Schemes.

Reference:

1. Software Engineering Concepts, Richard Fairly, Tata McGraw Hill Edition, New Delhi 1997.
2. Software Engineering – Roger Preswsmen
3. Software Enginerring – Ian Sommerville – Fifth Edition, Pearson Education Asia, 1996.

PAPER 2.8 MANAGEMENT INFORMATION SYSTEM & DATA PROCESSING

Unit I: The challenge of applying IT successfully – IT – Based Innovations – Dramatic Progress in processing data – Applying IT in the real world – Real World cases. Basics concepts of understanding systems – IS and work systems – Perspectives.

Unit II: Information and Databases: Data Modeling – DBMS – Text database and Hypertext – Models are components of IS Communication. Decision Making and Different Types of IS Basic Communications Concepts – Decision Making Concepts.

Unit III: Product, Customer, Competitive Advantages – Electronic Commerce, Human and Ethical Issues – Technology and people – Balancing positive and negative impacts. Computer Hardwares: Performance of IT – Data Input – Capturing Data – Storing and retrieving data.

Unit IV: Software programming and Artificial Intelligence: Types of Software – 4GL – Major Developments in Programming – Operating Systems – Programming Intelligence to machines – Real world cases.

Unit V: Networks and Telecommunications: Applying Telecommunications in Business – Types of Networks – Telecommunication standards – Telecommunication Policy Information Systems Planning; Strategic Alignment of Business and IT – Real World Case studies.

PAPER 3.1 COMPUTER NETWORKS

Unit 1: Computer Networks: Introduction – Growth, Complexity in Network Systems – Concepts and Terminology. Motivation and Tools: Resource sharing- growth of the internet- Probing the internet – Tracing a route. Data Transmission: Copperwires- Glass fibers – Radio – Satellites – Geosynchronous, Low Earth Orbit Satellites – Arrays- Microwave, infrared – Light from a laser.

Unit 2: Local Asynchronous Communication : The need –standards for communication – baud rate, framing and errors – full duplex – Limitations of real hardware – transmission of bits – significance of Data Networks. Long Distance Communication: Introduction – Sending signals across long distances – Modem – Leased Analog Data Circuits – Baseband and broadband technologies – Wave Division Multiplexing – Spread Spectrum – Time Division Multiplexing.

Unit 3: Packet Transmission: Packets – Hardware Frames – Byte stuffing – Transmission errors – Probability, Mathematics and error detection – Cyclic Redundancy Checks – Burst errors – Building blocks – Frame Formats and error Detection Mechanisms. LAN Technologies Network Topology: LAN Topologies – CSMA- CSMA/CD – Wireless LAN's- IBM Token Ring – ATM. Hardware Addressing and Frame Type Identification; Specifying a recipient – Broadcasting – multicasting – multicast addressing – Frame Headers and Frame Format – Network Analysers- Frame Types.

Unit 4: LAN wiring – Physical Topology – Interface Hardware : Speeds of LAN's and Computers – Network Interface Hardware – Connection Multiplexing – The topology paradox – Network Interface Cards – Other Network Technologies. Fiber Modems – Repeaters – Bridge and Switches- Long Distance Digital Connection Technologies: Digital Telephony – ISDN – SONET – DSL Technologies – Cable Modem Technology. WAN Technologies- Routing. A WAN – SPF – Examples of WAN. Network Ownerships – Service Paradigms and Performance. Protocols and Layers: Seven Layers – Multiple Nested Headers – Techniques Protocols use – Protocol Design.

Unit 5. Internetworking Concepts – Architecture and Protocols – IP Addresses – Binding Protocol Addresses (ARP) – The Future IP – Error Reporting Mechanism-TCP- Network Applications- Client – Server Interaction – World wide Web pages and Browsing.

Text Book: Computer Networks and Internets- Douglas E. Comer – 2nd Edition – Pearson Education Asia, Fifth Reprint 2001.

Reference: 1. B. Forouzan, Data Communication and Networking, McGraw Hill International editions, 1998.

PAPER – 3.2 NUMERICAL METHODS

Unit I

Algebraic and Transcendental Equations: Introduction – Errors in Numerical Computation – Iteration Method- Bisection Method – Numerical Computation – Iteration Method – Bisection Method – Regular Falsi Method – Newton – Raphson Method – Horner’s Method.

Unit II

Simultaneous Equations: Introduction – Simultaneous equations – Back Substitution – Gauss Elimination Method – Gauss – Jordan Elimination Method – Calculation of a Matrix – Crout’s Method – Iterative Methods- Gauss Jacobi Iteration Method – Gauss – Seidel Iteration Method – Relaxation method.

Unit III

Eigen Values and Eigen Vectors of a Matrix. Finite Differences: Introduction – Difference Operators – Other Difference Operators – Error Propagation in a difference table – Summation of Series.

Unit IV

Interpolation: Introduction – Newton’s Interpolation Formulae – Central Difference Interpolation Formulae – Lagrange’s Interpolation Formula – Divided Differences – Newton’s Divided Difference Formula – Inverse Interpolation.

Unit V

Numerical Differentiation and Integration: Derivatives using Newton’s forward difference formula – Derivatives using Newton’s backward difference formula – Derivatives using Newton’s central difference formula – Maxima and Minima of the interpolating polynomial – Numerical integration – Difference Equations: Basic Definitions – Formation of Difference Equations – Linear Difference Equations.

Text Book: Numerical Methods – S. Arumugam, A. Thangapandi Issac and A. Somasundram – SCITECH Publications, Chennai, 2001.

PAPER – 3.3 .NET PROGRAMMING

Unit I: Essential Visual Basic .Net, Operators – Conditional Statements – Loops – Procedure – Scope – Exception handling.

Unit II: Window forms: MsgBox – Input box, Events_Textboxes – Rich Text Boxes – Latch and Link Labels – Buttons – Check Boxes Radio Buttons – Panels and group Boxes.

Unit III: List Boxes – Checked Boxes – Combo Boxes – Picture Boxes – Menus – Built-in dialog boxes – Printing Image lists – Trees and Views Text Box – Status and Progress Bars and Tab Controls.

Unit IV: Object Oriented – Inheritance – Graphics and File Handling – Validation Controls – Calendar Ad Rotator – HTML Controls.

Unit V: Data – Access – With ADO.NET – Binding Controls to Data Bases – Handling database in coding – Database Access in Web Application.

PAPER 3.4 DATA MINING AND DATA WAREHOUSING

Unit I: Delivery Process: Data Warehousing delivery method – System process – Introduction – Overview – Typical process flow within a data warehouse – Extract and load process – Clean and transform data – Backup and archive process – Query Management process.

Process Architecture: Introduction – Load Manager, Warehouse Manager – Query Manager.

Unit II: Introduction – Why you need tools to manage a data warehouse – System managers – Data warehouse – Process manager – Load manager – Warehouse manager – Query manager.

Capacity planning, tuning and testing – Introduction – Process – Estimating the load.

Tuning the data warehouse: Introduction – Accessing performance – Tuning the data load – Tuning queries.

Unit III: Introduction – Basis of Data mining – Data mining versus knowledge discovery in database – Data mining Issues – Data Mining metrics – Social implications of data mining – Data mining from a database perspective.

Unit IV: Database / OLAP System – Fuzzy sets and Fuzzy logic – Information retrieval – Decision support systems – Dimensional modeling – OLAP – Web search engines.

Data mining techniques: Introduction – A statistical Perspective on data mining – Similarity measures – Decision trees – Natural networks – Genetic algorithms.

Unit V: Introduction – Large Item sets – Basic Algorithm – Parallel and distributed algorithm – Comparing approaches – Incremental rules – Advanced association rule techniques – Measuring the quality of rules.

PAPER 3.5 PC TROUBLE SHOOTING & MANAGEMENT

Unit I: The basic micro computer system – Introduction – The microprocessor subsystem – I/O subsystem configuration – Inside the IBM PC System – The bus subsystem – memory subsystem.

Unit II: Memory peripherals – magnetic record fundamentals – digital magnetic recording – The floppy disk subsystem – FDD – FDD adjustment and alignments – cleaning and preventive Maintenance – Winchester disk system.

Unit III: Peripherals devices – Introduction – Keyboards – Video displays – The CRT deflection – Video amplifier – Color video – IBM PC display – Printers – Interface standards – Modems and acoustic couplers.

Unit IV: Setup servicing and customer relations – PC XT configuration – Switch settings – Cables and connections – Operations – Power-on self test – Preventive maintenance - Diagnostic and troubleshooting – Introduction – starting the advance diagnostics – The home menu diagnostics – test submenu – error code.

Unit V: Introduction to PS/2S system processor – Micro channel – Test equipments – Logic probes – Pulsars –meters – Logic analyzers – Oscilloscopes – PROM burners – Power line monitor.
