MANONMANIAM SUNDARANAR UNIVERSITY
DIRECTORATE OF DISTANCE AND CONTINUING EDUCATION
Scheme and Syllabus
Master of Computer Application (MCA) / MCA – Lateral Entry
Post Graduate Diploma in Computer Applications (PGDCA)
(Effective from the year 2016 – 2017 onwards)

I YEAR		Credits
Paper 1	Fundamentals of Computer	4
Paper 2	Object Oriented Programming using C++	4
Paper 3	System Analysis and Design	4
Paper 4	Internet and its Applications	4
Paper 5	Visual Programming using VB	4
Paper 6	Client/Server Computing with Oracle	4
Paper 7	Advanced Data Structure	4
Paper 8	E. Commerce Applications	4
Paper 9	M.S. Office & OOPs Lab	3
Paper 10	VB & Oracle Lab	3
II YEAR		
Paper 11	Introduction to Computer Architecture	4
Paper 12	Mathematics – 1 (Discrete Mathematics)	4
Paper 13	Advanced Java Programming	4
Paper 14	Accounting and Financial Management	4
Paper 15	Operating System	4
Paper 16	Web Design Using ASP	4
Paper 17	Software Engineering	4
Paper 18	Management Information System & Data Processing	4
Paper 19	Java & Multimedia Lab	3
Paper 20	Web Programming With Scripting Lab	3
III YEAR		
Paper 21	Computer Networks	4
Paper 22	Numerical Methods	4
Paper 23	.Net Programming	4
Paper 24	Data Mining & Data Warehousing	4
Paper 25	PC Trouble Shooting & Management	4
Paper 26	Mini Project: Any Real Application Using Front And ASP JSP Back End: MS Access, Oracle	4
	Major Project: Any Real Applications Using Net Programming	10
	Total No. of Credits	110

Eligibility for M.C.A. (3 Years Programme)
Any Degree with Mathematics at +2 Level
(or) Any Degree with Mathematics / Statistics as one of Subjects.

Eligibility for M.C.A. LE (2 Years Programme)

B.C.A. / B.Sc. (Comp.Sci.) / B.Sc. (IT) / B.Sc. (SE) / B.Sc. (CT)
(or) Any Degree with Mathematics at +2 Level with PGDCA
(or) Any Degree with Mathematics / Statistics as one of the subject with PGDCA

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 & Embeding (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 – steam 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 – Displaing Text in lists – Ordered List – Using Ordered Lists – Using Netscape Extensions – Unordered Lists – Using <UL> 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 – Netscaps 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 Petrusha – 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 How 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. : Stategic 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 – Motorla 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 – cutest 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 – leftshit-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 Addision Wesley Publishing Company 1990.

PAPER 2.6 WEB DESIGN USING ASP

Unit 1: Introduction to ASP: What is ASP? – ASP Model – Scripting Languages – Delimeters 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 globall.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 Recordest 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 – lan 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 Tansmission: 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 Cirtcuits – 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: Lab Topoligies – CSMA-CSMA/CD – Wireless LAN's- IBM Token Ring – ATM. Hardware Addressing and Frame Type Identification; Specifying a receipient – 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. Corner – 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 Propogation 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 Tex 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.