COMPUTER APPLICATIONS

SECTION - A

Introduction to Computer and programming : Computer Organizations ; Number Systems : Logic gates ; Boolean Functions ; NAND implementation ; NOR implementation ; Binary Codes ; Combinations ; Circuits ; Sequential Circuits :

Programming Fundamental ; Algorithm Development ; Techniques of problem solving ; Flowcharting ; Programming in C, Pointers ; Structures and Unions ; File Management ; Object Oriented Programming : OOP programming ; methodologies ; Programming in C++; visual program design ; Programming using visual Basic/VC++ ;

Data Structures : Representation of Data ; Arrays ; Static and Dynamic implementations of data structures ; stacks and its applications ; Queues ; Linked Lists ; Trees; Graphs; Different types of searching and sorting techniques.

Business Data processing and File Systems : Data processing ; Concepts : relevance and cycle; Organization and attributes of business data processing ; Programming Methodologies ; coding, testing and refinements ; Business systems ; Business computing ; Programming with COBOL ;

Operating Systems : Operating Systems Overview and functions ; Processes, Process and CPU scheduling ; Memory management ; Segmentation ; Deadlock : Mutual Exclusions : classical Problems ; File system implementations ; Security and protection mechanisms ; Disks, clocks, terminals, Case study of WINDOWS, WIN NT and UNIX operating systems ;

System programming and Compiler Design : Sets, strings, theory of automata, DFA, NFA, lexical analysis ; Formal languages, regular grammars, context free grammars, sensitive grammars; Parsing techniques ; translation schemes ; code generation, symbol table management, error handling ; Assemblers, loaders, Linkers, relocating loaders etc.

Computer Architecture : MIMD and SIMD computers; CISC and RISE processors; Superscalar processors ; Hierarchical memory technology : Virtual memory technology; Linear pipeline processors; Multiprocessor systems, Parallel programming concepts; Parallel algorithms for multiprocessors ;

Software Engineering and System Design : Software product and process; Generic phases, Project scheduling and tracking ; Verification, validation and performance evaluation ; Software measurement ; Software testing techniques ; Software quality Assurance, Quality models : ISO 9000 and SEI-CMM ; Real time and Distributed systems; System development life cycle; System Design and modeling ; Data Flow diagram, Entity Relationship diagram, structure charts ;

Data Base Management Systems : Data abstraction and data integration; components of DBMS; Relational data manipulations; SQL; relational database design, functional dependencies, Oracle-Data types, SQL: Function, Procedure, Cursor, Exceptions, Triggers etc.

Data Communication and Computer Networks : Data Communication System; Data transmission : Time domain and frequency domain concepts; Analog and Digital data transmission; Modulation techniques; Computer network concepts: OSI and TCP/IP models; LAN and MAC Layer protocols: Data Link Layer; Network Layer: Routing techniques: Bridges, Routers, Gateways; Transport Layer: TCP, UDP; Internetworking; IP Addresses, Application Layer; Network programming: Sockets; IPX/SPX procedures ; RPC ; Remote login ;

Computer Graphics : Basics of graphics systems; Display devices; Input devices; Line drawing algorithms; DDA algorithms, Circle drawing algorithms, Pixel addressing, anti-aliasing, clipping; translation rotation, scaling reflection, shear, matrix representation.

Internet Technology and E-Commerce : Internet concepts; S/W requirements and Internet service products; Understanding the Web; Internet programming with JA VA/Perl ; creating applets, E-business concepts : Building blocks of E-Commerce ; Cryptography and security management ; Payment systems; building e-commerce system, system architecture, secure links etc ;