

# Syllabus Information Technology

## 3IT15 APPLIED MATHEMATICS

### UNIT-I:

Integral Transforms: Fourier Integral Theorem, Fourier and Laplace Transforms and their simple properties, Simple applications of Laplace transforms to solve ordinary differential equation including simultaneous equations, Solution of one dimensional diffusion and wave equation by transform method.

### UNIT-II:

Z-Transform definition and properties, Inversion, Relation with Laplace Transform, Application of Z-Transform to solve difference equation with constant coefficients.

### UNIT-III:

Matrices: Inverse of a matrix by adjoining method and its use in solving simultaneous equations, Rank of Matrix, Consistency of a system of equation, Eigen values, Eigen Vector, Reduction of a diagonal form, Statement and verification of Cauchy-Hamilton Theorem, Determination of a roots of algebraic equation by matrix method, Sylvester's Theorem, Association of Matrices with linear equation of second order with a constant coefficient.

### UNIT-IV:

Theory of Probability: Axioms and Models, Conditional Probability, Baye's Rule examples, Random Variable-Simple examples, Discrete and continuous random variable, Jointly distributed random variables.

### UNIT-V:

Distribution of random variable-examples, expectation-Moments, Conditional distribution and conditional Expectations, Stochastic Process-Bernoulli and poisson processes.

### TEXT BOOKS:

1. Mathematics for engineers by Chandrika Prasad
2. Advanced Mathematics for engineers by Chandrika Prasad.
3. matrix methods for engineering by L.A.Pipes.
4. Higher Engineering Mathematics by B.S Grewal
5. Probability, Statics with Reliability, Queing and Computer Science Applications by K.S Trivedi.

### REFERENCES:

1. Applied Mathematics for Engineers and Physics by L.A.Pipes and Harvile,
2. Probability Theory by Spiegel Murrey, Scham Series.
3. Probability and Statistics for engineers 4<sup>th</sup> ed, by Miller, Freunda and Johonsan

**3IT16**

## **PROGRAMMING LANGUAGE 'C**

### **UNIT-I:**

Algorithm, Flowchart ,program Development Steps, Basic Structure Of C Language, C tokens, Data Types, Declaration of Variables, Assigning values, Arithmetic, relational operators, Increment and Decrement Operators, Control operators, Expressions, Evaluation ,I/O operations, IF and Switch Statements, While Do While and for statements, Programming examples.

### **UNIT-II:**

One and Two Dimensional arrays, Initializations String Variable, Declaration, Reading, Writing, String Handling Functions, User defined functions, Variable and Storage Classes, Recursion, Preprocessor, Structure Definition, Initializing. Assigning Values, Passing of Structures as arguments, Union, Programming examples

### **UNIT-III:**

Declaration and Initializing Pointers, Pointer based expressions, Arrays, Strings, Functions and Structures, C program examples, File management in c, Opening and Closing, I/O operations on files, Programming Examples.

### **UNIT-IV:**

Enumerated data types, Renaming data types with typedef(),Type casting, Bit Wise Operators and Bit Manipulation, pointer to Pointer, Pointer to Function, Functions Returning Pointers, Functions with variable number of arguments, Dynamic Memory Allocation ,Programming examples.

### **UNIT-V:**

Drawing lines, Circle, rectangle, ellipse, arc using standard library functions, line drawing using DDA algorithm, Displaying text in various styles and fonts, drawing and filling shapes, pallets and colors, Programming examples.

PRACTICAL based on above syllabus

### **TEXT BOOKS:**

- 1.Programming in ANCI C by Balguruswami
- 2.The C Programming Language by Kerningham
- 3.LET US C by Y.C.Kanetkar.

## **3IT17      ELECTRONIC DEVICES AND CIRCUITS**

### **\*UNIT-I:**

Theory of PN junction diode, junction capacitance, Breakdown, Zener Diodes, Varactor Diodes, Tunnel Diode, Power Supplies: Half Wave and Full Wave, Voltage doublers, Filter types L and PI Regulation, Ripple Factors, Voltage Stabilizers

### **\*UNIT-II:**

Junction Transistor: Theory of operation, Static characteristics, Breakdown voltages, current, voltage and power limitation, Phototransistors

### **\*UNIT-III:**

Biasing arrangements, Voltage gain, current gain, input and output impedance for CS,CG and CD,FET amplifiers ,Brief discussion about UJT and SCR applications.

### **UNIT-IV:**

Biasing of BJT: Different biasing arrangements and stability factors, Thermal runaway in power transistors, voltage ,current, power gain, Input and Output impedances in CE and CS amplifiers and comparison,

### **UNIT-V:**

Feedback amplifier, Oscillators using BJT ,Barkhausen's creation, RC phase shift, wein bridge ,LC oscillators, Crystal oscillators, Frequency stability.  
Power amplifiers: Classification, A ,B and C classes, efficiency.  
Pushpull class: A, B, All complimentary symmetric, Distortion and its calculations

PRACTICAL based on above syllabus

### **TEXT BOOKS:**

- 1.Integrated Electronics by Millman and Halkias.
- 2.Electronic Devices and Circuits by Millman and Hallkis
- 3.Electronic Circuits-Discrete and Integrated by Schilling below
- 4.Micro Electronics Millman and Garbie

## **3IT18      ELECTRICAL SCIENCES**

### **UNIT-I:**

Network Theorems: Superposition, Reciprocity Thevenin's, Norton's, Maximum power transfer for AC circuits, Two port network parameter and interconnections.

### **UNIT-II:**

Nodal and Mesh analysis, Source Transformation, Duality.

### **UNIT-III:**

Measurements of Inductance, Resistance and Capacitance, Measurements of low, medium and high resistance, Elementary method of measurements of Inductance and Capacitance, Generalised theory of AC bridges, Their uses for Measurements of Inductance and Capacitance

### **UNIT-IV:**

Measuring Instruments: Classification, Absolute and secondary instruments, Electronics instruments (VTVM, CRO, DVM etc), Synchroscope

### **UNIT-V:**

Generalized principles of alternators and synchronous motors, Stepper motor.

### **TEXT BOOKS:**

1. Electrical Technology by B.L. Thereja.
2. Electrical and Electronics Measurement and Instrumentation by A.K. Sawney.
3. Control System Engineering by Nagrath and Gopal.

**UNIT-I:**

Analog Vs Digital Systems, Transistor as a switch, Boolean Algebra, Boolean identities, Logic problems, Binary, Gray, Octal, Hex and ASCII codes, Gates and their truth tables, DeMorgan's Law, Sum of Product and Product of Sums.

Combination Logic : Concepts, SSI, MSI & VLSI circuit classification, Standard TTL, CMOS characteristics, Karnaugh map, Simplification of sum product of sum, Solution to problem using K-maps.

**UNIT-II:**

Decoders, N Coaders, Multiplexes, D Multiplexes, code converters, Characteristics of display devices, Standard configuration of gates as SSI / MSI / LSI circuits, conversion of decoders / MUX into one another, use of MUX as a function generator.

**UNIT-III:**

Introduction to flip flop, latches, Concept of clock, Memory origination with flip flop as basic cell, RAM, ROM, EPROM & EEPROM - An overview, Master slave combination and conversion of one type to another type Flip flops

**UNIT-IV:**

Excitation tables and introduction to sequential circuits, Counters synchronous / asynchronous, different modulo counters with reset / clear facility, Design of counters of arbitrary modulo with K- maps, Lock free counters

**UNIT-V:**

Arithmetic circuits – Adders, Subtractors ( Half and full), BCD adder / subtractor. Concept of ALU and its design, Integrated circuit versions of multivibrators and their design parameters.

**TEXT BOOKS:**

1. Digital design by M.N. Mano
2. Digital electronic principals by Malvino
3. Digital integrated Electronics by Herbert Taub
4. Digital Circuits & Microprocessors by Herbert Taub
5. Introduction to Digital System by Ralmer
6. Digital Electronics by Ryan

## **3IT20           MANAGERIAL ECONOMICS AND ACCOUNTANCY**

### **UNIT-I:**

Meaning, Nature and Scope of Managerial economics, Concepts used in Management economics such as incremental concepts, Time perspective, Discounting for time, Opportunity cost equimarginalism, Law of diminishing marginal utility, Methodology of managerial economics, Simulation.

### **UNIT-II:**

Demand Analysis : Types of demand, Consumers and producers, Goods perishable and durable goods, Determinants of demand, price, income and cross elasticity of demand. Methods of demand forecasting.

### **UNIT-III:**

Theory of production, production function, Firm and Industry, Laws of return, Input, Output analysis, Break even analysis, Cost concepts, Fixed variable average marginal and total cost, depreciation cost.

### **UNIT-IV:**

New economic policy liberalization, Globalization with respect to current Indian economic scenario, International trade balance of trade and payments.  
Price and Output determination under perfect competition, monopoly monopolistic competition, Oligopoly, Pricing strategies adopted by the Indian and foreign companies.

### **UNIT-V:**

Accounting: evaluation of accounting, definition of accounting and book keeping, Accounting as an Information system, Users of accounting information, Financial and Managerial accounting, Accounting principles.

### **TEXT BOOKS:**

1. Managerial Economic by O.P.Chopra.
2. Managerial Economic by G.S.Gupta.
3. Managerial Economic by D.N.dwivedi

### **REFERENCES:**

1. Managerial Economic by P.N. Reedy.
2. Managerial Accounting by S.P.Gupta.
3. Managerial Economic by K.C.Shankarnarayan.

## **3IT21          COMPUTER WORKSHOP-I**

1.Introduction to PC Hardware.

2.Working under DOS Operating Environment.

3.Working Under WINDOWS Operating Enviroment.

4.Multimedia,IT in business.

## **3IT22      DISCRETE MATHEMATICS AND GRAPH THEORY**

### **UNIT-I:**

Mathematical Logic and Set Theory: Statement and Notation, Negation, Conjunction, Disjunction, Tautologies, Truth tables, basic concepts of set theory, Inclusion and equality of sets, The power set, Ordered pair and n-Tuples.

### **UNIT-II:**

Relation and Functions :Relation and Ordering, Properties of Binary relation in a set Relation, Matrix and the Graph Relation, Partition and covering of the set. Equivalence Relation, Partial Ordering, Partially Ordered set, Functions(defination and examples), Composition of function, Inverse functions, Characteristic function of a set.

### **UNIT-III:**

Group Theory : Semigroup and Monoids(defination and examples), Homomorphism of Semigroups and Monoids, Subsemi groups and Homomorphisms, cosets and Lagranges theorm, Normal subgroups, Codes and Group codes.

### **UNIT-IV:**

Rings(defination and examples) : Integral domains ring homomorphisms,ideas of Ring polynomial.

### **UNIT-V:**

Graph Theory : Basic concepts of Graph theory, basic definations, Paths and circuits.Reachability and connectedness, Matrix representation of graphs, Trees and their representation and their operations, Rooted trees,Path length in rooted trees,Multigraphs and Weighted graphs,Shortest paths in weighted graphs.

### **TEXT BOOKS:**

- 1.Discrete mathematics Structure with application to computer Science by J.P.Treamblay & R.Manohar.
- 2.Discrete Maths for Computer Scientists & Mathmaticians(chapter 2, 5, 7) by .L.Mott,A,Kandel,T.P.Baker.

### **REFERENCES:**

- 1.Elements of Discrete Mathematics by C.L.Liu.
- 2.Discrete Mathematics by Lipschutz.
- 3.discrete Mathematics by R.Johnsonbaugh

**4IT23**

## **ALGORITHM AND DATA STRUCTURE**

### **UNIT I:**

Introduction to algorithm :analysis of algorithms, the asymptotic notations, features of structured program,recursion,top down ,bottom up programming techniques ,divide & quauquer strategy.

Stacks & queues: fundamentals ,evaluation of expression, polish expressions and their compilation, application of stacks ,multiple stacks & queues, priority queues.

### **UNITII:**

LINKED LIST, Single linked list, linked stacks and queues, the polynomial addition, examples on link list, evaluation relation, circular link list, doubly link list, generalized link list.

### **UNIT III:**

SORTING methods, internal & external sort, bubble sort, exchange sort,insertion,selection,merge,heap,radix,quick sort, comparison with respect to their efficiency. searching methods:sequential,binary,indexed search, hashing techniques and collision handling mechanism

### **UNIT IV:**

Trees: definitions and terminology,representations,tree traversal examples on trees, threaded trees, binary tree, search tree, operation on multiways trees,B trees and B+trees.

### **UNIT V:**

Graph and their applications: computer representations of graphs, traversal techniques like breadth first search, depth first search, greedy algorithms ,study with respect to shortest path, minimum cost spanning tree.

Practicals based on above syllabus.

### **TEXT BOOKS:**

- 1.An introduction to data structures with applications by Trembley J.P.& Sorenson P.G
- 2.Algorithm data structures & programs by Niclaus worth.
- 3.data structures using C/C++ by Tenanbaun.

**UNIT I:**

analog systems: frequency spectrum of electromagnetic waves, their properties ,properties of Fourier transform, convolution in time & frequency domain, sampling theorem, noise types, sources.

**UNIT II:**

Mechanism of amplitude modulation & detection ,SSB,SSB-SC,DSB,various techniques of generation and detection of FM,comparison of various system based on SNR.

**UNIT III:**

Digital systems: bandwidth and rate of pulse transmission ,pulse spreading and interference,PSD of digital signals.

**UNIT IV:**

Pulse modulation:PAM,PWM,PCM and PPM systems,quantisation and noise ,delta modulation.

**UNIT V:**

Digital carrier system:ASK,PSK,FSK,DPSK systems,M-ary communication system

**PRACTICALS based on above syllabus.****TEXT BOOKS:**

- 1.Modern digital & analog communication system by B.P.Lathi
- 2.Communication system by B.P.Lathi
- 3.Digital communication by Proakis

**REFERENCES:**

- 1.Communication systems by A.B.Carlson
- 2.Principle of communication system by Taub & Schgilling
- 3.Communication Electronics by Kennedy

## **4IT25 DATA PROCESSING AND FILE ORGANISATION**

### **UNIT I:**

Structure organization of COBOL, character set, words, sentences, identification, division, environment division, data division, data types-numerical, alphabetical & alphanumeric, input-output sections, working storage sections PROCEDURE division features ACCEPT, DISPLAY, MOVE, arithmetic & COMPUTE verbs, sample programs, PERFORM & GOTO verbs, STRING UNSTRING, INSPECT & COPY verbs, sample programs using perform, miscellaneous COBOL statements

### **UNIT II:**

Conditional statements & table handling: relation conditions, nested conditions, class conditions, condition-name conditions, structured programming forms of program structure, structural flow charts, subscripting, OCCURS clause, multidimensional tables, table handling with PERFORM verb.

### **UNIT III:**

Business files: operation on files, master files, transaction files, report file, batch line-line processing, case studies, sequential access files, principles of magnetic storage & accessing blocking, inter record gap, label records, COBOL language instructions for sequential files.

### **UNIT IV:**

Direct access files: characteristics of disk storage & timing index, indexed sequencing files, COBOL instruction for indexed sequential file, relative file organization, division-remainder method, digit-analysis method, COBOL instructions for handling relative files.

### **UNIT V:**

**SORTING, SEARCHING & MERGING:** linear search sort, chained record sort, linear search, binary search, file sorting & merging sequential files.

**Report generation:** output layout design, handling date & detailed summaries, control breaks, language specifications for COBOL report writing.

### **PRACTICALS based on above syllabus.**

### **TEXT BOOKS:**

1. Information system through COBOL by S.Philiphakis, Leenard J.
2. COBOL programming by M.K.Roy, D.Ghosh Dastidar.

**UNIT I:**

strings,alphabet,language operations, finite state machine definitions,finite automation model, acceptance of strings and language, on deterministic finite automation, deterministic finite automation, equivalence between NFA and DFA,conversion of NFA into DFA,minimization of FSM,equivalence between two FSM's Moore and Mealy machines

**UNIT II:**

regular sets ,regular expressions, identity rules, manipulation rules, manipulation of regular expressions, equivalence between RE and fa, inter conversion, pumping lemma, closure properties of regular sets(proofs not required),regular grammars, right linear and left linear grammars, equivalence between regular linear programming and FA inter conversion between RE and RG.

**UNIT III:**

context free grammer,derivation trees,chomsky normal form,greibach normal form, push down automata,definition,model acceptance of cfl,equivalence of CFL and pda,interconversion ,enumeration of properties of CFL (proofs omitted)

**UNIT IV:**

Turing machine definition model, design of TM, computable functions, recursive enumerable language, church's hypothesis, counter machine, types of TM's (proofs not required),chomsky hierarchy of languages, linear bounded automata and context sensitive language,introduction of DFCL and DPDA,LR(O),grammar ,decidability of problems.

**UNIT V:**

Undecidability :properties of recursive & non-recursive enumerable languages, universal Turing machine,post-correspondence problem,introduction it recursive function theory.

**TEXT BOOKS:**

- 1.introduction to automata theory ,languages and COMPUTATION by hopcraft H.E. & ullman
- 2.an introduction to formal languages and automata by peter linz(chapter 1 to 12 except 6.3 and 6.4)

**REFERENCES:**

- 1.introduction to languages and the theory of automata by john c martin
- 2.elements of theory of computation by lewis H.P and papadimition C.H
- 3.theory of computation by mishra & chandrashekharan.

## **4IT27          COMPUTER ARCHITECTURE AND ORGANISATION**

### **UNIT I:**

Basic structure of computer hardware & software, functional unit, basic operational concepts, bus structures, software performance, distributed computing, addressing methods & machine program sequencing: memory locations, addresses & encoding of information, main memory operations, instructions & instruction sequencing, addressing modes, assembly language, basic input-output operations, stacks, subroutines.

### **UNIT II:**

The 68000 example: registers & addressing, instructions, assembly language program control, sorting example, logic instructions, program controlled I/O subroutines.  
Power PC examples: basic power PC organization, load & sorting instructions, arithmetic & logic instructions, flow control instructions, compare instructions, subroutines.

### **UNIT III:**

The processing unit: some fundamental concepts, execution of complete instruction, hardware control, performance considerations, microprogrammed control input-output organization, accessing I/O devices, interrupts, DMA.

### **UNIT IV:**

Arithmetic: number representations, additions of positive numbers, logic design of fast adders, addition & subtraction, arithmetic & branching conditions, multiplication of positive numbers, signed operand multiplication, fast multiplication, integer division.

### **UNIT V:**

The main memory: some basic concepts, semiconductors RAM memories, memory system considerations, semiconductor ROM memories, multiple-module memories and interleaving, cache memories, virtual memories, memory management requirements.  
Pipelining: basic concepts, instruction queue, branching data dependency, influence of pipelining on instruction set design, multiple execution units, performance considerations, examples of CISC, RISC & stack processors.

### **TEXT BOOKS:**

1. Computer organization & architecture by V.C. Hamacher, Z.G. Vranesic and S.G. Zaky.

### **REFERENCES:**

1. Computer organization & architecture by William Stalling
2. Computer organization & architecture by J.P. Hayes, Third Ed, McGraw Hill Publ

## **4IT28      COMPUTER WORKSHOP**

1.Introduction to networking accessories

2.Introduction to UNIX operating system

3.introduction to MS-WORD & POWER POINT

4.Familiarity with internet & world wide web.

**3IT29**

## **INFORMATION THEORY AND COMMUNICATION**

### **UNIT-I**

Digital communications: Introduction, digital ratio, digital amplitude modulation, frequency shift keying, phase shift keying, quadrature amplitude modulation, bandwidth efficiency, carrier recovery.

### **\*UNIT-II**

Probability random variable and stochastic processes, review of probability theory, random variable, probability density and distribution function, random process, periodic processes, stationary processes, auto correlation cross correlation application to signal analysis.

### **\*UNIT-III**

Data communications: history and communications, circuits, data communications, error control, synchronization, data communication, hardware, Data communication protocol and Network configuration:

Open system interconnection, synchronous protocol

### **\*UNIT-IV**

Digital transmission: PCM,

Differential pulse code modulation, pulse transmission, signal power in binary digital signal.

Multiplexing: time division multiplexing, TI digital carrier system, CCITT time-division multiplexed carrier system.

### **UNIT-V**

Shenon limit for information theory, channel capacity and discrete and continuous channels, error control coding, Hamming distance, linear block codes, CRC, convolutional codes

PRACTICAL BASED ON ABOVE SYLLABUS

### **TEXT BOOKS:**

1. Advanced Electronic Communication System by Wayne Tomasi
2. Communication System Analog, Digital by R.P.Singh., S.D.Sapre.
3. Modern digital and Analog communication System by B.P.Lathi.
4. Digital communication by Simon Haykin

## **3IT30 DISCRETE AND INTEGRATED CIRCUITS**

### **UNIT-I**

Linear waveshapping: RC, RL and RLC circuits, High pass, low pass circuits, response to step, ramp and exponential input, compensated attenuator.

### **\*UNIT-II**

Clipping and Clamping circuits: Diode clippers, Zener diode, clipper compensation for temp, changes in diodes, Clamping operation with and without source and diodes, Clamping operation with and without source and diode resistance Clamping circuit theorem effect of diode characteristics

### **UNIT-III**

Basic Operational Amplifier Circuits: Differential amplifier stages, current source, biasing, level shifting techniques, common mode and differential mode gains and impedance of a differential stage, over load protection circuits, frequency response and compensation.

### **\*UNIT-IV**

Comparator, sample and hold circuit basic concepts of multivibrator using transistor, design of bistable, monostable, astable multivibrator using OP-AMP.

### **UNIT-V**

Characteristics of ideal and non-ideal operational amplifier, error in measurement of various parameters, Integrator and Differentiator, Instrumentation amplifier, bridge amplifier, Introduction to 555,565 and 723 ICs

### **TEXT BOOKS:**

1. Microelectronics: Jacob Millam, McGraw Hill Book
2. Operational Amplifier and Applications by R. Gaikwad.
3. Op. Amp. Design and application by Tobey, Gramme and Huelsoman, McGraw Hill, Kogakusha.
4. Operational amplifier by Roy & Choudhary.
5. Pulse, Digital and Switching Waveform by Millman and Taub.

PRACTICALS based on above syllabus.

**UNIT I:**

Introduction ,object oriented development ,object oriented Terms, object module, object & classes link and associations,generalization,grouping constructs, a sample object module ,advanced object modeling, aggregation, abstract classes, multiple inheritance,metadata,candidate keys, constraints

**UNIT II:**

Dynamic modeling events & states, nested state diagrams, concurrency advanced dynamic modeling concepts, a sample dynamic module, relation of objects & dynamic module, functional models, data flow diagrams,specufying operations,constraints,a sample functional module.

**UNIT III:**

Design methodology, overview of analysis, problem statement, TM network, object modeling, various phases, dynamic modeling, various phases, adding operations, refining the object model, system design, overview ,sub systems, allocating subsystems, management of data stores,choosing software control,implementation,handling boundary conditions, trade offs.

**UNIT IV:**

Object design, overview ,designing algorithms, design optimization ,optimization of control, adjustment of inheritance, design of associations, object representations, physical packaging,documenting,design decisions.

**UNIT V:**

Comparison of methodologies ,information modeling ,notations, implementations ,programming languages ,data base systems ,object oriented reusability ,extensibility ,robustness.

**TEXT BOOKS:**

1.Object oriented modeling and design by James Rumbaugh,Michal Blaha,Williams premeriani,frwderick Eddy,William Lorenson FHL1997.

**PRACTICALS based on above syllabus.**

## **5IT32      SYSTEMS SOFTWARE**

### **UNIT I:**

Evaluation of components of programming system e. g .assemblers ,loaders ,macros,compilers,evaluation of operating system, functions of batch control language,facilities,machibe structure, machine language, assembly language

### **UNIT II:**

Design of assemblers:pass1,pass 2 algorithms,symbol table construction & processing searching & sorting.

### **UNIT III:**

Microinstructions, features of macro facility, implementation of single & two pass algorithms, macro calls within macros.

### **UNIT IV:**

Loaders: loader schemes, general absolute, subroutine linkages, relocating loaders,design of absolute and direct linking loaders, programming languages: functional modularity, asynchronous operation, multitasking

### **UNIT V:**

Feature of HLL:functional modularity, asynchronous operation,multitasking,compiler,general model of a compiler, phases of the compiler.

### **TEXT BOOKS:**

- 1.System programming by J.J.Donovan
3. System programming by D.M.Dhamdhare

## **5 IT 32      SYSTEMS SOFTWARE**

### **UNIT I:**

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### **UNIT V:**

Feature of HLL: functional modularity, asynchronous operation,multitasking,compiler,general model of a compiler, phases of the compiler.

### **TEXT BOOKS:**

- 1.System programming by J.J.Donovan
2. System programming by D.M.Dhamdhare

## **5IT33      COMPUTER GRAPHICS**

### **UNIT I:**

Geometry and line generation: points, lines, planes, pixels and frames buffers, types of display devices, DDA and Bresenham's algorithms, Bresenham's algorithms for circle generation, algorithm for ellipse generation.. aliasing and antialiasing

### **UNIT II:**

Graphics primitives: display files, algorithms for polygon generation, polygon filling algorithms, NDC (normalized device co-ordinates), pattern filling, 2D transformations: scaling, rotation, translation about arbitrary point reflections, zooming.

### **UNIT III:**

Segment tables, operations on segments, data structures for segments and display files, windowing and clipping: window, viewport, viewing transformations, clipping line and polygon clipping.

### **UNIT IV:**

3D Graphics: 3D primitives, projections, parallel, perspective, isometric, viewing transformations, hidden surfaces and line removal, painter's algorithm, Z-buffers, Warnock's algorithm

### **UNIT V:**

Curves and surfaces: Bezier and B-spline, sweeping method of interpolation, raster graphics architecture: simple raster-display system, display processor system, standard graphics pipeline.

### **TEXT BOOKS:**

1. Procedural elements for computer graphics by David F. Rogers, Mc Graw Hill.
2. computer graphics principles and practice by Foley, Van Dam, Feiner & Huges- Addison Wesley
3. Principles of interactive computer graphics by Newman & Sproul.
4. mathematical elements for computer graphics by David Rogers and Adams.

## 5 IT –34

### PRINCIPLES OF MANAGEMENT

#### UNIT I:

Concept of management & administration, management process, management as a profession, task and responsibilities for a professional manager and managerial skill required for a professional manager, modern approach .

#### UNIT II:

Function of management: outline and significance of planning, decision making, direct motivation, coordination, communication, time management

#### UNIT III:

Financial management –financial statement ,ratio analysis, budgets, organization and working of Indian market.

#### UNIT IV:

Meaning , nature and scope of HRM human resource planning, procurement and development of human resources(HR),organization, behavior, organizational change and development, quality of working life, management of stream, conflict, counseling.

#### UNIT V:

Materials management :meaning, nature, scope of materials management,inventory control-E.O.Q.and ABC analysis, store keeping and purchasing, outline of ISO 9000 and ISO 14000.

#### UNIT VI:

Marketing management and scope of marketing management , marketing concepts, market research , market segmentation, consumer behavior and advertisements.

#### TEXT BOOKS:

- 1.Principles of management by Kuntooz o.donnell.
- 2.Principles of management by P.C.Tripathi & P.N. Reddy, TMH pub.
- 3.financial management by chandra
- 4.human resource development management by M.Sheikh
- 5.Integrated material management by A.K.Mitra
- 6.Marketing management by Philipkatkar,Ramaswamy

## **6IT35      MICROPROCESSORS**

### **UNIT I:**

8085 microprocessor architecture, instruction set. addressing modes, memory organization & interfacing.

### **UNIT II:**

Assembly language programming, using 8085,8085 interrupts,8255 PPI and its organization

### **UNIT III:**

8254 programmable timer, organization & interfacing with 8085,8279 keyboard & display controller, organization &interfacing with 8085,analog & digital interfacing using 8255,keyboard/display interfacing using 8255 & 8279.

### **UNIT IV:**

Serial data transmission,USART 8251 & its organization & interfacing with 8085,8259 ,interrupts,controller,its organization & interfacing with 8085 ,DMA controller 8257 & its organization.

### **UNIT V:**

8086/8088 microprocessor ,architecture, instruction set,addressing modes,simple programs,memory organization and interfacing.

### **TEXT BOOKS:**

1. Microprocessor architecture programming & application with 8080/8085 by Ramesh S.Gaonkar
2. 16 bit microprocessor by Triebel and A.Singh
3. 16 bit microprocessor by Liu and Gibson

### **REFERENCES:**

- 1.Micrpprocessors and digital systems by D.V.Hall.

**PRACTICALS based on above syllabus.**

**UNIT I:**

Understanding user interface, basic considerations in designing a proper interface consistency, robustness of user friendliness, feedback, providing default values.

**UNIT II:**

Identifying user tasks, methods of accomplishing tasks, necessity of performing tasks ,event –driven programming, traditional programming, advantages of event –driven interfaces, types of events in windows.

**UNIT III:**

Menus, file menu, edit menu, menu structures, examples ,undo and redo features, graying a menu entry ,TEXT buttons, graphics buttons, examples.

**UNIT IV:**

Principles of good dialog box design, rules of thumb for dialog box design, kinds of dialog boxes, handling controls and radio buttons using radio buttons check boxes.

**UNIT V:**

Use of list boxes and combo boxes, rules of thumb in setting list boxes and combo boxes, varieties of list & combo boxes, examples.

**TEXT BOOKS:**

1.Designing of GUI applications by Alex Leavens ,BPB Publications,1995

## **6IT-37 DATABASE MANAGEMENT**

### **UNIT I :**

Introduction to database systems:overview,file systems vs. DBMS,various data models, levels of abstraction,structures of DBMS,relational model, relations and integrity constraints, relational algebra and calculus. SQL-basic,SQL query, nested queries, aggregate operations, Embedded SQL,dynamic SQL, security, views.

### **UNIT II:**

File organisation:storage media, buffer management, record and page formats, file organisation,various kinds of indexes and external sorting.

### **UNIT III:**

Query optimization and evaluation: introduction to query processing, selection Operation, projection operation, join operation, set operation and aggregate operation, relational query optimization, translating SQL queries,mho algebra, estimating the cost, relational algebra equivalence.

### **UNIT IV:**

Database design: overview of data base design,ER model, features of ER model, conceptual design using ER model, scheme refinement and normal forms, scheme refinement, use of decompositions, functional dependencies, normal forms,muti valued dependencies.

### **UNIT V:**

Concurrency control and recovery: concepts of transactioi,transactions and schedules,lock based concurrency control, lock management, specialized locking tecniques,concurrency control without locking, crash recovery, introduction to cash recovery, log recovery, check pointing, media recovery.

### **TEXTBOOKS:**

- 1.Database management systems by Raghu Rama Krishnan,MGH,1999
2. Database systems concepts by Henry Korth and others.

### **REFERENCE BOOKS:**

- 1.Database management and design by G.W.Hansen and J.V.pansen,PHI,1999.
- 2.An introduction to database system by C.Desai,Galgotia pub,1998.

PRACTICAL based on above syllabus using ORACLE.

## 6IT-38      JAVA PROGRAMMING

### UNIT I:

Data types, variables, arrays, integers, floating point types, characters, Boolean, literal operators: Arithmetic operators, bitwise operators, relational, boolean, logical, assignment, the ? operators precedence, use of parentheses, control statements: IF, switch, DO-WHILE, WHILE, FOR, Nested loop, break, continue return classes: fundamentals of classes, declaring objects, assigning objects, reference variables, methods, constructor, variable handling and garbage collection

Methods and classes: Overloading methods, using objects as parameters, arguments passing, returning objects, recursion, access control, understanding static, introducing final, nested inner classes, storage classes, command line arguments. Packages and Interface: packages, access protection, importing packages, interfaces. Exception handling: Fundamentals exception types, uncaught exception, try—catch, displaying description of an exception, multiple catch clauses, nested try statements, throw, throws, finally, built in exceptions, creating own exception subclasses. Multithreaded programming: JAVA thread model, thread priorities, synchronization, messaging, the thread class, runnable interface, creating Thread, creating multiple thread, using is Alive(), join(), thread Priority, synchronization, Inter Thread, communication, suspending, resuming, stopping threads, using multithreading.

### UNIT III :

I/O Applets : I/O stream, bytes stream, character stream, pre-define stream, reading console input, reading character, reading string, writing console output, the print write class, reading & writing files, applets fundamentals, transient and volatile modifiers, using instances of, strictfp, native methods.

### UNIT IV :

String handling : string constructor, special string operator, character extraction, string comparison, searching string, modifying string, data conversion using value of (), changing case of characters within a string, string buffer.

### UNIT V :

Networking : Networking basic socket overview, client/ server, reserved socket, proxy server, internet addressing , networking classes and interfaces, Factory method and instances methods TCP/IP client socket, URL, URL connections, TCP/IP server sockets, datagrams.

### TEXT BOOKS:

1. The complete References JAVA 2-3<sup>rd</sup> Ed. By Patrick Naughton, TMH Pub.

**PRACTICAL based on above syllabus**

## **6IT-39 SOFTWARE ENGINEERING**

### **Unit I:**

Software and software engineering. The importance of software, software software myths, software engineering paradigms, generic view of software engg, software matrices, measures and metrics, estimation, risk analysis, scheduling, size oriented metrics, function oriented metrics, metrics of software quality

### **UNIT II:**

Software project estimation and planning, decomposition techniques, LOC and FP estimation, effort estimation risk analysis, identification, projection, assessment, management and monitoring, software reengineering, requirement analysis tasks, analyst, software prototyping, specification principles, representation and the software requirements specification.

### **UNIT III:**

Object oriented analysis and data modelling, object oriented concepts, identifying objects, specifying attributes, defining operations, inter object communication, finalizing object definition, object oriented analysis modelling, data modelling, data objects, attributes and relationships, entity relationship diagrams, alternative analysis techniques, requirement analysis methods, data structure oriented methods, data structured system development, data flow diagrams and the DSSD approach, jackson system development.

### **UNIT IV:**

Software design fundamentals, The design process, design fundamentals, effective modular, design dataflow oriented design, object oriented design concepts, object oriented design methods, refining operations, program components & interfaces, implementation detail design, user interface design, human factors, human computer interface design, interface –design guidelines, interface standards.

### **UNIT V:**

Software quality assurance, software quality factors, quality assurance, quality metrics, Halstead's S/W science, software testing techniques/W testing fundamentals, white box testing, blackbox testing, validation testing, system testing, debugging software maintenance maintainability, maintenance tasks, reverse engineering and re-engineering.

### **TEXT BOOKS:**

1. Software Engineering by Roger S. Pressman, McGraw Hill, Second Ed
2. Software Engineering by D. Bell, I. Morrey-PHI pub

## **6IT-40 OPERATING SYSTEMS**

### **UNIT I:**

Introduction: What's an operating system, multiprogramming, time sharing real time systems, multiprocessor system, operating system services: types of the services, the user view, the operating system view. File System: File concept, file support, access methods. allocation methods, directory system, file protection, implementation issues.

### **UNIT II:**

CPU Scheduling: Review of multiprogramming, concept, scheduling concept, scheduling algorithms, algorithm evaluation, multiple processor scheduling  
Disk and drum scheduling: physical characteristics, first come first serve scheduling, shortest seek time first scheduling, SCAN, selecting a disk scheduling algorithm, sector queuing.

### **UNIT III:**

Memory Management: Preliminaries: Bare machine, resident monitor, swapping, multiple partition, paging, segmentations, combined systems.  
Virtual memory: Overlays, demand paging, performance of demand paging, page replacement, virtual memory concepts, page replacement algorithms, allocation algorithm, thrashing, other considerations

### **UNIT IV:**

Deadlocks: The deadlock problem, deadlock characterization, deadlock presentation, deadlock avoidance, combined approach to deadlock handling.  
Concurrent processes: precedence graph, specification, review of process concept, hierarchy of process, the critical section problem, semaphores, classical process coordination problem, interprocess communication

### **UNIT V:**

Protection: goal of protection, mechanism & policies, domain of protection, access matrix. implementation of access matrix, dynamic protection structures, revocation, Existing systems, language based protection, protection problems security.

### **TEXT BOOKS:**

1. Operating system concepts by J.L. Peterson & Silberschatz.

### **REFERENCE BOOKS:**

1. Operating System by Concept & Design by Milan Milenkovic  
2. Operating system by Madnick & Donovan  
3. An introduction to Operating Systems by H.M. Dietel

## **7IT41      COMPUTER NETWORKS AND INTERNET**

### **UNIT I :**

Introduction: The use of computer networks, networks for computers, network for people social issues, network hardware.LAN's,MAN's,WAN's.wireless networks, internet networks network software, protocol hierarchies, design issues for layers, interfaces and services, connection oriented and connectionless services,service primitives,relationship of services to protocols. the OSI reference model. TCP/IP reference model,Comparison of OSI & TCP/IP reference model ,critique of OSI model & protocols, critique of TCP/IP reference model. Example networks-novell netware,APRANET,NSFNET,THE INTERNET,smds,x.25 network, frame relay, network standardization-who's who in the telecommunication world, who's who in the international standards world.

### **UNIT II :**

Physical Layer –The theoretical basis for data communication-Fourier analysis, bandwidth-limited signals, maximum data rate of channel, transmission media-magnetic media, twisted pair coaxial cable, fiber optics, wireless transmission, microwave transmission, infrared and millimeter waves,lightwave transmission. Telephone system-structure, politics of telephones, local loop,trunks and multiplexing,switching,narrowband ISDN-services,architecture,interface,perspective on N\_ISDN,broad band ISDN & ATM-virtual circuits versus circuit switching, transmission in ATM networks, TM switches

### **UNIT III:**

Data link layer-design issues-services provided to the network Layer,framing,error control,flow control,error correcting & detecting codes,elementary data link protocols, simplex stop and wait simplex protocol for noisy channel, sliding window protocols, simplex stop and wait simplex protocol for noisy channel,slidingwindow protocols-one bit protocol, go back protocol, selective repeat protocol, the medium access sub layer – static and dynamic channel allocation in LAN's and MAN's, Multiple access protocol – ALOHA, CSMA, collision free protocol, limited contention protocol, wavelength division multiple access protocols, wireless LAN protocol, IEEE Standard 802 for LAN and MAN's –802.3 & Ethernet, token bus. Token ring, comparison 802.6, 802.2

### **UNIT IV :**

The network Layer – Design issues, services provided to the transport layer, internal organization, comparison of virtual circuit and datagram subnets, routing algorithms, optimality principle, shortest path routing, flooding, flow-based routing, distance vector routing, link state routing, hierarchical routing, broadcast & multicast routing, congestion control algorithms, general principles, prevention policies, traffic shaping, flow specifications, congestion control in virtual circuit subnets, choke packets, load shedding, jitter control, congestion control in multicasting, Internetworking– how networks differ, concatenates Virtual circuits ,connectionless internetworking, tunneling internetwork routing, fragmentation, firewalls, the Network layer in the

internet – IP protocol, IP address, subnets, internet control protocol, OSPF, BGP, internet multicasting.

**UNIT V:**

Transport and Application Layer – services provided to the upper layer, Quality of service transport service primitives, elements of transport protocols, addressing, establishment a connection, releasing a connection, flow control & buffering, multiplexing, crash recovery, network security – traditional cryptography, fundamental principles, secret-key algorithms, public key algorithms, authentication protocols, digital signatures, social issues.

**TEXT BOOKS:**

1. Computer Networks Third Edition by Andrew Tanenbanum (PHI Pub.)

**REFERENCES:**

1. Data & Computer Communications, 5<sup>th</sup> Ed. By William Stallings (PHI Pub.)
2. Data & Network Communications by Michael A. Miller
3. Computer Networks & E-commerce by Parag Diwan (Pentagon Pub.)

**PRACTICALS based on above syllabus.**

## **7IT42      DIGITAL SIGNAL PROCESSING**

### **UNIT I:**

Discrete time signals and systems, linearity, time variance, causality, stability properties of LTI casual system, response of LTI system to various input, convolutions, Sampling theorem.

### **UNIT II :**

Frequency Domain description of signals & systems, Fourier Transform of Discrete time signal, Properties of DFT, DFT's of typical discrete time signals.

### **UNIT III :**

The Z-Transform properties, ROC's relation with Fourier Transform, System function, Inverse Z-Transform, solution of difference equation using unilateral Z-transform.

### **UNIT IV :**

Digital filter design techniques : Design of FIR Filters based on Windows, Design of IIR digital filters from analog filters.

### **UNIT V :**

Introduction to FET algorithms : Decimation in time- FET algorithms, decimation in frequency FET algorithms, DCT.

### **TEXT BOOKS :**

1. Digital Signal Processing: Alen V. Oppenheim, W. Schaffer(PHI Pub.)
2. Digital Signal Processing: Proskias & Monalkies (PHI Pub.)

### **REFERENCE:**

1. Theory & Application of Signal Processing by Rabiner & Gold (PHI Pub.)
2. Digital Filter Design & Analysis by Andreas Antoniou (TMH Pub.)

PRACTICALS based on above syllabus using MATLAB & TMS C320 C50

## **7IT43      COMPUTER SYSTEM SECURITY**

### **UNIT I:**

Introduction : Attacks, services, mechanisms, security attacks, security services, a model for internet work security, encryption model, stenography, classical encryption techniques, modern techniques - simplified DES, block cipher principles, data encryption standard, strength of DES, differential and linear cryptanalysis, block cipher design principles, block cipher modes of operation, algorithm – triple DES, international data encryption algorithm, blow fish, RC5, CAST, RC2, characteristics of advance symmetric block ciphers.

### **UNIT II :**

Confidentiality using conventional encryption : placement of encryption function, traffic confidentiality, key distribution, random number generation, public key cryptography: principles, RSA algorithm, key management, Diffie – Hellman key exchange, Elliptic curve remainder theorem, discrete logarithms.

### **UNIT III :**

Message authentication and Hash functions : Authentication requirements, functions, codes, Hash function, security of Hash functions and MACs. Hash and Mac algorithms : MD5 message digest algorithm, secure hash algorithm (SHA-1), RIPEMD- 160, HMAC digital signatures and authentication protocols : Digital signatures, Authentication protocols, digital signature standard.

### **UNIT IV :**

Network security practice : Authentication applications – Kerberos, X.509 directory authentication service, Kerberos encryption techniques, email security : Pretty good privacy, S/MIME, data compression using ZIP Radix-64 conversion, PGP random number generation, IP security : Overview, Architecture, authentication header, encapsulating security payload, combining security, associations, key management.

### **UNIT V :**

Web security : Requirements, secure sockets layer and transport layer security, secure electronic transaction, networks management security : basic concepts of SNMP, SNMPv1 community facility, SNMPv3.

System security : Intruders, viruses and worms – intruders, viruses and related threats, Fire walls : design principles, trusted system.

### **TEXT BOOKS:**

1. cryptography and networks security principles and practice 2/e by William Stallings (Pearson Education Prentice Hall)
2. Network security Essentials Applications & Standard by William Stallings ( Pearson Education, LPP)

### **REFERENCE:**

1. cryptography in C and C++ by Michael Welschenbach (A press IDG Books India)
2. Introduction to data compression 2/e by Khalid Sayood (Morgan kaufmann/ Harcourt India).

**7IT44/2**

## **ARTIFICIAL INTELLIGENCE**

### **UNIT I**

Introduction : AL Problems, AI technique, defining problems as a state space representation, problem characteristics, production system characteristics, Heuristic search techniques : generate and test, hill climbing, best-first search, problem reduction, constant satisfaction, means-ends analysis.

### **UNIT II**

Knowledge Representation : Issues, predicate & proposition resolution, representing knowledge using rules, frames & scripts, semantic networks, conceptual dependency, truth maintenance system.

### **UNIT III**

Reasoning techniques : Elementary search techniques – depth first search, breadth first search, forward & backward reasoning, winding, unwinding, recursive & backtracking algorithm, Uncertainty Reasoning – probability theory, Bayesian networks, certainty factors methods, basics of fuzzy logic, nonmonotonics systems.

### **UNIT IV**

Game playing : Minimax search, alpha-beta cutoffs, planning – block world problems, STRIPS, hierarchical planning, nonlinear planning, Natural Language Processing – Grammar & Language. Chomsky hierarchy, transformational grammar, case grammar, systemic grammar, semantic grammar, basic parsing technique, transition networks RTN, ATN, semantic analysis & representation structures, natural language generation.

### **UNIT V**

Learning : Block architecture of learning system, types of learning – rote learning, learning by taking advice, learning from example, learning by analogy. Expert System – rule base architecture, non production system architectures, expert system shell, knowledge acquisition, knowledge system building tools.

#### **TEXT BOOKS:**

1. Artificial Intelligence by E. Rich & K. Knight (TMH Pub.)

#### **Reference Books:**

1. Introduction to Artificial Intelligence & Expert System by D.W. Patterson (PHI Pub.)
2. Principles of Artificial Intelligence by Nilsson N.J. (Narosa Pub.)

## **7IT44/1 OPERATIONS RESEARCH**

### **UNIT I :**

Definitions, characteristics and limitations of O.R., phases of O.R., modeling in O.R., tools and techniques of O.R., linear programming, formulation, solution of L.P.P., graphical method, simplex method, duality in L.P.P.

### **UNIT II :**

Allocation models – Assignment models multiple optima, prohibited assignment, transport model, prohibited and preferred routes, degeneracy.

### **UNIT III:**

Network analysis: Basic concept of network diagram, network construction, CPM, PERT, floats in network analysis, cost analysis of project.

### **UNIT IV:**

Queuing theory: Queuing process, components of queuing system, M/M/1 (OO/FIFO) model, simulation, monte carlo simulation, concept and application in various areas such as queuing system, network

### **UNIT V:**

Maintenance and replacement problems: Models for routine maintained and preventive maintenance decision replacement models that deteriorate with time and those fail completely.

### **TEXT BOOKS:-**

1. Problems in Operation Research by P.K.Gupta & Man Mohan (Khanna Pub.)
2. Mathematical Models in Operation Research by J.K.Sharma (Macmillan Pub.)

### **Reference Books:**

1. Introduction to Operation research by Hiller & Liberman (Holden Day Inc. Sanfransisco)
2. Operation Research by Kantiswaroop & Gupta (S.Chand Pub.)
3. Principles of Operation Research by Wagner (PHI Pub.)
4. Operation Research by Dr.B.S.Goel & S.K.Mittal (Pragati Prakashan)

**7IT44/2**

## **ARTIFICIAL INTELLIGENCE**

### **UNIT I**

Introduction : AL Problems, AI technique, defining problems as a state space representation, problem characteristics, production system characteristics, Heuristic search techniques : generate and test, hill climbing, best-first search, problem reduction, constant satisfaction, means-ends analysis.

### **UNIT II**

Knowledge Representation : Issues, predicate & proposition resolution, representing knowledge using rules, frames & scripts, semantic networks, conceptual dependency, truth maintenance system.

### **UNIT III**

Reasoning techniques : Elementary search techniques – depth first search, breadth first search, forward & backward reasoning, winding, unwinding, recursive & backtracking algorithm, Uncertainty Reasoning – probability theory, Bayesian networks, certainty factors methods, basics of fuzzy logic, nonmonotonics systems.

### **UNIT IV**

Game playing : Minimax search, alpha-beta cutoffs, planning – block world problems, STRIPS, hierarchical planning, nonlinear planning, Natural Language Processing – Grammar & Language. Chomsky hierarchy, transformational grammar, case grammar, systemic grammar, semantic grammar, basic parsing technique, transition networks RTN, ATN, semantic analysis & representation structures, natural language generation.

### **UNIT V**

Learning : Block architecture of learning system, types of learning – rote learning, learning by taking advice, learning from example, learning by analogy. Expert System – rule base architecture, non production system architectures, expert system shell, knowledge acquisition, knowledge system building tools.

### **TEXT BOOKS:**

1. Artificial Intelligence by E. Rich & K. Knight (TMH Pub.)

### **Reference Books:**

1. Introduction to Artificial Intelligence & Expert System by D.W. Patterson (PHI Pub.)
2. Principles of Artificial Intelligence by Nilsson N.J. (Narosa Pub.)

## **7IT44/3 VLSI DESIGN**

### **UNIT –I**

Switching algebra theorems,simplification of boolean functions using Karnaugh maps of combinational logic circuits,fault detection and location in two level circuits ,clock concept in flipflops,shift registers.

### **UNIT II**

Introduction to CMOS circuit,MOS Transistory theory,CMOS processing technology,circuit characterization and performance estimation,CMOS circuit and logic design.

### **UNIT III:**

Design of synchronous sequential machines usingh Mealy and Moore principles,minimization of state machines and their standard for ms FPGA,PLA,PLG

### **UNIT IV:**

Introductory concepts of VHDL and Verilog language,HDL based programs for decoder,encoder,multiplexer,counters,flipflops and finite state machines.

### **UNIT V:**

Architecture of 8 bit and 16 bit processor namely 8085,8086 concepts of increasing the speed of processor,architecture of other advanced processor,memory management ,memory controllers,Introductory concepts of USB AND PCI buses.

### **TEXTBOOKS:**

1.Principles of CMOS VLSI Design by Weste and Eshraghian(Addison-Wesley pub)

### **Reference BOOKS:**

- 1.Digital logic computer Design by Morris Mano (PHI pub)
- 2.A VHDL Primer by Dr.Bhasker (Addison –Welsey Longman pub)
- 3.Verilog by palnitkar
- 4.VHDL by Nawabi (McGraw Hill pub)
- 5.VHDL by perry
- 6.Microprocessor Architecture programming annd Applications with 8080/8085 by R.S.Gaonkar(Wiley Eastern pub)
- 5.VHDL by Perry
- 6.Microprocessor and Digital Systems by D.V.Hall(TMh pub)

## **71T45/1 FUZZY SYSTEM AND NEURAL NETWORKS**

### **UNIT-I:**

Basics of Artificial Neural Networks, characteristics of neural networks, historical development of neural network principles, model of neuron, basic learning in ANN:- supervised learning, unsupervised learning, reinforced learning ,competitive learning, the delta rule, gradient descent rule,Hebbian learning, parameters of ANN. ANN Topologies-Modeling ANNs,ANN learning & program, learning algorithms. Discrimination ability-Learning separable ANNs,multilinear ANNs,and nonlinear separable ANNs.

### **UNIT II:**

McCulloch-Pitts model, perception-Original perceptron ,perceptron learning procedure, logic operations with simple layer perceptron, delta learning algorithms. ADALINE,MADALINE models, Winner-Takes-All learning algorithm, Back propogation learning algorithm-mathematical analysis,application and criticism.

### **UNIT III:**

Hopfield model-Mathematical analysis,Hopfield learning algorithm,discrete time ,Hopfield net and competitive learning model. Simulated annealing,Boltzman machine.

### **UNIT IV:**

Fuzzy logic-propositional logic, membership function, fuzzy logic ,fuzzy rule generation, defuzzification of fuzzy logic, time dependent fuzzy logic, Temporal Fuzzy Logic(TFL)-time invariant membership function, time variant membership function,intervals,semilarge intervals, internal operators, temporal fuzzy logic syntax,defuzzification of temporal fuzzy logic.

### **UNIT V:**

Fuzzy Neural networks(FANN)-Fuzzy neural example,Neuro fuzzy control-traditional control,neural control,fuzzy control, fuzzy neural control, applications.

### **TEXT BOOKS:**

- 1.Understanding Neural Networks and Fuzzy Logic, Basic concepts and applications.
- 2.Fuzzy sets uncertainty and information by George Klir(PHI pub)
- 3.Neural Networks and fuzzy system by B. Kosko (PHI pub)

### **REFERENCE BOOKS:**

- 1.Neural Networks, algorithms, application and programming techniques by J.P. Freeman & David M. Skapura(Perarson Education pub.)
- 2.Fuzzy neural control , principles, algorithms and applications by Junhong Nie and Derek Linkens (PHI pub)

## **7IT45/2      MULTIMEDIA SYSTEMS**

### **UNIT I:**

Multimedia- definitions, CD-ROM and the multimedia highways, uses of multimedia introduction to making multimedia, the stages of projects, requirements to make good multimedia, multimedia skills and training, the multimedia tea, training opportunities in multimedia.

### **UNIT II**

Multimedia hardware, Macintosh and windows production platforms, hardware peripherals connections, memory and storage devices, input devices output hardware, communication devices, media software, basic tools, making instant multimedia authoring tools.

### **UNIT III:**

Multimedia building blocks- text, sound, images animations, video.

### **UNIT IV:**

Assembling and delivering a project, planning and costing, designing and producing content and talent, delivering, CD-ROM technology, DVD Tech.

### **UNIT V:**

Multimedia and Internet- History, web servers, web browsers, VRML, working on the web: text, animation, images and sound for the web, multimedia applications, media communication, media consumption, media entertainment and multimedia games.

### **TEXT BOOKS:**

1. Multimedia Making Work- by Tay Vaughan (TMH), 3<sup>rd</sup> Ed.

### **REFERENCE:**

1. Multimedia systems design by K.Andleigh, K. Thakkar (PHI Pub.)
2. Multimedia: Computing Communications & Applications  
By Ralf Stein and Klara Nahrstedt.
3. Advanced Multimedia Programming by Steve Rimmer (McGraw Hill Pub.)
4. Multimedia Literacy by Fred T. Hoftstetter(McGraw Hil Pub.)

## **7IT45/3      DIGITAL IMAGE PROCESSING**

### **UNIT I:**

Monochrome image representation and processing system (Block diagram), Basic relationship between pixels, neighbors of pixels, connectivity, labeling of connected components, Relation equivalent and transitive closure, distance measure, arithmetic and logical operation, application of image processing.

### **UNIT II:**

Image Enhancement : point operation, histogram modeling, spatial operation, transform operation, multi-spectral image enhancement, color image processing and enhancement, DFT, DCT.

### **UNIT III:**

Image Compression : Compression fundamentals, error free compression, variable length coding, bit plane coding, run line coding, entropy coding, loss less predictive coding, Huffman's coding, lossy compression, lossy predictive coding, transform coding.

### **UNIT IV:**

Image Restoration : Degradation model, diagonalization of circulant and block circulant matrices, algebraic approach to restoration, inverse filtering, weiner filtering restoration, interactive restoration, restoration in spatial domain, coordinate transformation and geometric correction.

### **UNIT V:**

Image segmentation and representation : Detection of discontinuities, point detection, line detection, edge detection, image thresholding, role of illumination, global thresholding, region oriented segmentation, basic formulation, region growing by pixel aggregation, region splitting and merging, image representation, chain codes.

### **TEXT BOOKS:**

1. Digital Image Processing by R.C.Gonzalez, R.E.Woods (Addison Wesley Pub.)
2. Fundamentals of Digital Image Processing by A.K.Jain (PHI Pub.)

### **REFERENCE:**

1. Fundamentals of Electronics Image Processing by A. R. Weeks.

## **7IT45/4      CAD/CAM**

### **UNIT I:**

Introduction CAD/CAM define, product cycle & CAD/CAM automation & CAD/CAM. Fundamental of CAD/CAM design process, Application of the computer for design, creating and manufacturing database benefits of CAD.

### **UNIT II:**

Hardware in CAD design workstation, the graphics terminal, operator, input devices plotter & other output devices, CPU secondary storage, Computer graphics software and database, the software confirmation of a graphics system, function of a graphics package constructing the geometry, transformation database structure.

### **UNIT III:**

Conventional numerical control, fundamental of CAM, NC concepts basic components of NC systems. The NC procedure NC coordinate systems, NC motion control systems application of NC economics of NC.

### **UNIT IV:**

NC part programming the punched tape in NC tape coding and format manual part programming computer assisted part programming, Art Language NC programming with interactive voice NV programming.

### **UNIT V:**

Computer control NC problem with conventional NV, CNC, DNC, combined DNC systems, adaptive control machine systems, production planning and control.

### **TEXT BOOK :**

1. CAD/CAM by P. Grover, Emory W. Zimmers Jr. (McGraw Hill Pub.)

### **REFERENCE :**

1. CAD/CAM Theory & practice by I.Zeid (TMH Pub.)
2. Computer Aided Design : Software and Analytical Tools by Rajiv S. Krishnamurthy C.S. (Narosa Pub.)
3. CAD/CAM by P. Radhakrishnamurthy and Subramanyam (Wiley Eastern Pub.)

**UNIT I:**

Meaning, nature and scope of MIS, decision support, systems approach, the system view of business, MIS organization with in industrial and business unit, managers views of information system, development of management organizational theory, management and organization, behavior, information, data.

**UNIT II:**

Planning with MIS, need for planning, characteristic of plan, strategy & development of plan, role of MIS in strategy development & strategy planning decision, from strategic plans to short range plans.

**UNIT III:**

Meaning, nature & feature of organization, organization and information system structure, management & decision making and MIS, MIS as a technique for mailing programmed decision & non-programmed decision assisting information system.

**UNIT IV:**

Nature of conceptual design of an MIS. Preparing member of the organization for change, studying, managerial and functional process systems, determining information needs, determining information sources, outlining general information flow and database system, hardware and software configuration, documenting the conceptual design.

**UNIT V:**

Organization for implementation, planning the implementation, organization training and development, acquisition, conversion, testing, operation, evaluation and maintenances.

**TEXT BOOKS:**

1. Management Information Systems Concepts & Design by Robert G. Murdic (PHI Pub.)

**REFERENCE:**

1. Management Information Systems by S. Sadagopan (PHI Pub.)
2. Management Information Systems by James A. Obrien (Galgotia Pub.)
3. Management Information Systems the Managers View by Robert Schultueis and Mary Sumnanov.
4. Management Information Systems by A. K. Gupta (S.Chand Pub.)

## **8IT47          DISTRIBUTED DATABASES & OBJECT ORIENTED DATABASES**

### **UNIT I:**

Distributed database features – distributed database management systems- review of databases and computer networks, levels of distribution transparency, references architecture, type of data fragmentation, distribution transparency for read only applications and update applications, distributed database access primitives and integrity constraints.

### **UNIT II:**

Distributed database design, a frame work for distributed database design, the design of database fragmentation, the allocation of fragments, translation global queries to fragment queries, equivalence transformation for queries, transforming global queries into fragment queries, distributed grouping and aggregate function evaluation, parameter queries.

### **UNIT III:**

Query optimization, problem in query optimization, objectives in query process optimization, simpler representation of queries, model for query optimization, join query, general queries, concept of two phase commit, resolving distributed transaction, concept of replication, snapshot on replication and multimaster replication, conflict resolution in multimaster replication concurrency control and database recovery in distributed database.

### **UNIT IV:**

The evolution of object oriented concepts, object-oriented concepts, characteristics of an object-oriented data model, object schemas, class-subclass relationship, interobject relationships, late and early binding, support for versioning, Similarities & differences between OODM and other data models, features of an object-oriented databases management system, OODBMS architectural approaches-extended relational model approach, semantic databases approach, object oriented databases programming language extension approach, DBMS generator approach, object definition language and object query language.

### **UNIT V:**

OODBMS architectures, performances issues in OODBMS, application selection for OODBMS, database design for an object relational database management system (ORDBMS), structured types & ADTs object identity, extending ER model, using nested collections, storage and access methods, query processing, query optimization, design and architecture of POSTGRES, distributed computing in CORBA and EJB.

**TEXT BOOKS:**

1. Distributed data bases principle and systems by Ceri & Pelagatti (McGraw Hill Pub.)
2. Fundamental of Databases System by Elmisky & Navathe (3<sup>rd</sup> Ed. Addison Welsey)
3. Object Oriented Databases System –Approaches & Architectures by C.S.R. Prabhu (PHI Pub.)

**REFERENCES:**

1. Databases System – Design Implementation & Management by Peter rob & Carlos Coronel. (Course Tech.)
2. Databases Management Systems by Raghu Ramakrishnan & Johannes Gehrke. (McGraw Pub.)
3. Oracle 8I Distributed Databases Replication Manual

PRACTICALS based on above syllabus.

## **8IT48      WEB TECHNOLOGIES**

### **UNIT I :**

Basic tools of internet access, email, ftp, news, www, anarchie, introduction to internet programming, sockets : connections, attributes domains, types and protocols (sockets). Creating and closing sockets, socket communication, client server application using C on Linux platform.

### **UNIT II :**

Standard use for www documents on internet, HTTP, MIME, SGML, DTD, MTNL, URL, URL, HTML tags, special characters, images, tables, forms, the hyperlinks, HTML URL's serving HTML pages.

### **UNIT III :**

CGI : CGI programming using C.

### **UNIT IV :**

XML basics, understanding markup languages, structures and syntax, valid Vr. Well formed XML, DTD (document type Definitions) classes.

### **UNIT V :**

Scripting XML, XML processor, parent child relationship, XML as a data, data type in XML, XML namespaces, linking with XML, simple link, the HTML way, XSL : XML with style, style sheet basics, XSL style sheets.

### **TEXT BOOKS :**

1. XML in action web technology by William J. Pardi (PHI Pub.)

### **Reference Books :**

1. Step by Step XML by Michael J. Young (PHI Pub.)
2. Designing Interactive Web sites by James I. Mohler & John M. Duff (Thomson Learning)

PRACTICALS based on above syllabus.

1. Socket programming and CGI using C on Linux platform
2. HTML, XML web page designing.

## **8IT49      ELECTRONICS COMMERCE**

### **UNIT I :**

Introduction to electronics-commerce : The scope of E-COM, E-COM and trade cycle, electronic market, electronic data interchange, internet commerce, E-Commerce in perspective, the value chain, supply chains, Electronics Commerce Software : What kind of software solutions Do you need ? marketing smarts, hosting services, basic packages, midrange package, enterprise solutions for large firms.

### **UNIT II :**

Business to Business Electronics-commerce : Inter-organizational transactions, electronics, electronics markets, electronics data interchange (EDI), EDI-technology, EDI and business, inter organizational e-com.

### **UNIT III :**

Business to consumer electronic commerce : consumer trade transactions, the elements of e-commerce – elements, e-visibility, the e-shop, online payment, delivering the goods, after sales service, internet e-com security, a website evolution mode.

e-business : Internet book shops, grocery supplier, software supplies and support, electronic newspaper, internet banking, virtual auctions, on-line share-dealing, e-diversity.

### **UNIT-IV:**

Security threats to E-Commerce : Security overview, intellectual property threats, electronics commerce threats, CERT (Computer Emergency Response Team) Implementing security for E-COM : protecting E-COM assets, protecting intellectual property, protecting client computers, protecting E-COM channels, ensuring transaction integrity, protecting the commerce software.

### **UNIT V:**

Electronics payment system : The basics of electronics payment systems. Electronics cash, electronics wallets, smart cards, credit and charge cards. The environment of electronic commerce : international legal, ethical and tax issues : International nature of electronics commerce, the legal environment of electronics commerce, taxation and E-COM, business plans for implementing E-COM : Planning the E-Commerce project, managing electronic commerce implementation.

### **TEXT BOOKS :**

1. e-Commerce by David Whiteley (McGraw Hill Pub.)
2. Electronics-Commerce by Gary P. Schneider & James T. Perry.  
(COURSE TECHNOLOGY Thomson Learning)

### **REFERENCE:**

1. Business on the net by K.N.Agarwal, A.Lal, Deekjha Agarwal (Macmillan Pub.)

## **8IT50/1      ENTERPRISE RESOURCE PLANNING**

### **UNIT I:**

INTRODUCTION : Business needs and ERP, ERP as an overview, entries as an overview, Benefits of ERP, ERP and related technologies, ERP architecture, business process reengineering, data warehousing, data mining, on line analytical processing supply choice management.

### **UNIT II:**

ERP IMPLEMENTATION :Client server architecture and ERP, ERP implementation life cycle, implementation methodologies, ERP implementation – The hidden cost, organizing implementation, vendors, consultants and users, contracts with vendors, consultants and employees, project management and monitoring. After ERP implementation.

### **UNIT III**

THE BUSINESS MODULE : Business models in an ERP packets, finance, manufacturing human resource, plant maintenance, materials management, quality management sales and distribution.

### **UNIT IV**

Selection of ERP, SWOT analysis of various ERP products supply chain enabled ERP.

### **UNIT V**

ERP and Electronic Data Interchange (EDI) integration, ERP in manufacturing and non-manufacturing industries.

### **TEXT BOOKS:**

1. ERP Demystified by Aleris Leon (TMH Pub.)
2. Enterprise Resource Planning by Parag Diwan and Sunil Sharma (Pentagoan Pren.)

## **8IT50/2 FIBRE OPTICAL COMMUNICATION**

### **UNIT –I**

Fiber optic communication system : Principles of optical communication – attributes & structures of various fibers, propagation in fibers, ray model, numerical aperture and multipath dispersion in SI & GI fiber, modes and power flow in fibers.

### **UNIT-II**

Manufacture of fiber & cables, fiber joints, splices and connectors, distribution networks & components, switches, fiber optic isolator, repeaters.

### **UNIT-III**

Signal degradation in fibers, optical sources, P-I-N & avalanche photo detector, operation & performance, optical receiver-operation & performance.

### **UNIT-IV**

Transmission link-point to point links, WDM, data buses, star, directional & T-coupler, NRZ, RZ & block codes, optical networks.

### **UNIT-V**

Measurements in OF-attenuation, dispersion, RI profile, optical source characteristics, monomode fiber characteristic measurements, Ete pattern technique, system design, analog system & digital system.

### **TEXT BOOKS :**

1. Optical Fiber Communication by G. Keiser, McGraw Hill.
2. Fiber Optic Communication by Joseph C. Palais (PHI, 3<sup>rd</sup> Ed.)

### **Reference:**

1. Optical Fiber Communication Principles and Practice by John Senior (PHP International)
2. Optical Communication System by J. Gower (PHI).

## **8IT50/3      MODELLING & SIMULATION**

### **UNIT-I**

System Models : concepts of a system, system environment, stochastic activities continuous & discrete systems, system modeling, types of models static physical models, dynamic physical models, static & dynamic mathematical models, principles used in modeling.

System Studies : Subsystems, a corporate model, environment segment, production segment, management segment, the full corporate model, types of system study, system analysis design & postulation.

### **UNIT-II**

System simulation :the technique of simulation, the montecarlo method, comparison of simulation and analytical methods, experimental nature of simulation, types of system simulation numerical computation technique for continues & discrete models, distributed lag models, cobweb models. Continuous System Simulation – continuous system models, differential equation, analog computers, analog methods, hybrid computer, digital-analog simulators, CSSLS, CSMP-III, hybrid simulation, feedback systems, simulation of an autopilot, interactive systems, real-time simulation.

### **UNIT-III**

System Dynamics- Historical background, exponential growth models & decay models, modified exponential growth models, logistic cures, generalization of growth models, system dynamics diagrams, multi-segments models, time delay, feedback in socio-economic systems, biological example, world models, the dynamo language.

Probability Concepts in Simulation – Stochastic variables, discrete probability functions, continuous probability functions, measures of probability functions, continuous uniformly distributed random numbers, computer generation of random nos., a uniform random number generator, generating discrete distributions, non-uniform continuously distributed random numbers, the rejection methods.

### **UNIT-IV**

Arrival Pattern & Service Times : Congestion in system, arrival patterns, poisson arrival pattern, exponential distribution, coefficient of variation, Erlang distribution, hyper-exponential distribution, service times, normal distribution, queuing discipline, measures of queues, mathematical solutions of queuing problems, utilization as design factor, grade of service.

### **UNIT-V**

Discrete System Simulation : discrete events, representation of time, generation of arrival patterns, simulation of telephone system, delayed calls, simulation programming tasks.

Introduction to GPSS : GPSS programs, general description, action times, succession of events, choice of paths, simulation of manufacturing shop, facilities & storage, gathering statistics, conditional transfers, program control statements priorities & parameters, standard numerical attributes, functions, simulation of a super market, GPSS model, of simple telephone system.

**TEXT BOOKS:**

1. System Simulation second Edition by Geoffrey Gordon (PHI Pub.)
2. System Simulation with Digital Computer by Narsingh Deo (PHI Pub.)

**Reference:**

1. "System Simulation " the Art & Science by Shannon R.E. (PHI Pub.)
2. The Application of GPSS to Discrete System Simulation by Gordon, Englewood Cliffs (PHI)

**UNIT-I**

Typical real time application : Digital control, high-level controls, signal processing other applications. Hard versus soft time system: Jobs & processors, release times, deadlines, timing, constraint, Hard & Soft timing constraint, Hard real time systems : soft real time systems : A Reference model of Real-time systems, processors and resources, temporal parameters of real-time workload, periodic Task model, precedence constraint & data dependencies other types of dependencies, functional parameters, resource parameter of Jobs & parameters of resources, scheduling Hierarchy.

**UNIT-II**

Approach to real time scheduling : Clock-driven approach, weighted round-robin approach, priority-driven approach, dynamic versus static systems, effective release times and deadlines, optimality of EDF & LST algorithms, nonoptimality of the EDF & LST, challenges in validating timing constraints in priority-driven systems, off line versus on-line scheduling, clock driven scheduling, notation & assumptions, static timer-driven scheduler, general structure of cyclic schedules, cyclic executives, improving the average response time of a periodic jobs, scheduling sporadic jobs, practical consideration and generalizations, algorithms for constructing static schedules, pros-cons of clock-driven scheduling.

**UNIT-III**

Priority-driven scheduling of periodic tasks: Static assumptions fixed-priority versus dynamics priority algorithms, maximum schedulable utilization, optimality of the RM & DM algorithms, a schedulability test for fixed priority tasks with short response times & with arbitrary response times, sufficient schedulability conditions for the RM & DM algorithms, practical factors, scheduling a periodic & sporadic jobs in priority-driven systems: assumptions & approaches, deferrable servers, sporadic servers, constant utilization, total bandwidth and weighted fair-queueing servers, slack stealing in dead-line driven systems, slack stealing in fixed-priority systems, scheduling of sporadic jobs, real time performance for jobs with soft timing constraints, a two level scheme for integrated scheduling.

**UNIT-IV**

Resources and resource access control : assumption on resources and their usage, effects of resource contention & resource access control, non preemptive critical sections, basic priority-inheritance protocol, basic priority-ceiling protocol, stack-based priority –ceiling protocol, use of priority-ceiling protocol in dynamic-priority systems, preemption-ceiling protocol, controlling accesses to multiple-unit resources, controlling concurrent accesses to data object., multiprocessor scheduling, resource access control and synchronization : model of multiprocessor & distributed systems, task assignment, multiprocessor priority-ceiling elements of scheduling algorithms for end-to end tasks in heterogeneous systems, predictability and validation of dynamic multiprocessor system flexible applications, tasks with temporal distance constraints.

## **UNIT-V**

Real-time Communication: model of real time communication, priority-based service discipline for switched networks, weighted round-robin service discipline, medium-access control protocols of broadcast network and resource reservation protocols, real-time protocol, communication in multicomputer systems.

Operating systems : Overview time services & scheduling mechanisms, other basic. OS functions, processor reserves and resource kernel, open system architecture, capability of commercial Real-time OS, predictability of general purpose operating systems.

## **TEXT BOOKS:**

1. Real time Systems by Jane W.S. Lin (Pearson Education Asia Pub.)

## **8IT51/1 MOBILE COMMUNICATIONS**

### **UNIT I:**

Introduction to wireless communication, introduction to cellular system, wireless transmission: frequencies for radio transmission, signal propagation

### **UNIT II:**

Introduction to medium access control: TDMA, CDMA GSM: System architecture [protocols, localization and calling, handover]

### **UNIT III:**

Modulation Techniques : QPSK transmission and detection techniques, quadrature amplitude modulation (QAM), transmitter & receiver.  
Spread spectrum: direct sequence and frequency hopping

### **UNIT IV:**

Wireless LAN: IEEE 802.11  
Wireless ATM: Services, reference model, functions  
Satellite Systems: GEO, LEO, MEO < routing, localization and handover

### **UNIT V:**

Mobile network Layer: Mobile IP, dynamic host, configuration protocol, ad hoc networks.  
Mobile transport layer: traditional TCP, indirect TCP & mobile TCP, Architecture of wireless Application protocol (WAP)

### **TEXTBOOKS:**

1. Mobile communication by Jochen Schiller (Addison Wesley pub)
2. Wireless Communication principles & Practice by T.S. Rappaport (PHI pub)

### **REFERENCE BOOKS:**

1. Mobile communications Design Fundamentals by William C.Y. Lee (John Wiley & Sons pub)

## **8IT51/2      PATTERN RECOGNITION**

### **UNIT I:**

Statistical Decision Theory, Probability-probabilities of events, random variables, joint distribution & densities, moments of random variables, estimation of parameters from samples, minimum risk estimators.

### **UNIT II:**

Statistical Decision Theory ,probability-probabilities of events, random variables, joint distribution & densities ,moments of random variables, estimation of parameters.

### **UNIT III:**

Non parametric decision Making-Histograms, kernel and window estimators, nearest neighbor classification techniques, adaptive decision boundaries, adaptive discriminate functions, minimum squared error estimation functions, choosing a decision making technique.

### **UNIT IV:**

Clustering-Introduction ,hierarchical clustering, partitional clustering

### **UNIT V:**

Processing of waveforms and images-Gray level

### **TEXT BOOKS:**

1. Pattern recognition & Image Processing by Earl Gose, Richard Johnsonbaugh & Steve Jost. (PHI Pub.)

Reference:

1. Fundamentals of digital signal processing by A.K. Jain

## **8IT51/3     ADVANCE MICROPROCESSOR**

### **UNIT-I**

Memory organization & interfacing of 8086, interfacing of peripherals PPI 8255, PTI 8254, PIC 8259 with 8086.

### **UNIT-II**

Interfacing of DMAC 8257, CRT controller 6845, USART 8251 with 8086. 8087 Numerical Data processor, its architecture & programming.

### **UNIT-III**

80386 Processor-its architecture, pin functions, addressing modes, instruction set, simple assembly programming, assembler directives.

### **UNIT-IV**

Real & protected modes of 80386, memory management, multitasking, segmentation, paging, cache & virtual memory.

### **UNIT-V**

Pentium Microprocessor-introduction, register organization, memory management, Pentium instructions.

### **TEXT BOOKS:**

1. Programming and Interfacing of 8086/8088, by D.V.Hall, Lui Gibson
2. The Intel Microprocessor, 8086/8088, 80186/80188, 80286/80386, 80486, Pentium pro processor Architecture, programming and interfacing by Barry B. Brey (4<sup>th</sup> edition)(PHI Pub.)

### **Reference:**

1. Advanced Microprocessor by A.K.Roy & Bhurchandi (TMH Pub.)
2. The 8086/8088 family, Design programming and interfacing by John Uffenbeck (PHI Pub.)

## **8IT51/4 PARALLEL PROCESSING**

### **UNIT-I**

Introduction to parallel processing : memories and IO subsystem : Evolution of computer system, parallelism in uniprocessor system, parallel computer structure, architecture classification schemes, parallel processing application, Hierarchical memory structure, virtual memory system, memory allocation and , management, I/O subsystem.

### **UNIT-II**

Pipelining and vector processing : Pipeline, overlapped pipelining, instruction and arithmetic pipelining, pipelined processor, vector processing, vector processor, architecture of cray-1, parallel memory organization.

### **UNIT-III**

Array Processor : SIMD array processor, (organization and inter connection networks), Parallel algorithms for array processor, SIMD matrix multiplication, parallel sorting on array processor, associative array processing, associative memory organization associative processors.

### **UNIT-IV**

SIMD Computer and Multiprocessor Architecture : III iac-IV System architecture and its applications, performance enhancement methods, parallel memory allocation, array processing, languages, multiprocessors, loosely and tightly coupled multiprocessor, time shared and crossbar interconnection networks, parallel memory organization, interleaved memory configuration.

### **UNIT-V**

Multiprocessing control and Data Flow Computers : Interprocesscommunication mechanisms system deadlocks and protection parallel algorithms for multiprocessors, classifications of parallel algorithms data driven computing, data flow computer architecture.

### **TEXT BOOKS:**

1. Computer Architecture and Parallel Processing by Hwang & Briggs (Mc-Graw Hill Pub.)

### **Reference:**

1. Advanced Computer Architecture by Kai Hwang (McGraw Hill Pub.)