

MCS- 01

DISCRETE MATHEMATICS

Mathematical Logic

Connectives :

Statements, connectives (Negation Conjunction, Disjunction), Conditional and Biconditional, Equivalence of formulae and well formed formulae, Tautologies, Duality law, Functionally complete sets of Connectives.

Some More Connectives

Exclusive OR, NAND, NOR, Two state devices, Gate and Module, Two-level networks, NOR and NAND gates.

Normal Forms and The Theory of Inferences

Various Normal forms, Valid inference using truth tables and direct method of proof, Inference (Rules P and T), Consistency of Premises and indirect method of proof, Automatic proving of theorems.

The predicate Calculus

Predicates, Statement Functions, variables and Quantifiers, Free and bound variables, special valid formulas involving quantifiers.

Graph Theory

Introduction to Graphs:

Graph, Applications of Graphs, MTNL's Networking Problem, Travelling Salesman Problem, Satellite Channel Problem, Graph isomorphism, Bipartite graphs, Subgraphs, Paths and walks, Connected Graphs and Cycles, Operations on graphs, Matrix Representation of graphs, Fusion of Graphs.

Trees and Connectivity

Tree, Properties, Bridge or cut Edge, Distance and Centre, Spanning trees, and connector problems, Kruskal's Algorithm, Prim's Algorithm, Computer implementation, cut vertices and connectivity, Shortest Path problems (BFS), Binary trees.

Euler tours, Hamiltonian Cycles, Planar graphs and Digraphs

Euler Tours, Konisberg Bridge problem, Fleury's Algorithm, Hierhozer's Algorithm, Hamiltonian graphs, closure of a graph, two optimal Algorithm, The closet insertion Algorithm, Planar graphs, Directed graphs of digraphs.

Functions, Sets and Relations

Basic Concepts of Set theory:

Operations on sets, Venn diagram and some of the Applications of set theory, Cartesian product of sets,

Relations and ordering:

Relations, Hasse Diagram.

Functions:

Functions, Range and Domain of a function, Functions as Sets of ordered Pairs, Difference between Relations and Functions, Transformation or Operators, Equality of two functions, Graph of a function, Types of functions, Permutation of a set, Product or compositions of Mappings, Binary operations, characteristic functions, Hashing Function and its Application in Computer Science.

Fuzzy Sets:

Vagueness, Impreciseness, Fuzzy sets, Basic operations, On Fuzzy sets, Image and Inverse image, I-V Fuzzy sets, Fuzzy relations.

Lattices and Boolean Algebra

Posets and Lattices:

Posets, Lattices as posets, lattices as Algebraic Systems, Sublattices, Complete Lattices, Bounds of Lattices, Modular and Distributive Lattices, Complemented Lattices, chains.

Boolean Algebra

Definition and important properties, sub Boolean Algebra, Atoms, Antiatoms and irreducibles, stone Representation theorem, Boolean Expressions and their Equivalence, Minterms and Maxterms, Canonical Forms and free Boolean Algebras, values of Boolean

Expressions, Boolean Functions, Symmetric Boolean Expressions.

Applications of Boolean Algebras:

Switching Algebra, Representations of Boolean Functions, Karnaugh Maps, Minimization of Boolean functions, Quine-McCluskey Algorithm.

Applications of Boolean Algebras:

Complement and 2's complement of a binary number, Modules and circuit diagrams for 1's and 2's complement. Binary Addition, Binary subtraction, Single Parity Bit Generator, Serial Binary Adder, Finite State machines, Equivalence of States, Equivalence and Reduction of Machines.

MCS-02

'C' Programming and Data Structures:

Introduction

Introductory: :

An overview of C Escape sequences, Getting A "feel" for C.

Data types in "C"

Variables of type (int] char, float, double, Enumerated types, the typed of statement, Identifiers.

Operators and Expressions Inc

Elementary Arithmetic operations and operators, Expressions, L values and P values, Promotion and Demotion of variable types : The cast operator, Printf () and Scan f () functions.

Decision Structures in 'C'

Boolean operators and Expressions The goto statement, the if (), Statement, the if () – else statement,.

Control structures – I

The do – while() and while Loops, the Comma Operator, the transfer of Control from within loops, Ternary operator, The Switch case default statement.

Programming in C

Control Structures II

'The for (;;) loop, unidimensional Arrays, The sizeof operator, storage classes and scope.

Pointers and arrays :

Pointer variables and pointer Arithmetic, Pointers, Arrays and the subscript operator, A Digression on scanf(), Multidimensional Arrays.

Functions :

Function Prototypes and Declarations, Functions and Scope, Pointers as Function Arguments, String Functions, Multi Dimensional Arrays as Function Arguments.

Functions II

Recursive functions, Macros, Conditional Compilation, Macros with Parameters, Command line Arguments, Variable length Argument lists, Complicated Declarations, Dynamic Memory Allocation.

Files and Structs, Unions and Bit-Fields

Files and File 70, Structs, the DOT Operator, Extracts and files : fseek (), Structs and Function and unions, The Bitwise operators.

MCS-03

Data Structures:

Introduction to Data Structures : Array

Program Analysis, Arrays, Array Declaration, Storage of arrays in Main memory, sparse arrays.

Lists

Basic Terminology, Static implementation of lists, Pointer implementation of lists, Doubly linked lists, circular linked list, Storage Allocation, Storage Pools, Garbage Collection, Fragmentation, Relocation and Compaction.

Stacks and Queues

Defining stack and Queue, stack operations and Implementations, stack Applications, Queues: Operations and implementation, Queue Application, priority Queues.

Graphs

Defining graph, Basic, Terminology, Graph Representation, Graph traversal (DFS, BFS), shortest path problem, Minimum spanning tree.

Trees and File Organisation

Trees

Basic Terminology, Binary, trees, Traversals of a Binary tree, Binary search Trees (BST).

AVL-Tree and B-Tree

Height Balanced tree, Building Height Balanced tree, B-Tree, B-Tree of order 5.

Files :

Terminology, File organization, sequential files, Direct, File organization, Indexed Sequential file organization.

MCS-04

Introduction to Computer Organisation

Hardware Concepts

Introduction and Data Representation :

The von Neumann Architecture, Computers: Then and Now, Data Representation, Instruction Execution.

Digital Logic Circuits

Boolean Algebra, logic Gates, Combinational circuits, Adders, Sequential circuits, Interconnection Structures.

Memory Organisation

Memory System, characteristics Terms for various memory Devices, RAM, External / Auxiliary Memory, High Speed Memories, Cache Memory, Associative Memories.

Input/Output Organisation

Input/Output Module, Input/Output Techniques, Direct Memory Access (DMA), Input/Output processors, External interface.

CPU Organisation

Instruction Sets

Instruction set characteristics, Addressing schemes, Instruction Format Design.

Register Organisation and Micro Operations

Basic Structure of the CPU, An Advanced Structure, Register Organisation, Micro Operations, Instruction Execution and Micro Operations.

ALU and Control Unit Organization

ALU Organisation, Control Unit Organisation, Functional Requirements of a Control unit structure of Control unit, Hardwired Control unit.

Microprogrammed Control Unit

MCU, Wilkes Control, The Microinstruction, Types of Microinstructions, Control Memory Organisation, Microinstruction formats, A simple structure of Control Unit, Micro instruction (sequencing, Execution), Machine Startup.

Microprocessor and Assembly Language Programming

Microprocessor Architecture

Microcomputer Architecture, CPU Components, CPU Registers, Instruction set, Addressing Modes, Introduction to Motorola 68000 Microprocessors.

Introduction to Assembly Language:

Assembly language Fundamentals, Input/Output Services, Assembly language Program Development tools.

Assembly Language Programming (Part-I)

Simple Assembly Programs (Data transfer, shift operations), Programming with loops and comparisons, Arithmetic and String Operations.

Assembly Language Programming (Part – II)

Arrays, Modular Programming, Interfacing Assembly language Routines to High level language programs, Interrupts

MCS -06

THEORY OF COMPUTATION

Finite Automata and Formal Languages

Finite Automata and Languages :

Regular Expressions (Introduction to Defining of languages, Kleene closure Definition, Formal Definition of Regular, Expressions, Algebra of Regular Expressions), Regular languages, Finite automata,

Mealy and Moore Machines.

Non-Deterministic Finite Automata

Equivalence of NFA and DFA, Pumping Lemma, Closure properties (Regular Languages and Finite Automata), Equivalence of Regular expression and Finite Automata.

Context Free Grammar:

Grammar and its classification, Chomsky, Classification for Grammar, Context free grammar, pushdown Automata (PDA), Non-Context free languages, Pumping Lemma for context free Languages, Equivalence of CFG and PDA.

Turing Machine and Recursive Functions

Turing Machine

Prelude to formal definition, Instantaneous Description and transition diagrams, Turing Machines as Computer of functions, Modular Construction of Complex turing machines, Symbol Writing machines, Right/Left head moving machines.

Turing Machine Miscellany

Extensions –cum-Equivalents of Turing Machine, Universal Turing Machine (UTM), Languages Accepted/Decided by TM, The diagonal language and the universal language, Chosky Hierarchy.

Recursive Function Theory

Recursive Function Theory
Recursive Definitions, Partial, Total and Constant Functions, Primitive Recursive Functions, Intuitive Introduction to primitive recursion, Primitive Recursion is weak Technique, The Techniques of unbounded minimalisation, Partial Recursion and μ -Recursion.

Complexity of Computability

Computability/Decidability

Decidable and undecidable problems, The halting, problem, Reduction to another undecidable problem, undecidability of post correspondence problem, undecidable problems for context free languages.

Complexity

Notations for Growth rates of functions (The Constant Factor in Complexity Measure, Asymptotic

considerations, well known Asymptotic growth rate Notations, The Notation O , The Ω Notation, The Notation Θ , The Notation W , classification of problems, Reduction, NP-Complete and NP-Hard Problems, Establishing NP-Completeness of problems.

Applications

Applications of Finite Automata, Applications of Regular Expressions, Application of Context free grammars (Definition of C-type small language, Definition of Part of HTML), ACM Code of Ethics and Professional Conduct.

MCS-07

Introduction to System Software

Programming Concepts and Software Tools

Introduction to Programming Language Concepts :

Algorithm, Flowcharting, Problem and its Algorithm, Concept of a Programming Language, Categories of Languages, Elements of a Programming language.

Introduction to Assembler

Advocates of a translator, types of translators, Assembler implementation, Macro processor, Loaders.

Introduction to Compiler writing

Compiler, Approaches to compiler development, compiler Designing Phases, Software tools.

Graphical user interface :

Graphical user interface, Evolution of the human and Machine interaction, Common Graphical user interface terms, functionality of graphical user interfaces, A look at some graphical user interfaces.

Introduction to a text editor and debugging system

Introduction to a text editor, overview of the Editing process, Types of Editors and user interface, Editor structure, Interactive debugging systems, Debugging Functions and Capabilities, Relationship with other parts of the system, user interface criteria.

Fundamentals of operating system

Introduction to operating system:

Operating System, Evolution of operating systems, serial processing, Batch processing, Multiprogramming, types of operating System, Batch Operating system Multiprogramming Operating system, Network operating system, Distributed Operating System, Operating System Structure, Layered Structure Approach, Kernel Approach, Virtual Machine, Client Server Model, Future Operating System trends.

Process Management

Process concept Processor scheduling, Types of Schedulers, Scheduling and performance Criteria, Scheduling Algorithms, Interprocess Communications and synchronization, Basic concepts of concurrency, Basic Concepts of Interprocess Communication and Synchronization, Mutual Exclusion, Semaphores, Hardware support for mutual Exclusion, Mechanism for Structured form of Interprocess Communication and synchronization, Deadlocks, System model, Deadlock Characterisation and Modelling.

Memory Management

Introduction, single process monitor, Multiprogramming with Fixed partitions, Multiprogramming with dynamic partitions, Paging Address mapping in a paging system, Hardware Support for Paging, Address Translation by Associative Memory, Sharing and Protection in a Paging System, Segmentation, Address Mapping in a Segmented System, Implementation of segment tables, sharing and Protection in a Segmented System, Virtual memory, Advantages of virtual memory, Demand Paging Virtual memory management policies.

File Management

Introduction, File concept, Directories, Disk organization, Disk Space Management methods, Linked List, Bit Map, Disk Allocation Methods, Contiguous Allocation, Non Contiguous Allocation, Disk Scheduling, FCFS, Shortest seek time-first scheduling, scan scheduling, File Protection,

Passwords, Access Lists, Access Groups.

UNIX Operating System-I

Theoretical Concepts of UNIX operating System

Introduction, Basic features of unix operating system, UNIX system Architecture, File Structure processing Environment, CPU Schedulings Memory Management, Swapping, Demand Paging, File System, Blocks and Fragment and Inodes, Directory Structure.

UNIX-GETTING STARTED I

Introduction, Getting started, user Names and Groups, Logging in, Correcting Typing Mistakes, Format of UNIX commands, changing your Password, Characters with special Meaning, UNIX documentation, Files directories, Current Directory, Looking at the Directory Contents, Absolute and Relative, Pathnames, Some UNIX Directories and Files.

UNIX Getting Started II

Introduction, Looking at file contents, your own directories, file permissions, Basic operations on files, Links between Files, Changing permission modes, standard files, Standard Output, Standard Input, Standard Error, Filters and Pipelines, Processes, *Finding out about Processes, stopping Background Processes.*

TEXT Manipulation

Introduction, Inspecting files, file statistics, Searching for Patterns, Comparing Files, Operating on files, printing files, Rearranging Files, Sorting files, Splitting files, Translating characters,

Editors

Introduction, General characteristics of V_i , Starting up and quitting from V_i , Adding text and Navigation, changing Text, Searching for Text, Copying and Moving Text, The Features of ex, The live editors Ex and Ed. starting up and Quitting, Addressing Lines, Looking at Text, Adding Deletig and changing text, Searching for and replacing text, cut and paste

operations, files and Miscellaneous features, The Stream Editor SED, changing several files in SED, AWK.

UNIX operating System I

User to user Communication

Introduction, Online Communication, OFF-line communication.

Shell Programming

Introduction, Programming in the Bourne and the C-shell, wild cards, simple shell programs, variables, Programming Constructs, interactive shell scripts, advanced Features.

Programming Tools

Introduction, The UNIX C compiler, other tools (Lint-the - C verifier, Program Profiles, Program listings), Cross References and Program flow, Maintaining Programs, the source code control system (Initialising a file, Examining and Altering files, Identification Keywords, Miscellaneous Commands).

System Administration

Introduction, System Administration - A Definition, Booting the system, Maintaining user accounts, file systems and special files, Backups and Restoration.

MCS-08

INTRODUCTION TO SOFTWARE ENGINEERING

Software Engineering Concepts

Introduction to Software Product, Component and Characteristics :

Software Engineering Phases, Documentation of the Software product, Software process and Models (Software Life Cycle, Requirements analysis and specification, Design and Specification, Coding and module testing).

Software Process Management:

Software Process Management, Human Resource Management, The software team (DD, CD, CC), Organisation, information and Decision, Problem

Identification, Software crisis, Role of a System Analyst.

Project Planning and Control

Project planning and control, Project Scheduling, Project Standards, Project outsourcing.

Risk Management Concepts:

Introduction and Risk Management Concepts (Managing Risk, Typical Management Risks in software Engineering. Technical Planning, Project Tracking, Delivery Timings, Partial Recovery, Benchmark Testing.

Software Quality Concepts and Case Tools

Software Performance

Customer Friendliness, Software Reliability, Software Reviews, Software upgradation, Software tools and environment, Software Libraries and Toolkits, Software Modules, Reapplication of Software modules, Development tools (Code Generators, Debuggers),

Quality Concepts.

Important Qualities of Software product and process (correctness, Reliability, Robustness, user Friendliness verifiability, Maintainability, Reusability, Portability, Data Abstraction, Modularity), Principles of Software Engineering.

Software Methodology An Object oriented concepts

The Evolving role of Software, An Industry perspective, structured Methodologies, Major influencing factors (Evolution of End user computing, Emergence of CASE tools, use of Prototyping and 4GL tools, Relational Database, Object Oriented Programming), using the Methodology, Choosing the Right Methodology, Implementing a Methodology, Current Generation of Software Development tools, Considerations in Application Development.

CASE Tools

Software crisis, An Engineering Approach to

Software, CASE tools, factors Affecting Software Development, The Benefits of using CASE.

MCS-09

C++ AND OBJECT ORIENTED PROGRAMMING

An Introduction to OOP:

What is object oriented Programming::

Object oriented programming, Paradigm, Advantages of OOP, Applications of OOP, The object orientation, C++

Object Oriented Programming System

OOPS, Class, Inheritance, Abstraction, Encapsulation and information Hiding, Polymorphism.

Advanced Concepts

Dynamism, Structuring Programs, Reusability, Organizing object – oriented Projects.

Introduction to object oriented languages

Objective-C, Python, C Sharp, Eiffel, Modula-3, Small talk, Object Rexx, Java, Beta.

An Introduction to UML

UML (Goals, History, use), Definitions, UML Diagrams (Use Case Diagrams, Class diagrams, Interaction Diagrams, Sequence diagrams), State diagram, Activity Diagrams, Physical diagrams.

C++ An Introduction

Overview of C++

Programming Paradigms, Concepts of C/C++, Functions and files.

Classes and objects:

Definition and Declaration of a class, Scope Resolution Operation, Private and Public member functions, creating objects, Accessing class data members and member functions, Arrays of objects, objects As Function Arguments.

Operator overloading

Operator Functions, Large objects, Assignment and initialization, function call, Increment, Decrement Operator, Friends.

Inheritance-Extending classes

Concept of Inheritance, Base class and Derived class, Visibility Modes, Single inheritance, Multiple Inheritance, Nested classes, Virtual Functions.

Streams and Templates

Output, Input, Files and Streams, Templates, Exception Handling.

MCS-11

Computer Graphics

Introduction to Computer Graphics, Display Technologies, Random and Raster Scan, frame buffer, bit plane, input Devices, Graphics Standards, Graphics Hardware.

Line and Circle Drawing Algorithms, Scan Conversion, filling algorithms, clipping, Two and Three Dimensional transformations, Homogeneous Coordinates, Rigid Body and Affine transformations, Parallel and perspective projections, vanishing points, viewing transformation, Hidden line removal method, Curve and Surface : Cubic Spline, Bezier curve, B-Spline Curves, Parametric Surface, Surface of revolution, Sweep surface, Fractal Curves and surfaces.

Introduction to Multi-media Technology, Audio System, Image Compression, Data Compression, Digital Motion Video, Authoring tools, Multimedia Applications, Multimedia DBMS.

MCS-12

Introduction to Database Management Systems

Introductory Concepts of Data Base Management Systems.

Basic Concepts :

Introduction, Traditional file Oriented approach,

Motivation for database approach database basics, three views of data, The three level Architecture of DBMS Mapping between different levels database Management System facilities, DDL, DML, Elements of a database Management System (DML Pre Compiler, DDL Compiler, File Manager, Database Manager, duery Processor, database Administrator, Data dictionary) , Advantages and disadvantages of database management system.

Data base Models and its Implementation:

Introduction, File Management. System Entity, Relationship (E-R) Model, The hierarchical model, DBTG set, the network model, The Relational model, Advantages and Disadvantages of Relational Approach, Difference between Relational and other models.

File Organisation for Conventional DBMS

Introduction, File Organisation, Sequentil file organization, Index-sequential file organization (Types of Indexes, Structure of Index Sequential Files, VSAM, Implementation of Indexing through Tree-Structure), Direct file organization, Multi key file Organisation (Need for the multiple Access path, multicost , File organization, Inverted file organization, cellular Partitions, comparison and Tradeoff in the Design of Multikey file).

Management Considerations:

Introduction, Organisational Resistance to DBMS Tools (Political observation, Information transparency, Fear of future potential, Reasons for Success), Conversion from An Old system to a new system, Evaluation of a DBMS, Administration of a database Management System.

Enterprise Wide Information System of the Times of India Group (A Case Study)

Introduction, organization and the operating environment unique nature of the Business, Information System goals and how to achieve the Goal The Response System and Respnet Choices, Benefits.

RDBMS and DBMS

Relational Model

Concepts, Formal Definition of a Relation, the Codd, Commandments, Relational Algebra, Relational Completeness.

Normalisation

Functional dependency, Anomalies in a database, Properties of Normalized Relations, 1st NF, 2nd NF, 3rd NF, BCNF, Fifth Normal form examples of Database Design.

Structured Query Language

Categories of SQL Commands Data Definition, Data Manipulation, views.

Distributed Databases

Structure of Distributed database Trade-OFFS in distributing the database, Design of Distributed Databases.

Emerging Trends in DBMS

Introduction to object oriented Database Management System

Next Generation database System, New database applications, object oriented database Management system, Promises and Advantages of object oriented Database Mgt. system, Difference between RDBMS and OODBMS, Alternative object oriented Database strategies.

Introduction to client/Server Database

Evaluation of client/Server, Emergence of client server Architecture, the client/server Computing, the critical products, Developing on Application, SQL (DDL, DML), Client/Server. where to Next?

Introduction to Knowledge Databases

Definition and Importance of knowledge, Knowledge base system, Difference between a knowledge base system and a database system, knowledge Representation Schemes.

OPERATING SYSTEMS

Introduction :

Operating System, Generation of operating systems, Processors, Memory, Disks, Tapes, I/O Devices, Buses, Mainframe Operating Systems, Server Operating Systems Multiprocessor Operating Systems, Real time, Operating systems, smart card operating systems.

Operating System Structure:

Monolithic systems, Layered systems, Microkernels, client, Server Model, Virtual Machines.

Processes and Threads:

The process Model, process creation, Process Termination Process States Implementation of Processes, Thread usage, The classical thread Model, Hybrid Implementations, Interprocess Communication, Race Conditions, Critical Regions, Mutual Exclusion with busy waiting, sleep and wakeup, semaphores.

Memory Management:

The Notation of an Address Space, Swapping virtual memory, Paging Page labels, speeding up paging, page Replacement Algorithms, The optimal Page Replacement Algorithm, the (FIFO) Page Replacement Algorithm, The second chance page Replacement Algorithm, The clock Page Replacement Algorithm, Design issues for Paging systems, Implementation Issues, Segmentation.

Deadlocks:

Resources, The OSTRICH Algorithm, Deadlock, Avoidance, Deadlock prevention, Deadlock Detection and Recovery.

Security :

Basics of Cryptography, protection Mechanisms, Authentication, Malware, Defenses.

Case Study 1 : LINUX

Case Study 2 : WINDOWS VISTA

MCS- 14

COMPUTER NETWORKS

An Introduction to Computer Networks

Network classification and Reference Models :

Network, Network Goals, Application of Networks, References Model, (OSI, TCP/IP), IEEE Standards for LAN.

Data Transmissions and Multiplexing

Transmission Terminology Analog and Digital Data transmission, Transmission media, Multiplexing.

Medium Access Control and Data Link layer

Data link layer, Medium Access Control Sublayer.

Network, Transport and Application layer

Network layer, Routing Algorithms, Congestion Control Algorithms, Transport layer, QOS, TCP/UDP, Application layer, DNS, Remote Procedure Call (RPC), File transfer protocol (FTP) Talnet.

Network Devices and Technology

Network Devices-I

Network Devices, Repeaters Bridges Switches, Hubs.

Network Devices – II

Routers, Gateways, Modem

ISDN:

Baseband and Broadband Communication, ISDN Services, Advantages of ISDN, ISDN Applications.

Asynchronous transfer Mode (ATM)

Switching Techniquis, circuit, Packet, Frame Relay, Cell Relay, ATM as Technology, ATM Layered Architecture in Comparison with OSI Model, ATM Protocal, The ATM Netwrok, The ATM cell, ATM classes of Services, ATM Traffic Control , Benefits of ATM, ATM Applictions.

MCS- 16

ARTIFICIAL INTELLIGENCE

Introduction to Artificial Intelligence

Overview of A.I., Knowledge : General Concepts, Definition and Importance of knowledge, knowledge Based systems, Representation of knowledge, knowledge organization, knowledge Manipulation, Introduction to Lisp, Functions, Predicates and Conditionals, Input, Output and Local variables, Iteration and Recursion, Property lists and Arrays.

Knowledge Representation

Formalized symbolic logics, syntax and Semantics for Propositional logic, Syntax and Semantics for FOPL, Properties of wffs, Inference Rules, The Resolution Principle, Truth Maintenance Systems, Model and Temporal Logics, Fuzzy Logic and Natural Language computations. Associative Networks, Frame Structures, Conceptual Dependencies and Scripts, Objects, class, Message, and Methods, object Oriented Languages and systems.

Knowledge Organization and Manipulation

Preliminary Concepts, Uniformed or blind search, Informed Search, Indexing and Retrieval Techniques, Integrating knowledge in Memory, Measures for Matching, Matching like patterns, Partial Matching, Fuzzy Matching Algorithms, The RETE Matching Algorithm.

Perception Communication, and Expert systems

Commands and Languages, Basic Parsing Techniques, Semantic Analysis and Representation Structures, Natural language Generation, Natural language Systems, Pattern Recognition, The Recognition and classification Process, Learning classification Pattern, Recognizing and understanding speech.

Knowledge Acquisition

Types of Learning, General Learning Model, performance Measures, Perceptions, learning Automata, Genetic Algorithms, Induction Basic Concepts, Inductive Bias, Generalization and specialization, The ID3 system, the LEX system The INDUCE system, Learning structure concepts.

MCS- 17

INTRODUCTION TO INTERNET PROGRAMMING

Fundamentals of Java Programming

Introduction to Java :

Applets and Applications, JAVA Buzzwords, The JAVA Platform, Java libraries, starting with Java.

Data types, operators and Arrays

Data types in Java, Operators, Java keywords, Mixing Data types, Type Casting, Programming Constructs in Java, Arrays.

Classes and objects in Java

Classes and objects, Constructor, Subclassing, The extends keyword, The instance of operator, static variables and methods, The final keyword, Access Control, Wrapper classes, Inner classes.

Exception Handling:

Exception classes, using TRY and CATCH, Handling Multiple exceptions, sequencing Catch blocks, Using Finally, Built-in Exceptions, throwing Exceptions, Catching Exceptions, user defined exceptions.

Packages and Interfaces

Creating Packages, Adding classes to existing Package, interfaces, creating Interfaces, Exceptions.