UNIT-I

Mathematical foundation of Computer Science:

**Discrete Mathematics**

Mathematical logic and set theory: The theory of inference for the statement calculus, the predicate calculus, inference theory of predicate calculus.

**Set Theory:**

Introduction, Basic concept of set theory elementary representation of Discrete structures.

**Relations and Ordering:**

Properties of Binary Relations in a set Relation Matrix composition of Binary relation, partial ordering.

**Functions:**

Composition, characteristics, Natural Numbers.

**Algebraic Structures:**

Introduction, basic concept of Algebraic structures, examples and general properties semi groups and monodies sub semi groups and sub monodies, Grammars and Languages. groups, subgroups and Homomorphism. Algebraic systems with two binary relations.

**Lattice and Boolean Algebra:**

Introductions to lattice as partially ordered sets, sub lattices, direct product and Homomorphism, some special lattices. Boolean algebra: Definition & examples sub algebra, direct product and Homomorphism Boolean functions.
UNIT-II

Basic Computers organization:
Evolution of computer systems, classification of computers, Data representation in computers, Binary codes. Concept of Boolean algebra; canonical form, minimization Techniques; karnaugh Map logic gates. flip-Flops.

Basic Building blocks of Computers
Registers, counters, central processing Unit, Memory organization, Data transfer.

Internal architecture of 8086/88 Microprocessor.
Software model of 8086/88, Memory address space and Data organization, Data types segment registers and memory set wantalior. Instructions printers, Data registers, Addressiry model of the 8086/88. Introduction to 8086/88 programming.

UNIT-III

Programming Part- I:
Basic of C programming structure of a simple C program, simple I/O function, Data types in C, operators &their freelance. Control structures, were defined functions, storage class, recursion, arrays, the C Preprocessors.

Programming Part-II:
String and string functions, Pointer. passive printers as parameter. Dynamic, memory allocation, arrays and position. structure and files.

Data Structure Part: I
Introduction, Algorithm analysis for time & space requirement, stock, recursion, polish expressions their semi putative Queue, linked storage representation.
Data Structure Part: II

Definition and concepts of general trees and binary trees, binary tree traverse. Graphs & their representation, Breadth first search, Depth first search, spewing tree, application of graph, topological sorting techniques, searching techniques, wash table network, hashing functions.

UNIT-VI

Mathematical foundation of computers science -II: Theory of computation

Automate Theory:

Alphabets, system languages, recursive definition, regular expressions profiler or regular expressions, finite automata transistor -table, transistor diagram, transistor graphs kleen's theorem, non deter minims, NFA to DRA finite automata with output.

Pushdown automata theory- I:

Context free grammars, Backus normal form, parse tree, Regular grammars Chomsky normal form, push down automata.

Pushdown automata theory- II:

Context free languages, intersection and complement passing.
Turing Theory: Turning machine port machine minskey's theorem.

UNIT-V

Introduction to System software:

Machine Structure (memory, register, Data format, Instruction format, addressery, models, instruction set Input/Output) assembler basic assembler function machine dependent and independent assembler features, assembler design options.
Loader & Linkers:

Basic loaded functions, machine dependent and independent loader features, loader design options.

Macro processors functions machine dependent and independent macro processor features, macro processor design options.

Compilers:

Ban's compilers functions (Grammars, lexical analysis, syntactic analysis, code senoration/machine) marpine dependant & independent compiler feature, compiler Design options.

UNIT-VI

Mathematical foundation of computer Science II

Theory of Computation

Automata Theory :- Alphabets, Strings, Languages, Recursive definition, Regular expressions, Problem on regular expressions, finite automata, Transition table, transition diagram, Transition graphs, Kleen's Theorem, nonveteran minims, NFA to DRA, Finite automata with output.

Pushdown Automata Theory I:- Context free grammar, Backus normal form, parse free, Regular grammars Chomsky Normal Form, Push down automata.

Pushdown Automata Theory II:- Context free languages, Intersection and complement, paring

Turing Theory:- Turning Machine, part machine, minskejs theorem
UNIT-VII

Operating System


Inter process Communication :

Concurrent Process, Inter Process Synchronization, Inter Process Communication, Deadlock occurrence.

Memory Management, File & Device Management .

UNIT-VIII

Introduction to Network , Basic Data Communication, OSI, TCP/IP Reference Model, Hardware Software Requirements for Networking, Data link layer, Medium Access Sub layer & The Network layer, The Transport and Application layer.

UNIT-IX


UNIT-X

Parallel Processing, Principles of Pipelining and vector Processing, Array Processors, Multiprocessor Architecture & Programming Overview of graphics Systems 2D transformations, 3D transformations. Views and modeling