**Computer Organization & Architecture**

**UNIT - I**

**Boolean Algebra and Logic Gates**

Logic Gates

Basic laws of Boolean algebra

Simplification of Boolean algebra

**Combinatorial Logic**

Multiplexers

Decoders

Encoders

Adder

Subtracters

Parallel Binary Adder

Parallel binary Subtractor

**UNIT-II**

**Sequential Logic**

**Sequential circuits**

Flip-Flops

S-R

D

J-K

T

Clocked Flip-flop

Race around condition

Master slave Flip-Flop

**Register Transfer and Micro Operations**

Register Transfer Language

Register transfer

Bus and Memory transfer

Arithmetic Micro-operations

Logic Micro-operations

Shift Micro-operations

Arithmetic Logic Shift Unit

**UNIT-III**

**Basic Computer Organization and Design**

Instruction Codes

Computer Registers

Common bus system

Computer Instructions

Instruction formats

Instruction Cycle

Fetch and Decode

Flowchart for Instruction cycle

Register reference instructions

Addressing Modes

**CPU Design**

Specifying a CPU

Design and implementation of a simple CPU

Fetching instructions from memory

Decoding and executing instructions

Establishing required data paths

**UNIT-IV**

**Input-Output Organization**

Input-output Interfaces

Asynchronous Data Transfer

Mode of Transfer -

Programmed I/O

Interrupt I/O

Direct Memory access (DMA)

**Memory Organization**

Memory Hierarchy

Main Memory

Auxiliary Memory

Associative Memory

Cache Memory

Virtual Memory

**I/O Interrupt**

types of Interrupts

Priority Interrupts

Direct Memory Access (DMA)