## UNIT I



**Syllabus :**

Basic computer data types, Complements, Fixed point representation, Register Transfer and Micro-operations : Floating point representation, Register Transfer language, Register Transfer, Bus and Memory Transfers (Tri-State Bus Buffers, Memory Transfer), Arithmetic Micro-Operations, Logic Micro-Operations, Shift Micro-Operations, Arithmetic logical shift unit.



## UNIT II



**Syllabus :**

Instruction codes, Computer registers, computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt, Complete computer description, Design of Basic computer, design of Accumulator Unit.

**UNIT III**



**Syllabus :**

Introduction, Machine Language, Assembly Language, assembler, Program loops, Programming Arithmetic and logic operations, Looping construct, subroutines, I-O Programming.



**UNIT IV**



**Syllabus :**

Control Memory, Address sequencing, Micro program Example, Design of control Unit.

**UNIT V**



**Syllabus :**

Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC) & Complex Instruction Set Computer (CISC)



**UNIT VI**



**Syllabus :**

Flynn's taxonomy, Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing, Array Processors.

**UNIT VII**



**Syllabus :**

Introduction, Addition and subtraction, Multiplication Algorithms (Booth Multiplication Algorithm), Division Algorithms, Floating Point Arithmetic operations, Decimal Arithmetic Unit.



**UNIT VIII**



**Syllabus :**

Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA, Input-Output Processor (IOP), CPUIOP Communication, Serial communication.

**UNIT IX**



**Syllabus :**

Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory.

**UNIT X**



**Syllabus :**

Characteristics of Multiprocessors, Interconnection Structures, Inter-processor Arbitration, Inter-processor Communication and Synchronization, Cache Coherence, Shared Memory Multiprocessors.



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