Computer Organization

UNIT - I

Register Transfer Language, Register Transfer, Bus and memory Transfer (03). Micro-Operations: Arithmetic Micro-Operation, Logic Micro-Operation, Shift Micro-Operation. Common Bus Organization, Multiple Bus Organization, Arithmetic Logic Shift UNIT (03). Addition and Subtraction Algorithm (02). Multiplication Algorithm (Booth Multiplication Algorithm) (03).
Lectures: 11

UNIT - II

Instruction Codes, Computer Instruction (02). Computer Registers (DR, AR, AC, IR, PC, TR, INPR, OUTR). Instruction Cycle (Fetch and Decode) (03). Control Unit Organization: Functional Requirements of a Control UNIT, Hardwired Control Unit (03). Micro programmed Control UNIT (Microinstructions, Micro program Sequencer) (04).
Lectures: 12

UNIT - III

Processor Design: General Register Organization, Stack Organization (Push and Pop Operation, Register Stack, Memory Stack) (03). Instruction Format (Zero Address Instructions, One Address Instruction, Two address Instruction, Three Address Instruction). Data transfer and manipulation (Data transfer Instructions, Data Manipulation Instructions, Program Control Instructions) (03). RISC and CISC Architecture (02). Addressing Schemes: Immediate Addressing, Direct Addressing, Indirect Addressing, Register Addressing, Register Indirect Addressing, Displacement Addressing (04).
Lectures: 12

UNIT - IV

Input-Output Organization: I/O Interface, Modes of transfer, Interrupts Interrupt handling, Direct Memory access (DMA controller, DMA transfer) (04). Memory Organization: Memory Hierarchy, Main Memory (RAM and ROM Chips) (02). Auxiliary memory (Magnetic disks, magnetic Tapes), Cache memory (Hit Ratio, mapping techniques: Associative mapping, Direct mapping, Set associative mapping), Introduction to Virtual Memory (04).
Lectures: 10