

CORE COURSE – VIII - DIGITAL COMPUTER FUNDAMENTALS

UNIT 1 :

Number Systems and Codes: Decimal, Binary, Octal and Hexadecimal Systems – Conversion from one to another – Complements; Binary Addition, Subtraction, Multiplication & Division; Codes: BCD, Weighted, Excess Three, Gray, ASCII and Error Detecting Codes.

UNIT 2 :

Boolean Algebra: Fundamental Concepts – Boolean Functions and Expressions – Truth Tables – Laws and Theorems; Simplification of Expressions – Karnaugh Map & Tabulation Methods.

Digital Logic & Circuits: AND, OR, NOT, NAND, NOR, XOR Gates; Integrated Circuits – TTL & MOS Logic Circuits; Gating Networks.

UNIT 3 :

Logic Design: Flip-Flops – Transfer Circuits – Clocks – Shift Registers – Counters – State Diagrams and State Tables – Magnitude Comparator – Programmable Arrays of Logic Cells.

UNIT 4 :

Elements of ALU: Design and Implementation of Binary Adders (Half and Full) and Subtractors; BCD Adder; Multiplexers, Floating – Point Number Systems – Arithmetic Operations with Floating Point Numbers.

UNIT 5 :

Memory Elements: RAM, Decoders, Dynamic Random Access Memories; Read Only Memories; Magnetic Tapes; Magnetic Bubble and CCD Memories.

TEXT BOOK:

1. Digital Computer Fundamentals – Thomas C. Bartee, 6th Edition, Tata McGraw Hill, New Delhi, 1991.

REFERENCE BOOK:

1. Digital Design – Morris Mano, Prentice Hall.