

MScIT-02 Digital Logic

Unit 1: Number Systems

Decimal, Binary, Hexadecimal and Octal. It's Conversion: Decimal to Binary/Hexadecimal/Octal and vice versa. Addition/ Subtraction on Binary Numbers, Complement: r 's and $(r-1)$'s complement. Fixed Point representation and Floating point representation, BCD, ASCII, EBCDIC, Gray code.

Unit 2: Boolean Algebra

Boolean operators, Rules (postulates and basic theorems) of Boolean algebra, dual and complement of Boolean expression, representation of Boolean expression in Canonical form, Boolean expression and their simplification by algebraic method and Karnaugh Map, Don't care condition.

Unit 3: Logic Gates

Logic Gates(OR, AND, NOT, NAND, NOR, XOR, XNOR), Truth Tables, De-Morgan's theorem, Conversion of the logic gates.

Unit 4: Combinational Circuits

Half-adder, Full-adder, Half-subtractor, Full-subtractor, Multiplexer, De-multiplexer, Encoder, Decoder, Magnitude Comparator

Unit 5: Sequential Circuit

Flip-Flops:RS, D, JK, MS; Counters: Asynchronous , Synchronous; Register and its types: Shift register, parallel/serial in, parallel/serial out;

Unit 6: Memory Organization

Primary Memory- RAM and its types, ROM and its types.

Suggested Readings:

1. Rajaraman, V." Fundamentals of Computers" Prentice Hall of India, New Delhi.
2. M. Motris Mamo, "Digital Logic and Computer Design".