Computer Fundamentals and Introduction to Digital Logic
BCA-01

Unit 1: Introduction of Computer

Block diagram, Evolution, Generations,   Classification and its Application.

Unit 2: 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 3: Logic Gates

Logic Gates, Truth Tables, De-Morgan's theorem, Conversion of the logic gates.

Unit 4: Combinational and Sequential Circuit

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. Multiplexer, Demultiplexer, Encoder, Decoder, Half-Adder, Full-Adder, Sequential circuit, Flip-Flop and its different types like RS, JK; Registers: Shift register, parallel/serial in, parallel/serial out; Different types counter like Asynchronous and Synchronous. Multiplexer, Demultiplexer, Encoder, Decoder, Half-Adder, Full-Adder.

Unit 5: Basic Computer Organization

Central Processing Unit (CPU), CU, ALU, Instruction format, instruction execution, Primary Memory- RAM and its types, ROM and its types, Secondary Memory, Secondary Storage Device : Magnetic Tape, Magnetic Disk, Optical disk, Magneto-Optical Disk, Various input and output devices, Buses(Address, Data, Control)

Suggested Readings:

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