Digital Electronics

UNIT - I

Binary System: Digital Computers and digital systems, Number system (03), Binary Arithmetic, Signed binary numbers, complements: r's complements (2's complement, 10's complements), (r-1)'s complements (1's complement, 9's complement), Subtraction using 1's complement and 2's complement method, Binary codes, Logic gates: Inverter, AND, OR, NOR, NAND, XOR, XNOR, De Morgan's Theorems, Boolean algebra, Canonical and standard forms, Karnaugh Map (04), Introduction to IC Digital logic families (RTL, DTL, TTL, ECL, MOS and CMOS) and characteristics (Fan-In, Fan-out, Power Dissipation, Propagation delay, Noise margin) of IC Digital logic families (TTL, ECL, CMOS) (03)
Lectures: 10

UNIT - II

Combinational and sequential Circuits: Half adder, Full adder, Half Subtractor, full Subtractor, Serial and parallel adder (04), Code conversion circuits (02), Parity generator and checker (02), Comparators (01), Encoder, Decoder, Multiplexer, De-multiplexer (03)
Lectures: 12

UNIT - III

Flip flops: RS-Flip flop, D-Flip flop, T-flip flop, JK-Flip flop, JK Master slave flip flop, edge triggered and pulse triggered flip flops (06), Registers: Simple Register, Shift registers, Types of Shift Register, Construction and timing diagram of 4-bit Shift Register (06)
Lectures: 12

UNIT - IV

Counter: Binary counter, characteristic of counter (Synchronous/Asynchronous, Modulus/length of counter, UP/DOWN counter, Speed of Asynchronous counter), Construction of full length and Non full length, UP/DOWN Synchronous counter using 2, 3 and 4 FF, Ripple counter. Design of different MOD counter, Construction of Asynchronous counter, Ring Counter, Johnson Counter (05), Random Access Memory, Read Only Memory, Types of Read Only Memory (03), Multivibrators: Astable, Monostable, Bistable, Schmitt Trigger, Timer (03)
Lectures: 11