

17BCADLCT24:Digital Logic and Computer Design

Teaching Hours: 4 Hrs/week

Marks: Main Exam: 80

IA: 20

UNIT I 10Hrs
Digital Systems and Binary Numbers: Digital Systems, Number systems and base conversions, Representation of signed Binary Numbers, Binary codes, binary logic.

UNIT II 10Hrs Boolean Algebra:
Introduction to Boolean Algebra, Axioms and Laws of Boolean Algebra, Boolean functions, Canonical and Standard Forms.
Gate – Level Minimization: The Map method, Two, Three, Four Variable K-map's, Don't Care Conditions, NAND and NOR implementation, Exclusive OR function.

UNIT III 10Hrs
Combinational Logic: Combinational logic circuits, analysis and design procedure, Binary adder and subtractor, decimal adder, binary multiplier, Magnitude comparator, Decoders, Encoders, Multiplexers.

UNIT IV 10Hrs
Synchronous Sequential Logic: Sequential circuits, Latches, Flip Flops, SR, JK, T, D Flip Flops, Flip Flop excitation tables.
Registers and Counters: Registers, Shift registers, Ripple counters, Synchronous counters, Other counters.

UNIT V 10Hrs
Memory and Programmable Logic: Random access memory, memory decoding, error detection and correction, Read-Only memory, Programmable logic array, Programmable array logic, sequential programmable devices.

References:

1. M. M. Moris and Michael D. Ciletti, Digital Design, 5th Edition, Pearson.
2. M. Moris Mano, Digital Logic and Computer Design, 4th Edition, Pearson.
3. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall.
4. Paul Malvino, Digital Principles and Applications by Leach, 57th Edition, Tata McGrawHill.

Additional Reading:

5. Charles H.Roth, Fundamentals of Digital Logic Design, 5th Edition, Cengage
6. G.K. Kharate, Digital Electronics, Oxford University Press
7. A. Anand Kumar, Switching Theory and Logic Design, 2nd Edition, PHI.