

FIRST YEAR – SEMESTER - I
PAPER I: DIGITAL LOGIC FUNDAMENTALS

Credits: 4

Hours: 75

Objective: To impart in-depth knowledge of Logic Gates, Boolean Algebra, Combinational and Sequential circuits.

UNIT – I

Number Systems and Codes: Number System – Base Conversion – Binary Codes – Code Conversion. Digital Logic: Logic Gates – Truth Tables – Universal Gates.

UNIT – II

Boolean Algebra: Laws and Theorems – SOP, POS Methods – Simplification of Boolean Functions – Using Theorems, K-Map, Prime – Implicant Method – Binary Arithmetic: Binary Addition – Subtraction – Various Representations of Binary Numbers – Arithmetic Building Blocks – Adder – Subtractor.

UNIT – III

Combinational Logic: Multiplexers – Demultiplexers – Decoders – Encoders – Code Converters – Parity Generators and Checkers.

UNIT – IV

Sequential Logic: RS, JK, D, and T Flip-Flops – Master-Slave Flip-Flops. Registers: Shift Registers – Types of Shift Registers.

UNIT – V

Counters: Asynchronous and Synchronous Counters - Ripple, Mod, Up-Down Counters– Ring Counters. Memory: Basic Terms and Ideas –Types of ROMs – Types of RAMs.

TEXT BOOK

1. V.Rajaraman and T.Radhakrishnan, *Digital Computer Design*, Prentice Hall of India, 2001
2. D.P.Leach and A.P.Malvino, *Digital Principles and Applications* – TMH – Fifth Edition – 2002.
3. M.Moris Mano, *Digital Logic and Computer Design*, PHI, 2001.
4. T.C.Bartee, *Digital Computer Fundamentals*, 6th Edition, Tata McGraw Hill, 1991.