

I B.Sc (Compute Science) – I Semester

Digital Logic Fundamentals

Unit – I:

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

Unit II:

Boolean Algebra: Laws & Theorems – SOS, POS methods – Simplification of Boolean Functions – Using Theorems, K-Map, Prime – Implicant Method – Implementation using Universal Gates. Binary Arithmetic : Binary Addition – Subtraction – Various Representations of Binary Numbers – Arithmetic Building Blocks – Adders – Subtractors.

Unit III:

Combinational Logic: Multiplexers – Demultiplexers – Decoders – Encoders – Code Converters – Parity Generators & Checkers – PAL – PLA.

Unit – IV:

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

Unit – V:

Counters: Asynchronous Counters Ripple, Mod, Up-Down Counters – Decoding Gates – Synchronous Counters – Ring, Decade, Preset table, Shift Counters, Memory; Basic Terms & Ideas – Magnetic Memories – Memory Addressing – Types of ROMs – Types of RAMs.

References:

1. D.P. Leach & A.P. Malvino, Digital Principles and Applications – THM Fifth Edition – 2002
2. M.M. Mano, Digital Logic and Computer Design, PHI,2001
3. T.C. Bartee, Digital Computer Fundamentals, 6th Edition ,Tata McGraw Hill, 1991