

PAPER I - DIGITAL ELECTRONICS AND MICROPROCESSORS

UNIT-I

Number Systems: Decimal, Binary, Octal and Hexadecimal number systems- Conversion between number systems- Binary arithmetic-BCD codes – BCD addition- Alphanumeric codes.

Boolean Algebra and logic gates : AND, OR, NOT, NAND, NOR, XOR and XNOR gates- Truth tables- Basic laws of Boolean Algebra – De-Morgan's theorems.

UNIT-II

Simplifications of Boolean expressions- Canonical SOP and POS forms- Karnaugh maps- Implementing Boolean expressions using NAND gates alone- Implementing Boolean expressions using NOR gates alone.

Combinational logic circuits: Half and Full adders- Half and Full subtractors- Parallel binary adder- BCD adder- Encoders- Decoders- Multiplexers- Demultiplexers.

UNIT-III

Sequential logic circuits: NAND latch – SR flip-flop- JK flip-flop – Edge triggering- PRESET and CLEAR inputs – Shift register- Universal shift register- Asynchronous and Synchronous counters – BCD counter.

UNIT-IV

Parallel Computer Models: Introduction, Flynn's classification, Parallel & Vector Computers system Attributes to performance, implicit & Explicit parallelism, shared, Memory Multiprocessors. Uniform and Non-uniform Memory Access and Cache only Memory Access Models, distributed Memory Multicomputers Multivector & SIMD Computers, PRAM and VLSI Models

UNIT- V

Processors and Memory hierarchy: CISC & RISC Architectures, CISC Family, RISC scalar processors, Super Scalar Processors and their features. Very Long Instruction word Architecture vector & Symbolic processors, Memory Hierarchy.

TEXT BOOK(S)

1. Morris Mano, "Digital Computer Fundamentals" TMH, IIIrd Edition
2. Thomas C Bartee "Computer Architecture and logic Design" TMH

REFERENCE(S)

1. Malvino and Leech "Digital Principles and Applications" , TMH
2. Badri Ram, "Fundamentals of Microprocessor and Microcomputers" Dhanpat Rai and Sons.
3. Liu and Gibson "Microcomputer Systems" PHI