

13EC2201-SWITCHING THEORY & LOGIC DESIGN

(Common to EEE and ECE)

Credits: 4

Lectures/Week: 4Hrs.

Sessional Marks: 40

Univ. Exam.Duration:3Hrs

Univ.Exam.Marks: 60

UNIT – I

NUMBER SYSTEMS AND CODES: Number systems, conversions, complements, arithmetic operations, signed binary numbers, BCD, Grey, ASCII, Parity bit and hamming code.

BOOLEAN ALGEBRA AND LOGIC GATES: NOT, OR, AND operations, Boolean theorems, De-Morgan's theorem, logic gates, Universal gates and IEEE standard logic symbols.

UNIT – II

COMBINATIONAL LOGIC CIRCUITS: Standard forms of logical functions, Min-term and max-term specifications, Simplification by K-maps, Incompletely specified functions, prime implicants, essential prime implicants, Realization of logical functions using gates.

UNIT -III

DESIGN OF COMBINATIONAL CIRCUITS: Design procedure, Binary adders and subtractor, Serial and parallel adders, IC parallel adder, Decoders, encoders, Multiplexers, Demultiplexers and Digital magnitude comparator.

UNIT – IV,

SEQUENTIAL CIRCUITS: Latch, flip-flops (SR, JK, D & T), Timing problems, master-slave flip-flop and Shift registers.

DESIGN OF SEQUENTIAL CIRCUITS: Asynchronous, synchronous counters, Ring and Johnson counters.

UNIT-V

MEMORY DEVICES: Terminology, ROM, PROM, EPROM, EEPROM, Semiconductor RAM (SRAM & DRAM) and its architecture, Memory expansion.

TEXT BOOKS:

1. Digital design by Morris Mano, Pearson Education Asia
2. Fundamentals of logic design by Roth & Charles, 2nd Edition, West Publishing Company, 1979
3. Ronald J.Tocci, Neal S.Widmer, "Digital systems — Principles and applications".8th edition, Pearson Education Asia, 2001.

REFERENCE BOOKS:

1. Fundamentals of logic circuits by A.Anand Kumar, PHI Learning
2. Jon M, Yarbrough, "Digital logic — applications and design", Thomson — Brooks India edition.