**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 sub-tractor, Serial and parallel adders, IC parallel adder, Decoders, encoders, Multiplexers, De-multiplexers 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.

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**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.

**REFERENCES:**

1. Fundamentals of logic circuits by A.Anand Kumar, PHI Learing

2. Jon M, Yarbrough, “Digital logic — applications and design”, Thomson — Brooks India edition.