**17EC2102 – SWITCHING THEORY & LOGIC DESIGN**

**UNIT – I**

**NUMBER SYSTEMS AND CODES:** Number systems, Signed binary numbers, Base conversions, Binary arithmetic, Complements, Binary codes–(BCD, Grey, ASCII).

**BOOLEAN ALGEBRA AND LOGIC GATES**: Basic definitions and theorems of Boolean algebra, De-Morgan’s theorem, Digital logic gates, Universal gates, Multi-level gate circuits.

**UNIT – II**

**MINIMIZATION OF DIGITAL CIRCUITS:** Standard forms of logical functions, Min-term and max-term specifications, Simplification by K-maps, Incompletely specified functions, prime implicants, Essential prime implicants, Tabular method, Realization of logic functions using gates.

**UNIT -III**

**COMBINATIONAL LOGIC CIRCUITS:** Design procedure, Binary adder, Subtractor, Decimal adder, Magnitude comparator, Decoders, Encoders, Multiplexers, Demultiplexers.

**UNIT – IV**

**SEQUENTIAL CIRCUITS:** Sequential circuits, Storage Elements: (Latchs & Flip-flops), Master-slave Flip-flop, Flip-flop conversions, Timing and triggering consideration, Analysis of clocked sequential circuits, State reduction & assignment, Design procedure.

**UNIT – V**

**REGISTERS AND COUNTERS:** Registers, Shift registers, Ripple counters, Synchronous counters, other counters– Ring and Johnson counters.

**UNIT-VI**

**MEMORY AND PROGRAMMABLE DEVICES:** Random-Access Memory, Memory Decoding, Error detection and correction, Read-only Memory, Programmable Logic Array, Programmable Array Logic, Sequential programmable devices.

**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

**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