

SYLLABUS

ANALOG AND DIGITAL ELECTRONICS

Unit I: Diode and Characteristics: PN-Junction Diode, Characteristics and Parameters, Zener Diode, Zener Diode as voltage regulator, Light Emitting Diode characteristics, Seven Segment Display, Photo Diode, PIN Diode.

Unit II: Transistors and Characteristics: Transistors and their Types (PNP, NPN), Transistor as an amplifier, BJT operation, BJT Voltages and Currents, BJT Switching, Common-Base Characteristics, Common-Emitter Characteristics, Common-Collector Characteristics, Transistor testing.

Unit III: Number System: Binary Number System, Signed and unsigned Number, Octal Number System, Hexadecimal Number System, Conversions between Number Systems, r 's and $(r-1)$'s Complements Representation, Subtraction using 1's and 2's Complements, BCD, Gray Code, Excess 3 Code and Alpha numeric codes.

Unit IV: Minimization Techniques: Logic Gates, Boolean Algebra, Logic Operation, Axioms and Laws of Boolean Algebra, Reducing Boolean Expression, Boolean Functions and their representation, SOP Form, POS Form, Karnaugh Map (up to 5 variable), Limitation of Karnaugh Map, Quine-McCluskey Minimization Technique (up to 5 variable).

Unit V: Combinational Circuits: Introduction, Design Procedure, Adders, Subtractors, Binary Parallel Adder, 4 Bit Parallel Subtractor, Look-ahead carry Adder, BCD adder, BCD Subtractor, Multiplexer, De-multiplexer, Decoder, Encoder, Comparator, Parity bit Generator/Checkers, Boolean Expression Implementation using these ICs.

Unit VI: Sequential Circuits: Flip-flops: S-R, J-K, Master slave J-K, D-type, T-type, Flip flop Excitation Table, Conversion of Flip Flops, Registers: SISO, SIPO, PISO, PIPO, Universal Shift Register. Counters: Asynchronous and Synchronous counter, Up/Down counter, MOD-N counter, Ring counter, Johnson counter.