



SCHEME AND SYLLABUS - B.E. COMPUTER ENGINEERING

Course Code	Type	Subject	L	T	P	Credits	CA	MS	ES	CA	ES	Pre-Requisites
FC003	FC	Electrical and Electronics Engineering	3	0	2	4	15	15	40	15	15	None

COURSE OUTCOMES

1. To understand the basic concepts of magnetic, AC & DC circuits
2. To learn the basics of semiconductor diodes, BJTs
3. Will be able to analyze basic electrical and electronic circuits

COURSE CONTENT

D.C. Circuits and Theorems: Ohm's Law, KCL, KVL Mesh and Nodal Analysis, Circuit parameters, energy storage aspects, Superposition, Thevenin's, Norton's, Reciprocity, Maximum Power Transfer Theorem, Millman's Theorem, Star-Delta Transformation. Application of theorem to the Analysis of dc circuits.

A.C.Circuits: R-L, R-C, R-L-C circuits (series and parallel), Time Constant, Phasor representation, Response of R-L, R-C and R-L-C circuit to sinusoidal input Resonance-series and parallel R-L-C Circuits, Q-factor, Bandwidth.

Magnetic Circuits: Magnetomotive Force, Magnetic Field Strength; Permeability, Reluctance, Permeance, Analogy between Electric and Magnetic Circuits.

Semiconductor Diodes and Rectifiers: Introduction, general characteristics, energy levels, extrinsic materials n & p type, ideal diode, basic construction and characteristics, DC & AC resistance, equivalent circuits, drift & diffusion currents, transition & diffusion capacitance reverse recovery times, temperature effects, diode specifications, different types of diodes (Zener, Varactor, Schouky, Power, Tunnel, Photodiode & LED), Half wave & full wave rectifiers. Switched Mode Power Supply.

Bipolar junction transistor: Introduction, Transistor, construction, transistor operations, BIP characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations, Eber-Moll's model



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Bias Stabilization: Need for stabilization, fixed bias, emitter bias, self bias, bias stability with respect to variation in I_{CO} , V_{BE} & β , Stabilization factors, thermal stability.

SUGGESTED READINGS

- (1) Vincent Del Toro , “Electrical Engineering Fundamentals,”
- (2) Basic Electrical Engineering: Mittle and Mittal, TMH
- (3) Electronic Devices and Circuit Theory: Boylestad and Nashelsky, 10th Edition, Pearson.
- (4) Microelectronics: Millman & Grabel. TMH.

Course Code	Type	Subject	L	T	P	Credits	CA	MS	ES	CA	ES	Pre-Requisites
FC004	FC	Physics	3	0	2	4	15	15	40	15	15	None

COURSE OUTCOMES

1. Knowing important concepts and phenomena linked to relativity, waves and oscillations and be able to do analytical and numerical calculations for faithful measurements, observations and gravitational wave communications.
2. The course is helpful to the students in understanding various optical wave phenomena which are required for optical & electromagnetic wave communications and in optical devices.
3. Concepts of Laser and Optical Fiber for modern developments in physics which are helpful in designing and developing new devices used in optical communications, medicine, environment, industries and related physics.

COURSE CONTENT

Relativity: Special Relativity, Lorentz Transformations, Velocity addition, Time dilation, Length Contraction, Variation of mass with velocity, Mass and energy,