

B.TECH ELECTRICAL ENGINEERING SYLLABUS II SEMESTER

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

Subject Code: E 151

UNIT I

DC Circuit - Voltage & Current sources, Loop and Nodal equations, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, Star-Delta transformations.

UNIT II

Fundamentals of AC- Average value, RMS value, form factor, crest factor, AC power and power factor, phasor representation of sinusoidal quantities.

Simple series, parallel & series-parallel circuits containing R-L, R-C, R-L-C parameters. Active, Apparent & Reactive power, Resonance in series & parallel circuits.

UNIT III

Introduction to Electrical Machines-Faraday's law of electromagnetic induction, Lenz's law, statically and dynamically induced EMF, Working principle & Basic constructional features of Transformer, different types, O.C. and S.C. tests of transformer, equivalent circuit and vector diagram, losses, efficiency and regulation, autotransformer. Basic constructional features of DC machines, working principle and classification.

UNIT IV

V-I characteristics of diodes, diode parameters, equivalent circuits, rectifiers, derivation for rectifier efficiency, ripple factor, filter circuits, power supplies.

Introduction to common lab equipment : Cathode Ray Oscilloscope, Function generator, multimeters. Time base circuits.

UNIT V

Transistor Circuits-Principle of operation of transistors, Input/output & transfer characteristics of BJT, Common Emitter, Common Base, Common Collector Configuration of BJT, Analytical expression for transistor characteristics, Maximum voltage ratings, Transistors Eber's model.

Reference books:

1. Electrical Technology - H.Cotton
2. Electrical Circuits - Schaum series
3. Basic Electrical Engineering. - V.N.Mittle & Arvind Mittal
4. Electronics Devices - Millman & Halkias
5. Electronics Principles - A.P.Malvino
6. Electronics Devices - Bell