With effect from the academic year 2015-2016

ES 221EE

BASIC ELECTRICAL ENGINEERING
(Common to ECE&CSE)

Instruction : 3 periods per week
Duration of University Examination : 3 hours
SEE : 70 Marks
CIE : 30 Marks
Credits : 3

Objectives :
1. To acquire knowledge in circuits and principle operation of electrical machines.
2. To be able to understand the tariff and safety measures.

Unit-I
DC & AC Circuits : Ohm’s law, Kirchhoff’s laws, Series & parallel circuits, Star & Delta conversions, Thevenin’s, Norton’s and Superposition theorems (analysis with DC excitation only).
A.C. Circuits : Production of sinusoidal voltage, Phasor representation of sinusoidal quantities, Average & rms values, Form factor, RLC circuits excited by sinusoidal input. Active & reactive power, power factor.

Unit-II
3-Phase Balanced Circuits: Star & Delta connections, Measurement of 3-phase power by two-wattmeter method.

Unit-III
DC Generator: Principle of operation, Constructional details, EMF equation, Types of generators, Armature reaction, No-load & Load characteristics, Losses & efficiency, Applications.
DC Motor: Principle of operation, Types of motors, Torque equation, 3-point starter, Characteristics of DC motors, Speed control of DC shunt motor, Losses & efficiency, Applications.

Unit-IV

Unit-V
Electrical Safety Measures: Earthing and its Importance, Safety practices, Basic ideas of Fuse, Circuit Breaker, and relay.

Suggested Reading