

ELECTRICAL TECHNOLOGY

Paper Code: ETEE-107
Paper : Electrical Technology

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INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks: 75

1. This is first introductory course in electrical technology to the students of all the branches of engineering in first year.
2. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
3. Apart from question no. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: To provide exposure to the students in respects of the basics of different aspects of electrical engineering with emphasis on constructional, measurement and applications of various types of instruments and equipments.

UNIT – I: DC Circuits

Introduction of Circuit parameters and energy sources (Dependent and Independent), Mesh and Nodal Analysis, Superposition, Thevenin's, Norton's, Reciprocity, Maximum Power Transfer and Millman's Theorems, Star-Delta Transformation and their Applications to the Analysis of DC circuits.

[T1],[T2][No. of Hrs. 11]

UNIT – II: A.C.Circuits

A.C. Fundamentals, Phasor representation, Steady State Response of Series and Parallel R-L, R-C and R-L-C circuits using j-notation, Series and Parallel resonance of RLC Circuits, Quality factor, Bandwidth, Complex Power, Introduction to balanced 3-phase circuits with Star- Delta Connections.

[T1],[T2][No. of Hrs. 14]

UNIT – III: Measuring Instruments

Basics of measuring instruments and their types ,Working principles and applications of moving coil, moving iron (ammeter & voltmeter) and Extension of their ranges, dynamometer- type Wattmeter , induction-type Energy Meter , Two-wattmeter method for the measurement of power in three phase circuits, Introduction to digital voltmeter, digital Multimeter and Electronic Energy Meter.

[T1],[T2],[R2][No. of Hrs. 11]

UNIT – IV: Transformer and Rotating Machines

Fundamentals of Magnetic Circuits, Hysteresis and Eddy current losses, working principle, equivalent circuit, efficiency and voltage regulation of single phase transformer and its applications. Introduction to DC and Induction motors (both three phase and single phase), Stepper Motor and Permanent Magnet Brushless DC Motor.

[T1],[T2],[R2][No. of Hrs. 12]

Text Books:

[T1] S.N Singh, "Basic Electrical Engineering" PHI India Ed 2012

[T2] Chakrabarti, Chanda,Nath "Basic Electrical Engineering" TMH India", Ed 2012.

Reference Books:

[R1] William Hayt "Engineering Circuit Analysis" TMH India Ed 2012

[R2] Giorgio Rizzoni "Principles and Application of Electrical Engineering" Fifth Edition TMH India.