

2054

B.E., Second Semester

EEE-201: Fundamentals of Electrical Engineering ✓

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Define the main magnetic quantities needed to deal with magnetic circuits. How are these interrelated?
- b) What are the advantages of electromechanical measuring instruments?
- c) What are the classifications of DC motors? Specify one application for each one.
- d) Classify the four types of generating stations and the types of energy source used in each.
- e) How will you minimize the ratio and phase angle errors? (5x2)

UNIT - I

- II. a) Why is it necessary to have a controlling system in a measuring instrument? Describe with sketches (i) spring control (ii) gravity control.
b) State two types of moving-iron instruments and discuss their working principles. (2x5)
- III. a) Define self and mutual inductance. Discuss the significance of coefficient of coupling.
b) Explain how a hysteresis loop is obtained. Also explain the significance of the critical points on the curve. (2x5)
- IV. a) Explain with the help of suitable diagrams the theory and construction of current and potential transformers.
b) Write a note on characteristics of CT and PT. (2x5)

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(2)

UNIT - II

- V. a) State the various parts of a transformer and their functions.
b) Starting with an ideal transformer on no-load, explain its working under load conditions. Draw the phasor diagrams and the equivalent circuit. (2x5)
- VI. a) Write the expression relating the electrical power converted to the mechanical form in a dc motor. How are the electrical power input and mechanical power output different from these powers?
b) Describe the construction and working principle of a three-phase induction motor. (2x5)
- VII. a) Draw a single line diagram of an ac power system and clearly show the various sub-systems and the range of voltages at which they operate.
b) Briefly explain the photovoltaic systems and wind generation technologies. (2x5)

x-x-x