2063
B.E. (Electrical and Electronics Engineering)
First Semester
EEEC-101: Electrical Measurement and Instrumentation

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) Name the seven base units in SI system?

   b) What is an energy meter?

   c) Why standardization of potentiometers is done?

   d) What are the sources of errors in bridge circuits?

   e) State the differences between current and potential transformers?

   (5x2)

UNIT - I

II. Discuss the MKS system of units and its advantages over CGS system of units. How the RMKS system of units is different from MKS system of units? (10)

III. a) What are the main sources of errors in PMMC instruments?

   b) Explain the PMMC voltmeters and their loading effects. (10)

IV. a) Explain the procedure for standardization of potentiometers.

   b) A potentiometer that is accurate to $\pm 0.000\ 1V$ (standard deviation) is used to measure current through standard resistance of $0.1 \pm 0.1\ \Omega$ % (standard deviation). The voltage across resistance is measured as 0.2514V. What is current and to what extent accuracy has been determined? (10)

UNIT - II

V. An AC bridge has arm ab with a resistance of 800Ω in parallel with a capacitor of $0.4\mu F$; arm bc with unknown resistance; arm cd with known resistance of $1200\ \Omega$ and arm da with a resistance of $500\ \Omega$ in series with a capacitor of $1\mu F$. Find resistance in arm bc to give balance and also frequency for which bridge is balanced. (10)

P.T.O.

VI.   What are Permeaters? Explain the working of Hopkinson permeater.   (10)

VII.   Draw diagrams to explain how high currents and voltages are measured using instrument transformers? Also tell the applications of instrument transformers. (10)

x-x-x