2074
B.E. (EEE), First Semester
EEEC-101: Electrical Measurements and Instrumentation

Time allowed: 3 Hours

Max. Marks: 50

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

x-x-x

I. Answer the following:-

   a)   List any three factors that affect the accuracy of measurement instruments.

   b)   Describe the primary standard for Temperature.

   c)   How is "true zero" obtained in Crompton's potentiometer?

   d)   What is the effect of stray capacitance in bridge circuits?

   e)   What are the advantages of potential transformers?   (5x2)

UNIT - I

II. Describe the construction of primary standard for absolute ohm and henry.   (10)

III. Derive the dimensions of (i) emf (ii) permeability (iii) resistivity (iv) current density in L,M,T,I system of dimensions.   (10)

IV. The emf of a standard cell is measured with a potentiometer which gives a reading of 1.01892V. When a 1M Ω resistor is connected across the standard cell terminals, the potentiometer reading drops to 1.01874V. Calculate internal resistance of the standard cell?   (10)

UNIT - II

V.   Explain and draw the circuit of Wein's bridge for frequency measurement. Explain its use in other circuits also. Why it is also called a harmonic distortion analyser? (10)

VI. A transformer is operated on 1000V, 50 Hz and give a total loss of 1000W of which 700W is due to hysteresis . If transformer were to operate at 2000V at 100Hz, what would be the losses due to hysteresis and eddy currents? Steinmetz constant=1.6. (10)

VII. Draw and explain the instrument transformers and give their applications.   (10)

x-x-x