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BIEE-007

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

00226

Term-End Examination

June, 2014

BIEE-007 : ELECTRICAL MEASUREMENTS AND MEASURING INSTRUMENTS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks.*

1. (a) Explain static characteristics of measuring instruments with suitable examples and figures wherever required.

(b) The true value of the voltage across a resistor is 50 V. But the measured value is 49 V. Calculate (i) Absolute error, (ii) Percentage error and (iii) Percentage accuracy. *7×2=14*

2. (a) Explain the principle and working of direct deflection type instrument with neat diagram. Also derive its torque equation.

(b) Classify the resistances from point of view of its measurement. Explain loss of charge method for measurement of insulation resistance of cable. *7×2=14*

3. (a) Describe the constructional details of Electrodynamometer type watt-meter. Derive the expression for torque when the instrument is used on a.c. Also explain why it is necessary to make the potential coil circuit purely resistive.

(b) Describe the construction and working of two element induction type energy meter. *7×2=14*

4. (a) Derive the equation for bridge sensitivity of a Wheatstone bridge.

(b) What is the principle of A.C. Bridges ? Explain how an unknown inductance can be measured by using Maxwell's Inductance Bridge. *7×2=14*

5. (a) Explain the method of reversals for experimental determination of hysteresis loop of a magnetic specimen.

(b) Draw and give a one line description of the block diagram of a general purpose Cathode Ray Oscilloscope. Each block should be described. Draw curves and circuit wherever required. *7×2=14*

6. (a) Give the classification of CRO. Explain with neat block diagram, the working of Dual trace CRO.

(b) A CRT has an anode voltage of 2000 V and parallel deflecting plates 2 cm long and 5 mm apart. The screen is 30 cm from the centre of the plates. Find the input voltage required to deflect the beam through 3 cm. The input voltage is applied to the deflecting plates through amplifiers having gain of 100. *7×2=14*

7. Write short notes on any ***two*** of the following : *7×2=14*

(a) Moving iron type instrument

(b) Harmonic Analyzer

(c) Flux Meter

(d) Cathode Ray Tube