



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 121304

Roll No.

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B.Tech.

(SEM. III) (ODD SEM.) THEORY
EXAMINATION, 2014-15
**ELECTRICAL AND ELECTRONICS
MEASUREMENT**

Time : 3 Hours]

[Total Marks : 100

Note: Attempt all questions. Each question carries equal marks.

1 Attempt any two parts of the following : **2x10=20**

- (a) (I) Describe the term Accuracy, precision, resolution, sensitivity.
- (II) The resistance of an unknown resistor is determined by wheatstone bridge. The solution for the unknown resistance is stated as :

$$R_x = \frac{R_1 \times R_2}{R_3}$$

Where limiting values of various resistances are
 $R_1 = 500 \pm 1\%$ $R_2 = 615 \pm 1\%$ $R_3 = 100 \pm 0.5\%$

Calculate (i) the normal value of the unknown resistance (ii) the limiting error of the unknown resistor in ohm

- (b) Explain the principle of working of thermocouple instrument with neat diagram.

- (c) A 3 phase 500V motor load has a power factor of 0.4. Two wattmeters connected to measure the Input. They show the input to be 30 kW. Find the reading of each instrument.
2. Attempt any two parts of the following. $2 \times 10 = 20$
- (a) Derive the transformation ratio for a current transformer using phasor diagram.
- (b) (i) Why secondary of CT never open while its primary winding is energised ?
(ii) What is the application of potential transformer ? Define the term ratio error and phase angle error.
- (c) Explain any power factor meter with diagrams.
3. Attempt any two parts of the following. $2 \times 10 = 20$
- (a) Classify different types of resistances with their order. Explain wheatstone bridge method for measurement of medium value of resistance.
- (b) Explain Maxwell's inductance-capacitance bridge for measurement of unknown inductance. State advantages and disadvantages of this bridge.
- (c) Explain De-Sauty bridge with circuit diagram.
4. Attempt any two parts of the following. $2 \times 10 = 20$
- (a) Explain basic potentiometer circuit with diagram and describe the procedure for standardisation of the potentiometer.
- (b) Describe the method of determination of Hysteresis loop with neat sketch.
- (c) Explain Lloyd-Fisher square method for measurement of iron loss.
5. Attempt any two parts of the following. $2 \times 10 = 20$
- (a) Describe Integrating type of digital voltmeter with block diagram.
- (b) Sketch the CRT with internal structure and explain its different components.
- (c) Explain dual trace and dual beam oscilloscopes.