Reg. No. : | | | | | | | | | | |

Question Paper Code: 31634

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Instrumentation and Control Engineering

01UIC304 – MEASUREMENTS AND INSTRUMENTATION

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What is the significance of calibration?
2. Compare Moving coil with Moving iron instruments.
3. What is meant by creeping in energy meter?
4. Define creeping in energy meter.
5. What are the applications of potentiometers?
6. Distinguish between polar and Co-ordinate type AC potentiometers.
7. With a neat circuit diagram, write the balanced equation of Wheatstone bridge.
8. Draw the circuit diagram of guard circuit for measurement of high resistance.
9. Why there are two conditions of balance in AC bridges?
10. Which bridge is used to measure incremental inductance? Write the expression.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the construction and theory of operation of D'Arsonval galvanometer. (16)

Or

(b) Describe the construction details and working of an electrodynamometer type instrument. (16)

12. (a) Explain about the errors in electrodynamometer type wattmeter. (16)

Or

(b) Explain the construction and theory of operation of an induction type energy meter. (16)

13. (a) Draw the circuit diagram of a Crompton's potentiometer and explain its working. Describe the steps used when measuring an unknown resistance. (16)

Or

(b) Draw the equivalent circuit and phasor diagram of a current transformer. Derive the expression for ratio and phase angle errors. (16)

14. (a) Explain the theory and working principle of Kelvin's double bridge method for measurement of low resistance. Derive the relation for finding unknown resistance. (16)

Or

(b) What is the importance of the value of earth's resistance? What are the factors which influence its value? Describe the fall of potential method for measurement of earth resistance. (16)

15. (a) Explain the operation of Schering bridge to determine the unknown capacitance. Derive the relevant equations and explain the computation procedure using phasor diagram. (16)

Or

(b) What are the different sources of errors in AC bridges? Explain the precautions taken and the techniques used for minimization of these errors. (16)

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