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

Question Paper Code: 31055

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

Third Semester

Electronics and Instrumentation Engineering

01UEI305 - ELECTRICAL MEASUREMENTS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Compare Ballistic and D'Arsonval galvanometer.
2. Write basic principle of rectifier type instrument.
3. What is Phantom loading?
4. Write the methods for calibrating the wattmeter.
5. Compare AC and DC potentiometer.
6. List the various type of errors in CT and PT.
7. Classify the resistance based on the range of the measurement.
8. Write the limitations of Wheatstone's bridge.
9. Write the sources and detectors used in AC Bridge.
10. What is meant by sliding balance in AC Bridge?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the working principle of attraction type and repulsion type moving iron instruments with necessary diagrams. (12)

(ii) Compare MI and MC instruments. (4)

Or

(b) (i) Design a multi-range d.c.milli-ammeter using a basic movement with an internal resistance R_m=50Ω and a full scale deflection current I_m=1mA. The range required are 0-10mA; 0-50mA; 0-100mA and 0-500mA. (8)

(ii) Explain in detail about thermal type instrument with necessary diagram. (8)

12. (a) (i) Explain in detail about sources of errors in Electrodynamometer type wattmeter and also explain the various compensation techniques used. (12)

(ii) Write short notes about LPF wattmeter. (4)

Or

(b) Describe basic principle, construction and working of induction type energy meter and also derive the torque equation for the same. (16)

13. (a) (i) Explain in detail about the laboratory grade DC potentiometer. (10)

(ii) Give the applications of AC potentiometers. (6)

Or

(b) Explain in detail about characteristics of CT and PT with phasor diagram. (16)

14. (a) (i) Describe the circuit of Kelvin's double bridge used for measurement of low resistance. Derive the conditions for balance. (8)

(ii) Explain in detail about series type ohmmeter with neat sketch. (8)

Or

(b) (i) Explain any two types of earth resistance measurement with neat diagram. (8)

(ii) Describe in detail about price's guard wire method. (8)

15. (a) (i) Explain in detail about vibration galvanometer. (12)

(ii) Illustrate the different sources of errors in AC bridges. (4)

Or

(b) (i) Derive an expression for balance condition in Anderson's bridge. (10)

(ii) Derive the bridge balance condition for the Wein's bridge. (6)

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