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Question Paper Code: 31535

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

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. Mention the various methods of providing control torque.
2. Explain the terms resolution and sensitivity.
3. List the errors in electro dynamometer type wattmeter.
4. What is phantom loading?
5. What is the use of a potentiometer?
6. What are the advantages of instrument transformers over shunts and multipliers?
7. List the applications of Megger.
8. What is ground fault?
9. Give any two merits and demerits of Hay's bridge.
10. State two applications of vibration galvanometer.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain in detail about the working principle of D'Arsonval galvanometer and derive its torque equation. (16)

Or

- (b) Illustrate with a neat diagram the principle of operation, construction and working of PMMC instrument. (16)
12. (a) Describe the constructional details of an electro dynamometer type wattmeter. Derive the expression for torque when the instrument is used on ac. (16)

Or

- (b) Draw cross sectional view of induction type single phase energy meter and explain its principle of operation. How is creep error eliminated? (16)
13. (a) Describe the working and construction of a co-ordinate type ac potentiometer. (16)

Or

- (b) Explain the operating principle of current transformer with a neat diagram. Mention the various causes of error and state the methods of reducing the errors. (16)
14. (a) Sketch the circuit of Kelvin double bridge, explain its operation and derive the equation for the unknown resistance. (16)

Or

- (b) (i) Sketch the circuit of a series ohmmeter with a zero control. Explain the circuit operation. (8)
- (ii) Draw a circuit diagram to show how the insulation resistance of a cable should be measured. Explain. (8)
15. (a) Sketch the circuit diagram of a Maxwell inductance bridge. Derive the equations for resistive and inductive components of the measured inductor. (16)

Or

- (b) How is vibration galvanometer different from ballistic galvanometer? Explain the operation of vibration galvanometer with a neat diagram. (16)