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

Question Paper Code : 60525

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Third Semester

Electronics and Instrumentation Engineering

EI 2202/EI 34/EI 1201/080300004/10133 EI 306 — ELECTRICAL MEASUREMENTS

(Common to Instrumentation and Control Engineering)

(Regulations 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the main sources of errors in PMMC instrument.

2. What is transfer instrument?

3. What is creeping? How it is prevented?

4. What is pressure coil?

5. How does a P.T. differ from a power transformer?

6. State the reason why current transformer must never be operated on open circuit.

7. How to measure resistance by ammeter and voltmeter method?

8. Write the technique used in the measurement of resistance by direct deflection method.

9. Which types of detector is used in ac bridges?

10. Write about the errors in A.C. bridge methods.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the construction and working of a Ballistic galvanometer. (10)

(ii) What are the main sources of error in moving coil instrument? Explain them briefly. (6)

Or

(b) (i) Explain the construction and operation of electrodynamometer type moving coil ammeter. (10)

(ii) A moving coil instrument gives a full scale deflection of 1 mA when the potential difference across its terminals is 10 mV. Calculate the shunt resistance for a full scale reading with 100 V. (6)

12. (a) Explain the construction and operation of single phase energy meter. Also derive the torque equation. (16)

Or

(b) With a neat diagram explain the construction and working of electro dynamometer type Wattmeter. Also explain what the importance is of deflecting torque in these analog instruments. (16)

13. (a) Describe with basic circuit construction and operation of Crompton Laboratory type D.C Potentiometer. (16)

Or

(b) With a neat sketch explain construction and operation of polar type Drysdale A.C. Potentiometer. (16)

14. (a) Illustrate the operation of the Wheatstone bridge. Compare the measuring accuracy of a Wheatstone bridge with the accuracy of an ordinary ohmmeter. (16)

Or

(b) What are the various difficulties encountered in the measurement of high resistance? Explain how these difficulties are overcome. (16)

15. (a) Explain the measurement of inductance using Maxwell-Wein's bridge circuit.

Or

(b) Write short notes on :

(i) Vibration galvanometer (8)

(ii) Campbell bridge. (8)