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Question Paper Code : 10315

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Third Semester

Electrical and Electronics Engineering

EE 2201/131301/EE 33/EI 1202/ 10133 EE 302/080280016 — MEASUREMENTS AND INSTRUMENTATION

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the static characteristics of an instrument?

2. What is the significance of calibration?

3. What is meant by creeping in energy meters?

4. List out the methods used for measurement of iron loss in ferromagnetic materials.

5. What is the use of earth loop?

6. What is meant by self balancing bridges? Give two examples.

7. What is the difference between LED and LCD?

8. What are the functions of a data logger?

9. What are the factors to be considered for selection of transducer?

10. Define smart sensors.

PART B — (5 × 16 = 80 marks)

11. (a) Show the functional blocks of a generalized instrumentation system through a neat sketch. Also explain their functions in detail. (16)

Or

(b) Describe the different types of static errors in a measurement system. (16)

12. (a) Describe the constructional details and working principle of the single phase induction type energy meter? (16)

Or

(b) Write short notes on :

(i) Use of current transformer for current and power measurement. (8)

(ii) Working of Weston frequency meter. (8)

13. (a) Explain how Wein bridge used for frequency measurement with neat circuit diagram. Also derive the suitable expression. (16)

Or

(b) (i) Discuss the effects of electro static and electromagnetic interference in instruments. (8)

(ii) Write short notes on Grounding techniques. (8)

14. (a) Explain the principle of working of a X–Y recorder with neat functional diagram. Also mention some applications. (12 + 4)

Or

(b) With neat figure explain the working principle of a digital storage oscilloscope. What are the advantages over analog CRO? (12 + 4)

15. (a) Explain the principle of the following transducers.

(i) Thermistors (8)

(ii) LVDT (8)

Or

(b) What is data acquisition system? Give the block diagram arrangement of a data acquisition system and describe the function of each component. (16)

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