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

Question Paper Code : 80570

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fourth Semester

Electrical and Electronics Engineering

EE 8403 — MEASUREMENTS AND INSTRUMENTATION

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List out the dynamic characteristics of any measurement system.
2. Show the block diagram indicating functional elements of measurement system.
3. Illustrate the types of multimeters used for instrumentation.
4. Write the torque equation for the moving iron instruments.
5. Draw the circuit diagram write the expression for unknown inductance and its resistance of Anderson's bridge.
6. What are the sources of electromagnetic interference?
7. Point out the advantages of magnetic tape recorder.
8. Differentiate the functions of printers and plotters.
9. Mention the basic requirements of transducers.
10. Write the desired properties of Thermo couple metals.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Discuss the different types of standards of measurement. (6)

(ii) Describe the static and dynamic characteristics of measuring instruments. (7)

Or

(b) Explain construction and working Principle of various types of Digital Voltmeter (DVM).

12. (a) Discuss with circuit diagram and phase diagram, describe the working of single-phase AC energy meter.

Or

(b) (i) Discuss in detail, about the working principle and characteristics of B-H curve analysis of a magnetic circuit. (7)

(ii) Explain the operating principle of instrument transformer. (6)

13. (a) With the circuit diagram, describe the principe of operation of duo-range DC Potentiometer.

Or

(b) Quote the procedure of measuring a low resistance with the help of Kelvin's double bridge. Derive the relation to find unknown resistance. (8+5)

14. (a) (i) Describe construction and working of magnetic tape recorder. (6)

(ii) With a help of functional block diagram, explain the operation of a Cathode Ray Tube(CRT). (7)

Or

(b) Explain the Dot matrix printer working and sketch the construction layout. (7+6)

15. (a) Explain in detail about hall effect transducer and mention some applications of hall effect transducer.

Or

(b) With a neat block diagram explain single and multichannel data acquisition system. Give example for each.

PART C — ($1 \times 15 = 15$ marks)

16. (a) Evaluate the expression for the current through the galvanometer in case of unbalanced Wheatstone Bridge. And also state its application.

Or

(b) Design and construct the Digital CRO to display the digital signal.

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