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

Question Paper Code : 51431

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Third Semester

Electrical and Electronics Engineering

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

(Regulation 2008/2010)

(Common to PTEE 2201 – Measurements and Instrumentation for B.E. (Part-Time) Third Semester Electrical and Electronics Engineering – Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Define measuring lag and fidelity of dynamic characteristics of instrument.

2. Give the international standards of instruments.

3. How are basic instruments converted into higher range ammeter?

4. Define creeping in energy meter.

5. With a neat circuit diagram, write the balanced equation of Wheatstone bridge.

6. Draw the circuit diagram write the expression for unknown inductance and its resistance of Anderson's bridge.

7. What is LED?

8. What is the principle of working of Dot Matrix display?

9. Define primary type of transducer.

10. What is the principle of operation of optical transducer?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the functional elements of an instrument with a neat block diagram. (10)

(ii) Define accuracy and reproducibility of an instrument and explain. (6)

Or

(b) (i) What are the different types of errors? Explain how to eliminate errors in instrument. (10)

(ii) Describe primary and secondary standards in instruments. (6)

12. (a) With circuit and phasor diagram, explain the working of single phase ac energy meter. (16)

Or

(b) (i) Obtain B-H curve of a ring specimen. (8)

(ii) Describe how to obtain iron loss of a ring specimen using wattmeter. (8)

13. (a) With a circuit diagram, explain the principle of operation of Duo-range DC Potentiometer. (16)

Or

(b) (i) Draw a neat diagram of Kelvin double bridge and explain how to measure low resistance. (8)

(ii) Obtain an expression for measurement of inductance using Maxwell's Inductance Bridge with a neat circuit diagram. (8)

14. (a) (i) Describe construction and working of magnetic tape Recorder. (8)

(ii) With a block diagram, explain the working of digital CRO. (8)

Or

(b) (i) Draw a neat block diagram of X-Y recorder and describe its working. (8)

(ii) Explain the principle and working of CRT display with a neat diagram. (8)

15. (a) (i) Describe the construction and working of potentiometer type resistance transducer for measuring linear displacement. (8)

(ii) Explain the working of D/A converter with a neat diagram. (8)

Or

(b) (i) What is called Piezo electric transducer? Explain its working with a diagram. (8)

(ii) Explain how to measure pressure using capacitive type transducer. (8)

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