

(Compulsory Question)

9. (i) Define deflection sensitivity of a CRT. 2  
(ii) Differentiate accuracy and precision. 2  
(iii) What are the main elements of velocity transducer ? 2  
(iv) How range of D.C. Voltmeter can be extended ? 2  
(v) Give application of Megger. 2  
(vi) Application of magnetic recorder. 2

Roll No. ....

Total Pages : 04

**July-22-00323**

**B. Tech. EXAMINATION, 2022**

Semester V (CBCS)

ELECTRONIC MEASUREMENT AND MEASURING  
INSTRUMENTS

EC-504

*Time : 3 Hours*

*Maximum Marks : 60*

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*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

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**Note :** Attempt *Five* questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. 9 is compulsory.

**Section A**

1. Explain various sources of errors and their minimizing methods. A set of independent current measurements were recorded as 10.03, 10.10, 10.11 and 10.08A. Calculate the range of an error.

2. (a) Distinguish between spectrum analyzer and harmonic distortion analyzer. 6
- (b) Define the following :
- (i) precision
  - (ii) accuracy
  - (iii) sensitivity
  - (iv) resolution
  - (v) tolerance
  - (vi) errors. 6

### Section B

3. (a) If the three arms of the Wheatstone's bridge are having resistances of 5 k $\Omega$ , 10 k $\Omega$ , 15 k $\Omega$  respectively, find the value of resistance required to balance the bridge. 6
- (b) Illustrate the measurement of unknown inductance using Maxwell's bridge. 6
4. (a) Draw the circuit diagram of Schering's Bridge and explain its operation. 6
- (b) How the effect of contact resistance and resistance of the connecting leads are eliminated in the measurement of resistance by Kelvin's double bridge ? 6

### Section C

5. (a) What is Piezo-electric effect ? Explain the operation of Piezo-electric transducer. 6
- (b) Draw and explain the block diagram of analog and digital data acquisition system. 6
6. Explain the construction and principle of working of a linear voltage differential transformer (LVDT). Explain, how the magnitude and direction of the displacement of core of an LVDT detected ? 12

### Section D

7. An electrical deflected CRT has a final anode voltage of 2000V and parallel deflecting plates of 1.5 cm long and 5 mm apart. If the screen is 50 cm from the centre of the deflecting plates, find :
- (i) Beam speed
  - (ii) Deflection sensitivity of the tube
  - (iii) Deflection factor of the tube. 12
8. (a) Explain the role of telemetry system and its applications. 6
- (b) Compare various display devices. 6