

Dec.-22-0212

EC-504 (Electronics Measurement and
Measuring Instruments)

B.Tech. 5th (CBCS)

Time : 3 Hours

Max. Marks : 60

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

Note : Attempt any five questions in all, selecting one question from each unit. Unit V is compulsory.

UNIT - I

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 10.08 A. Calculate the range of an error. (12)
2. (a) Distinguish between spectrum analyzer and harmonic distortion analyzer.
(b) What are various standards of measurement system? (6+6=12)

UNIT - II

3. An unbalanced Wheatstone bridge has the following resistances with $R_1=1\text{ k}\Omega$, $R_2=2.5\text{ k}\Omega$, $R_3=3.5\text{ k}\Omega$, $R_4=10\text{ k}\Omega$ with a battery voltage of 6V and a galvanometer resistance of $R_g=300\ \Omega$. Calculate the current through the galvanometer. What is a limitation of Wheatstone bridge? (12)
4. (a) Draw the circuit diagram of Schering's Bridge and explain its operation.
(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+6=12)

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UNIT - III

5. (a) What is Piezo-electric effect? Explain the operation of Piezo-electric transducer.
(b) Draw and explain the block diagram of analog and digital data acquisition system. (6+6=12)
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)

UNIT - IV

7. An electrical deflected CRT has a final anode voltage of 2000V and parallel deflecting plates of 1.5cm long and 5mm apart. If the screen is 50cm 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.
(b) Compare various display devices. (6+6=12)

UNIT - V

9. (i) Define deflection sensitivity of a CRT.
(ii) Differentiate accuracy and precision.
(iii) What are the main elements of velocity transducer?
(iv) How range of D.C. Voltmeter can be extended?
(v) Give application of Megger.
(vi) Application of magnetic recorder. (6×2=12)