

SET-VI

Unique Paper Code : 32223904_OC

Name of the Paper : Basic Instrumentation Skills

Name of the Course : B. Sc (Hons) and B. Sc. (Prog)-CBCS_SEC

Semester : IV-Semester

Medium : English

Duration : 3 hours **Maximum Marks : 50**

Instructions for Candidates

All questions carry equal marks. Attempt any **four** questions in all.

Q1. What are the different types of errors present in the measurement system?

A 0-150 V voltmeter has a guaranteed accuracy of 1 per cent full-scale reading. The voltage measured by this instrument is 43 V. Calculate the limiting error in per cent. How does this value change when the voltmeter reads 115 V? (8, 4.5)

Q2. Draw a neat labelled block diagram of Cathode Ray Tube (CRT). Explain why the screen of CRT is coated with phosphor? What is aquadag? What is its function. Explain how phase difference two sinusoidal waves of same frequency is measured using CRO. (3, 2, 1, 2, 4.5)

Q3. Explain the operation of a Q meter with help of its block diagram. Mention its applications.

A 1000 Hz bridge has the following constants

Arm AB: $R=1\text{ K}\Omega$ in parallel with $C=0.05\text{ }\mu\text{F}$.

Arm BC: $R=1.5\text{ K}\Omega$ in series with $C=0.25\text{ }\mu\text{F}$.

Arm CD: $L=50\text{ mH}$ in series with $R=200\Omega$

Find the constants of arm DA to balance the bridge. (5, 2.5, 5)

Q4. Compare digital voltmeter with the analog voltmeter. What is the basic working principle of digital voltmeter? Explain briefly the following characteristics of digital meters:

(i) Resolution (ii) Sensitivity (iii) Accuracy. (4, 4, 4.5)

Q5. Draw the block diagram and explain the working of multimeter. What are the advantages of electronic voltmeter over conventional voltmeter. (7.5, 5)

Q6. Draw the block diagram of an audio frequency signal generator and explain its components. What is the difference between signal generator and function generator? What is harmonic distortion factor? (7.5, 3, 2)