SET - I

Unique Paper Code	**:**	**32223904**
Name of the Paper	**:**	**Basic Instrumentation Skills**
Name of the Course	**:**	**B. Sc (Hons) and B. Sc. (Prog)-CBCS_SEC**
Semester	**:**	**III**
Medium	**:**	**English**

Duration: 3 hours **Max Marks: 50**

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All questions carry equal marks. Attempt any **four** questions in all.

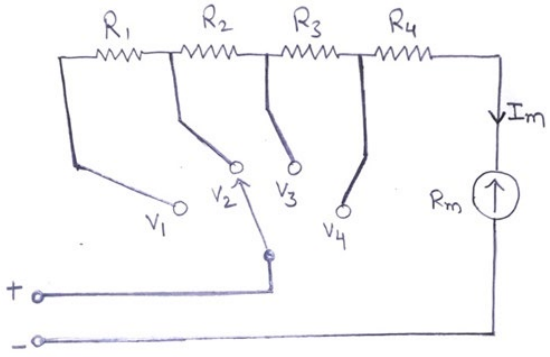
1. State three types of systematic error, giving examples of each.
   The expected value of the voltage across a register is 80 V. However, the measurement gives a value of 79 V. Calculate (i) absolute error (ii) percentage error (iii) relative accuracy (iv) percentage of accuracy.

2. What do you understand by the electrostatic focusing in CRO? How is it achieved in CRO? Explain in detail using diagrams.

3. Explain the working of pulse generator and mention its applications. What are the different applications of signal generator? Give a brief idea of testing.

4. What is digital frequency meter? Briefly discuss the working of digital frequency meter with the help of suitable block diagram. Suppose that the unknown input signal to frequency counter is 6.30 kHz. What will be display (five-decade counter is used for display) indicate if the GATE ENABLE time is 0.1 s and 10 s.

5. A basic moving coil analog voltmeter, as shown below, with internal resistance, $R_m = 100\ \Omega$, and full-scale current is 1 mA, is to be converted into a multi-range dc voltmeter with voltage ranges of 0-10 V, 0-50 V, 0-250 V, and 0-500 V. Calculate the values of R_1, R_2, R_3, R_4, for the flowing circuit.



6. What are Lissajous figures? How are they used in CRO to measure frequency and phase difference? Explain in detail using diagrams.