2434

BEI1303

Electronics Instrumentation (New)
(1020)

P. Pages : 3

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** sub questions from each unit.
5. Figures to the right indicate full marks.
6. Draw neat diagrams wherever necessary.
7. Assume suitable data if necessary.

UNIT - I

1. a) What is standard ? Explain different types of standards.   10

    b) Give the types of error and explain them in detail.   10

    c) A Voltmeter reads 50V on it's 100V scale. Voltmeter have sensitivity of 1000 Ω/V when connected across an unknown resistor in series with milliameter which reads 4mA. Calculate

        i)   Apparent resistance of unknown resistor.

        ii) Actual resistance of unknown resistor.

        iii) The error due to the loading effect of the Voltmeter.   10

UNIT - II

2. a) Describe the constructional details and working of the electrodynamometer type instrument.   10

    b) Explain the operation of PMMC movement with neat sketch. State advantages, disadvantages and errors in PMMC instrument.   10

c) Fig. (a) shows a simple series circuit where $R_1 = R_2 = 15K$ connected to 110V dc source. If the voltage across R_2 is to be measure by Voltmeter having i) $1000\,\Omega/V$ and ii) $22000\,\Omega/V$. Find which voltmeter will read the accurate value or voltage across R_2. Both the meters are used on the 60V range. **10**
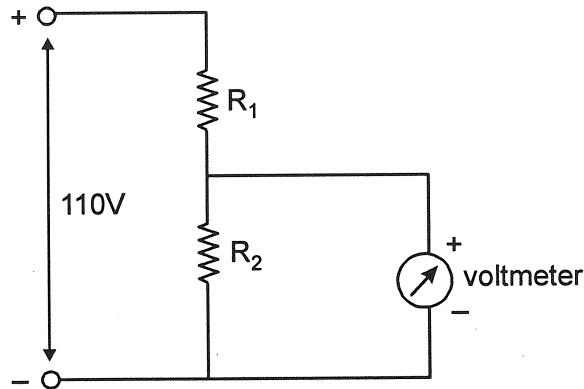

fig. (a)

UNIT - III

3. a) Wein bridge has following constants $R_1 = 3.5K\Omega$ in series with $C_1 = 5.5\,\mu f$ $R_2 = 27K\Omega$, $R_4 = 110K\Omega$.
The frequency of supply is 2KHz. find equivalent parallel resistance and capacitance that null the Wein bridge. **10**

b) An ac bridge has following constants **10**
Arm $AB - R_1 = 2K\Omega$ in parallel with

$\quad\quad C_1 = 0.47\mu f$

Arm $BC - C_3 = 0.47\mu f$

Arm CD - unknown C_x in series with R_x.

Arm $AD - R_2 = 3K\Omega$

If input frequency is 1KHz, determine unknown and dissipation factor.

c) Draw circuit diagram for Kelvin's bridge, and express it's feature.
Derive balance equation. **10**

UNIT - IV

4. a) Draw and explain operating principle of a Ramp type DVM. Also state the features of Digital voltmeter. **10**

b)   Draw and explain Galvanometric recorder. Also state it's application.   **10**

c)   With basic components draw and explain magnetic tape recording.
     Write down the method of recording in brief.   **10**

UNIT - V

5.   a)   Describe the construction of thermocouple. List various types of thermocouple.
          Also state the error introduced in thermocouple.   **10**

     b)   Explain the working of LVDT with neat diagram. State the advantages and
          disadvantages of LVDT.   **10**

     c)   Write short note on :   **10**

          i)   Pyrometer

          ii)   RTD.

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