S.E. Electrical III CBGS

E & E Measurement

01. 6. 15

(REVISED COURSE)

Q.P. Code : 4794

(3 Hours)

[Total Marks : 80

N. B.
(1) Question No. 1 is compulsory.
(2) Attempt any **three** questions out of remaining questions.
(3) Figures to the **right** indicate **full** marks.
(4) Assume suitable data if necessary.

1. Solve any **five** :-   20
    a) Explain how dc potentiometer measures unknown potential. What enhancement is made in dc potentiometer to convert it in Crompton's potentiometer?
    b) Explain measurement of resistance using Wheatstone's bridge
    c) What is an instrument transformer? State the types
    d) Compare RTD, thermistor and thermocouple
    e) How digital meters are advantageous over analogue meters?
    f) Short note on - basic Q meter.

2. a) A PMMC instrument with full scale deflection of 100 μA and coil resistance of 50 Ω   10
        is to be converted into a multimeter to measure voltage (0-500V) and current (0-10A). Find the suitable values of shunt and multiplier resistance required.
    b) Justify Hay's bridge is suitable for measuring inductance of high Q coils. Draw its   10
        circuit diagram and phasor diagram

3. a) Explain systematic, random error and limiting error. Define expression for relative   10
        limiting error.
    b) Write a short note on - photo electric transducers   10

4. a) How cold junction and lead compensation is provided for Thermocouple? Also sate   10
        need for compensation.
    b) Explain with neat diagram 'electrodynamometer type power factor meter'? Show   10
        that power factor is proportional to its deflection

5. a) Why synchroscope is required? Explain with neat diagram 'Weston type   10
        Synchroscope'?
    b) Explain with neat diagram 'digital energy meter'   10

6. Write a short note on-
    a) Digital multimeter   07
    b) Megger   07
    c) Calibration of voltmeter   06

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