Con. 8937–13.

GX–12143

(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. (a) Explain types of error in Electrical measurement. 4
   (b) Explain resolution and sensitivity of digital meter. 4
   (c) Explain a suitable bridge to measure low resistance. 4
   (d) Describe working principle of D.C. crompton type of Potentiometer. 4
   (e) What is Electrical transducers ? Differentiate between Active and Passive transducer. 4

2. (a) Explain Anderson bridge for measuring self inductance. Draw a neat circuit diagram 10
      and phasor diagram. Derive expression for self inductance under balance condition.
      State advantage and disadvantages.
   (b) Explain De Sauty's Bridge with circuit diagram, Phasor diagram, derive the expression 10
      for measuring the capacitance of a capacitor and also write in detail how the bridge
      can be modified to measure dielectric loss of a capacitor.

3. (a) Classify frequency meter. Explain any one in detail. 10
   (b) Describe the construction and working of PMMC instrument. Derive the equation 10
      for deflection if the instrument is spring controlled.

4. (a) Explain how D.C. Potentiometer is used to calibrate the following meter. 10
         (i) Voltmeter
         (ii) Ammeter
         (iii) Wattmeter
   (b) Explain the working principle of digital Voltmeter, Ammeter and frequency meter. 10

5. (a) Explain with neat sketch Piezo Electrical transducers and derive the expression for 10
      magnitude voltage across the load by making simplifying assumption.
   (b) Describe the construction, theory, working of thermocouple. 5
   (c) Explain how temperature can be measured with the use of (i) RTD (ii) Thermistor. 5

6. Write notes on :— 20
   (a) LVDT
   (b) Resistance Pressure transducer
   (c) Digital energy meter
   (d) Digital frequency meter.