III / Transducers - I / Inst (CBGS)

24/05/16

QP Code : 30657

(3 Hours) [Total Marks : 80

N.B. : (1) Question No.1 is **compulsory**.
(2) Answer any **three** out of remaining **five** questions.
(3) Assume suitable data whenever required and state the assumptions.

1. Solve any **four** from the following **20**
    (a) What do you mean by calibration? What is need of calibration?
    (b) Explain the principle of radiation type pyrometer.
    (c) Define transducer and state its classification.
    (d) Explain ultrasonic liquid level measurement.
    (e) Define metrology and write its significance.

2. (a) Explain static and dynamic characteristics of an instrument **10**
   (b) Compare RTD, thermister and thermocouple. **10**

3. (a) Explain use of potentiometer for displacement measurement **10**
   (b) The output of a LVDT is connected to 5V voltmeter through an amplifier **10**
       whose amplification factor is 250. An output of 2 mV appears across
       the terminals of L VDT when core moves through a distance of 0.5mm.
       Calculate sensitivity of the L VDT and that of the whole setup. The
       milivoltmeter scale has 100 divisions. The scale can read of 1/5 of
       division. Calculate the resolution of the instrument in mm.

4. (a) Draw and explain schematic block diagram of hair hygrometer **10**
   (b) A platinum thermometer has a resistance of 100Ω at 25⁰C. **10**
       (i) Find its resistance at 65°C, if the platinum has a resistance
           temperature coefficient of 0.00392/°C.
       (ii) If the thermometer has a resistance of 150Ω, calculate the
            temperature.

5. (a) Explain Air purge type level gauge with advantages and disadvantages. **10**
   (b) Define error and explain types of error. **10**

6. Write short notes on following topic. (Any **two**) **20**
    (a) Optical pyrometer
    (b) Cold junction compensation
    (c) Limits and fits

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FW-Con. : 11012-16.