

S.E. (Instru.) Sem-III Chota based Dt 201519

(1/2)

Duration: 3 Hours

Total Marks: 80

Note:

1. Question one is compulsory.
2. Attempt any three from remaining five questions
3. Assume suitable data wherever necessary.

- Q1. Attempt any four** 20
- a. What is the difference between sensor and transducer?
 - b. What do you mean by calibration? What is the need of calibration?
 - c. Explain absolute humidity and relative humidity.
 - d. Explain liquid level measurement using float and LVDT with appropriate diagram.
 - e. Explain working of bimetallic thermometer.
- Q2. a** Draw and explain block diagram of generalized measurement system. 10
- Q2. b** Explain the flapper nozzle transducer for displacement measurement and also draw its characteristics. 10
- Q3.a** A copper constantan thermocouple was found to have linear calibration between 0 to 500°C with emf at maximum temperature equal to 40.68mv. Reference junction at 20°C. 10
- i) Determine the correction which must be made to indicate emf if the cold junction temperature is 25°C.
 - ii) If the indicated emf is 8.92mv in the thermocouple circuit. Determine the temperature of hot junction.
- Q3.b.** Compare RTD, Thermistor and Thermocouple. 10
- Q4.a.** Explain construction and working principle of LVDT. 10
- Q4.b.** A linear resistance potentiometer is 5cm long and having resistance of 10KΩ. Under normal condition the slider is at center of potentiometer. What will be the displacement when the resistance of potentiometer as measured by bridge circuit is i) 3.8KΩ. and ii) 8.3KΩ. Comment on direction of motion of slider. 10

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(2/2)

- Q5.a. Explain with neat sketch how the capacitance probe can be used for level measurement of non-conducting and conducting liquids. 10
- Q5.b. Explain the air purge type level gauge with advantages and disadvantages. 10
- Q6. Write a short note on (Any two) :- 20
- a. Lead wire compensation in RTD
 - b. Hall Effect Transducer
 - c. Sound Pressure Level)SPL (meter
 - d. Proximity sensors