Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VII • EXAMINATION – WINTER • 2014

Subject Code: X 70903 **Date: 03-12-2014**

Subject Name: Industrial Instrumentation

Time: 10:30 am - 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define the following terms (**Any Seven**) (1) Hysteresis (2) Reproducibility (3) Resolution (4) Accuracy (5) Dead Zone (6) Drift (7) Sensitivity (8) Gauge Pressure (9) Absolute Pressure (10) Static Pressure	**7**
	(b)	What are Electrical transducers? Give its advantages. What are the basic requirements of a transducer?	**7**
Q.2	**(a)**	Explain how temperature compensation is achieved in strain measuring system.	**7**
	(b)	Define Gauge factor with respect to resistance strain gauge. Obtain an expression for the gauge factor in terms of poison's ratio.	**7**
		OR	
	(b)	List different principles involved behind weight measurements and explain strain gauge load cell for weight measurement.	**7**
Q.3	**(a)**	Describe the construction and working principle of electromagnetic type flow meter with it's merits and demerits.	**7**
	(b)	Describe with neat sketch the construction and working of a Rota meter for flow Measurements.	**7**
		OR	
Q.3	**(a)**	Describe Hall effect transducers principle and applications.	**7**
	(b)	Draw the schematic of X-Y recorder and describe it's working.	**7**
Q.4	**(a)**	Explain working of Ultrasonic level detector.	**7**
	(b)	Explain construction and working principle of LVDT and explain how the magnitude and direction of the displacement of core of LVDT can be detected?	**7**
		OR	
Q.4	**(a)**	Describe the working principle of thermocouple. Explain the laws governing the thermocouple.	**7**
	(b)	Describe with neat circuit diagram the use of hot wire anemometer for gas flow measurement.	**7**
Q.5	**(a)**	Explain Resistance Temperature Detector (R.T.D.) with its merits and demerits.	**7**
	(b)	Describe pirani gauge used for vacume pressure measurement.	**7**
		OR	
Q.5	**(a)**	What is load cell? Explain Proving ring and Hydraulic load cell	7
	(b)	Describe application of Thermister for temperature measurements.	7

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