Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER– VII • EXAMINATION – SUMMER 2014

Subject Code: X70903 **Date: 03-06-2014**

Subject Name: Industrial Instrumentation

Time: 02.30 pm to 05.00 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)**	Differentiate between the following with suitable examples of each: (i) Active and Passive Transducer. (ii) Primary and Secondary Transducer (iii) Analog and Digital Transducer	**07**
	(b)	What are Electrical transducers? Give its advantages. What are the basic requirements of a transducer?	**07**
Q.2	**(a)**	Explain how temperature compensation is achieved in strain measuring system.	**07**
	(b)	Differentiate Unbonded and bonded type strain gauge. How is the temperature compensation carried out using strain gauge in a bridge circuit?	**07**
		OR	
	(b)	What is load cell? Explain Proving ring and Hydraulic load cell.	**07**
Q.3	**(a)**	Describe the construction and working principle of electromagnetic type flow meter with it's merits and demerits.	**07**
	(b)	What is Hall effect? Describe the working principle, construction and application of Hall effect transducer.	**07**
		OR	
Q.3	**(a)**	Describe the construction, working, advantages and limitation of any method for flow measurement.	**07**
	(b)	Draw the schematic of X-Y recorder and describe it's working.	**07**
Q.4	**(a)**	Explain Black Body concepts for very high temperature measurements. Describe with neat diagram how disappearing filament type optical pyrometer can measure very high temperature. Mention it's merit and demerits.	**07**
	(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?	**07**
		OR	
Q.4	**(a)**	Describe dynamic characteristics of piezo electric transducer. Obtain the relationship of piezo electric transducer output voltage and voltage sensitivity, pressure and thickness of crystal.	**07**
	(b)	Describe with neat circuit diagram the use of hot wire anemometer for gas flow measurement.	**07**
Q.5	**(a)**	Explain Resistance Temperature Detector (R.T.D.) with its merits and demerits.	**07**
	(b)	Describe pirani gauge used for vacuum pressure measurement.	**07**
		OR	

Q.5	**(a)**	Describe the schematic of strip chart recorder and describe it's working and construction of each components. Compare with circular chart recorder	**07**
	(b)	Describe application of Thermister for temperature measurements.	**07**

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