Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – WINTER 2015

Subject Code: 170904 **Date: 16/12/2015**

Subject Name: INDUSTRIAL INSTRUMENTATION

Time: 10:30am to 1:00pm **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)**	What is electrical transducers? Explain its advantages. What are the basic requirements of a transducer?	**07**
	(b)	Explain the construction and working of LVDT used for measurement of displacement.	**07**
Q.2	**(a)**	Explain the working principle of thermocouple. Explain the laws governing the thermocouple.	**07**
	(b)	What is sample and hold circuit? Why it is needed? Explain with circuit diagram.	**07**
		OR	
	(b)	What is Hall effect? Describe the working principle, construction and applications of Hall effect transducer.	**07**
Q.3	**(a)**	What is Synchros? Explain control type synchro system.	**07**
	(b)	Explain following characteristics of a transducer. (i) Linearity (ii) Resolution (iii) Sensitivity (iv) Threshold (v) Repeatability (vi) Calibration (vii) Hysteresis	**07**
		OR	
Q.3	**(a)**	Define: (i) Absolute Pressure (ii) Gauge Pressure (iii) Differential Pressure. Explain how these pressure can be measured by an Inductive transducer.	**07**
	(b)	State and explain various principles of operation of capacitive transducer for level measurements.	**07**
Q.4	**(a)**	Explain construction and working principle of electromagnetic type flow meter. Write it's merits and demerits.	**07**
	(b)	Explain Macleod gauge.	**07**
		OR	
Q.4	**(a)**	Explain construction and working of Rotameter. State it's advantages and disadvantages.	**07**
	(b)	Explain semiconductor strain gauge. Also state it's advantages and applications.	**07**
Q.5	**(a)**	Explain Ultrasonic flowmeter.	**07**
	(b)	Write short note on Synchros.	**07**
		OR	
Q.5	**(a)**	Write different methods for torque measurement. Explain any one in detail.	**07**
	(b)	Write different temperature compensation techniques used with strain gauge. Explain any one in detail.	**07**

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