Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2170913 **Date: 29/04/2017**

Subject Name: Industrial Instrumentation(Departmental Elective - II)

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)**	Explain Active transducer and Passive transducer. Enlist types of each.	**07**
	(b)	What is Gauge factor? Derive the expression for Gauge factor in terms of poisson's ratio.	**07**
Q.2	**(a)**	Explain principle of operation of L.V.D.T. with its characteristics.	**07**
	(b)	Describe the working principle, construction and application of Proximity sensors.	**07**
		OR	
	(b)	What is Hall effect? Describe the working principle, construction and application of Hall effect transducer.	**07**
Q.3	**(a)**	Explain working of incremental encoders used for Shaft Speed Measurement.	**07**
	(b)	Explain proving ring type load cell and its advantages.	**07**
		OR	
Q.3	**(a)**	Explain inline rotational torque measurement using strain gauge.	**07**
	(b)	Write need of Pirani gauge and Describe it with neat diagram.	**07**
Q.4	**(a)**	Explain variable inductance and capacitance transducers for pressure measurement.	**07**
	(b)	Explain ultrasonic flow meter.	**07**
		OR	
Q.4	**(a)**	Explain operation of capacitive transducers for liquid level measurements.	**07**
	(b)	Describe Optical pyrometer for temperature measurement.	**07**
Q.5	**(a)**	Describe construction, operation and applications of X-Y recorders.	**07**
	(b)	Explain dual slope A/D circuits in digital data acquisition.	**07**
		OR	
Q.5	**(a)**	Describe operation of sample and hold circuit.	**07**
	(b)	Explain in brief working principle of different temperature sensors– RTD, Thermister, Thermocouples and Thermopiles and material used for each.	**07**

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