

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2170913****Date: 15/11/2018****Subject Name: Industrial Instrumentation****Time: 10:30 AM TO 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.

		MARKS
Q.1	(a) Define following term: (i) Resolution (ii) Dead Zone (iii) Accuracy	03
	(b) What is electrical transducer? Explain its advantages.	04
	(c) What is Gauge factor? Derive the expression for Gauge factor in terms of Poisson's	07
Q.2	(a) State factors affecting strain measurements.	03
	(b) State and explain basic requirements of transducers.	04
	(c) Describe, with neat sketches, construction and working of RVDT with its characteristic, advantages and disadvantages.	07
	OR	
	(c) Explain construction and working principle of LVDT with neat sketches and explain how the magnitude and direction of the displacement of core of LVDT can be detected? Write its advantages and disadvantages.	07
Q.3	(a) Differentiate between Deflecting torque and Controlling torque.	03
	(b) Explain Damping torque.	04
	(c) Explain Hall effect devices and Proximity sensors.	07
	OR	
Q.3	(a) Explain Bellows for pressure measurements.	03
	(b) What is piezoelectric transducer? Draw its equivalent circuit.	04
	(c) Explain with neat sketch, Capacitive pressure transducer.	07
Q.4	(a) State Flow measuring instruments.	03
	(b) Explain Rota meter for flow Measurements.	04
	(c) Describe, with neat sketches, construction and working of Turbine Flow meter with advantages and disadvantages.	07
	OR	
Q.4	(a) Compare Thermistor with RTD.	03
	(b) Write and Explain laws of thermocouples.	04
	(c) Write short note on Optical Pyrometers.	07
Q.5	(a) What is Signal conditioning of thermocouples output?	03
	(b) Write application of Strain Gauges.	04
	(c) Explain the need of recorders. Differentiate strip chart and X-Y recorder.	07
	OR	
Q.5	(a) Describe sample and hold circuits.	03
	(b) What are A/D and D/A circuits in digital data acquisition?	04
	(c) Write short note on modern digital data acquisition system.	07
