

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 2170913****Date: 27/06/2023****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Define following term: (i) Precision (ii) Drift (iii) Sensitivity	03
	(b) Differentiate (i) active & passive, (ii) analog & digital transducer with suitable examples.	04
	(c) What is Gauge factor? Derive the expression for Gauge factor in terms of Poisson's ratio.	07
Q.2	(a) Explain working principle of piezo electric transducer.	03
	(b) Write a short note on proximity sensors.	04
	(c) Explain the construction and working principle of LVDT with neat sketch. Also state its advantages and disadvantages.	07
	OR	
	(c) Why temperature compensation is required in strain gauge circuit? Explain any one method of temperature compensation.	07
Q.3	(a) What is load cell? Also enlist application.	03
	(b) Explain proving ring.	04
	(c) Enlist primary pressure sensing elements. Explain any one in detail.	07
	OR	
Q.3	(a) State governing laws of thermocouple.	03
	(b) Write a short note on Pirani Gauge.	04
	(c) Explain construction and working of Ultrasonic Flow Meter. Also state its merits and demerits.	07
Q.4	(a) State basic principle of capacitive transducer for the level measurement.	03
	(b) Write a short note on pitot tube.	04
	(c) What is pyrometer? Explain radiation pyrometers.	07
	OR	
Q.4	(a) Enlist application of Thermistors.	03
	(b) Write a short note on Air Purge Method.	04
	(c) Explain construction and working of RTD. Also state its merits and demerits.	07
Q.5	(a) Describe sample and hold circuit.	03
	(b) Compare strip chart recorder and X-Y recorder.	04
	(c) Explain modern digital data acquisition system with the help of block diagram.	07
	OR	
Q.5	(a) Enlist the different components of an Analog Data Acquisition System.	03
	(b) Why A/D & D/A circuits are needed in digital data acquisition system?	04
	(c) What is transducer? State merits of electrical transducer.	07
