

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 2170913

Date: 24-11-2025

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) Differentiate between active and passive instrumentation systems.	03
(b) Define and explain the following terms with examples: (a) Accuracy (b) Precision (c) Sensitivity (d) Drift	04
(c) Describe the working principle, construction, and applications of the LVDT (Linear Variable Differential Transformer).	07
Q.2 (a) Describe the working principle of RTD (Resistance Temperature Detector).	03
(b) What is the significance of the gauge factor in strain measurement?	04
(c) Describe the construction and working of Wire strain gauge.	07
OR	
(c) Describe the construction and working of Semiconductor strain gauge.	07
Q.3 (a) What are the various electrical methods used for displacement measurement?	03
(b) Define proximity sensor and classify them.	04
(c) Explain the construction and working of an RVDT with a neat diagram.	07
OR	
(a) Explain the Hall Effect and its use in displacement measurement.	03
(b) Explain the working of a piezoelectric displacement transducer.	04
(c) Describe the construction and operation of Helical potentiometer.	07
Q.4 (a) Discuss the advantages and limitations of load cells.	03
(b) Explain the principle and working of a torque wrench.	04
(c) Explain the construction and working principle of a Pirani gauge.	07
OR	
(a) Explain Bellows for measurement.	03
(b) Write note on McLeod gauge.	04
(c) Explain with neat sketch Capacitive Pressure Transducer.	07

- Q.5** (a) Explain the working principle of a Pitot tube. **03**
- (b) Explain the working principle of a Venturi meter. **04**
- (c) Write short note on digital data acquisition system. **07**

OR

- (a) Explain the need of recorders. **03**
- (b) Describe sample and hold circuit. **04**
- (c) Write short note on Optical Pyrometers. **07**
