

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV EXAMINATION – SUMMER 2025****Subject Code:3141709****Date:17-05-2025****Subject Name: Principle of Measurement Science****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
<b>Q.1</b>	(a) Define terms : Speed of response, Fidelity and Drift.	<b>03</b>
	(b) Explain how Flapper-Nozzle assembly can work as pneumatic amplifier.	<b>04</b>
	(c) With proper technical arguments explain transducer selection to fulfill measurement requirement.	<b>07</b>
<b>Q.2</b>	(a) Explain cold junction compensation.	<b>03</b>
	(b) Differentiate and explain RTD and Thermister.	<b>04</b>
	(c) Explain Radiation methods of temperature measurement.	<b>07</b>
<b>OR</b>		
	(c) Explain two-wire circuit, three-wire circuit, four-wire circuit for temperature Measurement.	<b>07</b>
<b>Q.3</b>	(a) Explain absolute and gauge pressure scale.	<b>03</b>
	(b) Explain characteristics of manometer fluid.	<b>04</b>
	(c) With suitable example explain how capacitive transducer can be used for pressure measurement.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Convert 200 kg/cm <sup>2</sup> into mmWG, mmHg and bar unit.	<b>03</b>
	(b) With neat diagram explain barometer.	<b>04</b>
	(c) Draw and explain Vibrating Element Transducer can be used in pressure measurement.	<b>07</b>
<b>Q.4</b>	(a) State the Bernoulli's theorem and its importance for flow measurement.	<b>03</b>
	(b) Draw and explain Turbine type flow meter.	<b>04</b>
	(c) Enlist advantages and disadvantages of Vortex flow meter.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Explain importance of Reynolds' number to identify flow characteristics.	<b>03</b>
	(b) Draw block diagram of ultrasonic flow meter and explain in brief.	<b>04</b>
	(c) Explain how Weirs and Flumes can be used for open channel flow measurement.	<b>07</b>
<b>Q.5</b>	(a) Explain Level switch.	<b>03</b>
	(b) Discuss the FMCW level measuring system.	<b>04</b>
	(c) Describe the Electrical Level measurement instruments.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) With neat diagram explain Vibrating fork level sensor	<b>03</b>
	(b) Explain the working of Gamma-ray Level indicator.	<b>04</b>
	(c) Explain Optical level indicators.	<b>07</b>

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