

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER–VII EXAMINATION – WINTER 2025****Subject Code:3170208****Date:26-11-2025****Subject Name:Measurement, Instrumentation and Control in Automobile****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: (1) Threshold, (2) Hysteresis (3) Sensitivity.	<b>03</b>
	(b)	Explain pressure sensors in detail.	<b>04</b>
	(c)	List out mechanical measurements used in automobile and explain in brief about any one of them.	<b>07</b>
<b>Q.2</b>	(a)	Write definition of Readability and Reproducibility.	<b>03</b>
	(b)	Write the principal and operation of the actuators.	<b>04</b>
	(c)	Explain with neat sketch Exhaust gas recirculation actuators.	<b>07</b>
<b>OR</b>			
<b>Q.3</b>	(c)	Differentiate accuracy and precision with suitable example.	<b>07</b>
	(a)	Write short note on Antilock braking system (ABS).	<b>03</b>
	(b)	Describe static and dynamic measurement system.	<b>04</b>
<b>Q.3</b>	(c)	Compare antilock braking system with conventional braking system.	<b>07</b>
<b>OR</b>			
<b>Q.3</b>	(a)	Explain in detail solenoid-operated valve.	<b>03</b>
	(b)	Explain electronic transmission control for automotive vehicles.	<b>04</b>
	(c)	Write different types variable resistance type sensors and explain any one in detail.	<b>07</b>
<b>Q.4</b>	(a)	Discuss need for signal analysis. Describe use of FFT analyzer.	<b>03</b>
	(b)	Discuss important factors affecting Selection and Requirement of Measuring instrument.	<b>04</b>
	(c)	Write a short note with a block diagram of general-purpose cathode ray Oscilloscope.	<b>07</b>
<b>OR</b>			
<b>Q.4</b>	(a)	Compare any two different temperature measurement instruments for suitability to measure coolant temperature.	<b>03</b>
	(b)	Explain stroboscopes.	<b>04</b>
	(c)	Describe instrumentation required for testing of IC Engine.	<b>07</b>
<b>Q.5</b>	(a)	Explain comfort system for automobile system.	<b>03</b>
	(b)	Discuss about data acquisition systems for automobile engineering.	<b>04</b>
	(c)	Discuss traction control and electronic stability for automobile system.	<b>07</b>
<b>OR</b>			
<b>Q.5</b>	(a)	Differentiate Analog and Digital transducers.	<b>03</b>
	(b)	Write in detail with neat sketch oxygen sensors.	<b>04</b>
	(c)	Define Secondary and Tertiary types of measurements. Discuss with suitable examples.	<b>07</b>

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