

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3170208

Date:21-05-2025

Subject Name:Measurement, Instrumentation and Control in Automobile

Time:02:30 PM TO 05:00 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) Differentiate between Static and Dynamic measurement systems.	<b>03</b>
(b) Describe the errors.	<b>04</b>
(c) Explain Generalized Measurement System with example.	<b>07</b>
<b>Q.2</b> (a) Define the following term: (1) Precision (2) Accuracy (3) Linearity	<b>03</b>
(b) What is Load Cell? Explain any one with neat sketch.	<b>04</b>
(c) Explain the working of hot wire type air flow (MAF) rate Sensor.	<b>07</b>
<b>OR</b>	
(c) Write short note on stroboscopes.	<b>07</b>
<b>Q.3</b> (a) Explain the principle and types of thermocouples.	<b>03</b>
(b) Explain electronic transmission control for automotive vehicles.	<b>04</b>
(c) Write different types of variable resistance type sensors and explain any one in detail.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) List the methods used for force measurement.	<b>03</b>
(b) Explain (i) Piezo-electric type and (ii) Strain gauge type accelerometers.	<b>04</b>
(c) Write short note on Antilock braking system (ABS).	<b>07</b>
<b>Q.4</b> (a) Compare Power Absorption Dynamometers with Power Transmission Dynamometers.	<b>03</b>
(b) Write the principal and operation of the actuators.	<b>04</b>
(c) Explain primary, Secondary and Tertiary types of measurements with suitable examples.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Explain Electromechanical transducers.	<b>03</b>
(b) Describe fluid flow measurement system.	<b>04</b>
(c) Explain working and construction of cathode ray oscilloscope.	<b>07</b>
<b>Q.5</b> (a) Explain Adaptive power steering.	<b>03</b>
(b) Explain active suspension control system in short.	<b>04</b>
(c) Describe Electronic Stability Control System of Automobile.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) List out the safety and comfort systems used in modern vehicles with its description.	<b>03</b>
(b) Discuss important factors affecting Selection and Requirement of Measuring instrument.	<b>04</b>
(c) Write short note on adaptive cruise control system.	<b>07</b>

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