

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3170208****Date: 28-05-2024****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) Explain Need and objective of Mechanical Measurement.	<b>03</b>
	(b) Distinguish between Primary, Secondary, Tertiary and working standards of length.	<b>04</b>
	(c) Explain Methods of Measurement System.	<b>07</b>
<b>Q.2</b>	(a) What do you understand by Slip Gauge?	<b>03</b>
	(b) Explain Performance characteristics of instruments.	<b>04</b>
	(c) Explain Instrumentation for Measuring rotational speed.	<b>07</b>
	<b>OR</b>	
	(c) Explain the working of vane type air flow (MAF) rate sensor with neat Diagram.	<b>07</b>
<b>Q.3</b>	(a) List out various Transducers for Automotive Applications.	<b>03</b>
	(b) Explain Analog and Digital type DAS- Indicators.	<b>04</b>
	(c) Explain working and construction of ABS actuators.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Enlist mechanical measuring Instrument used in automobile and Elaborate in brief about any one of them.	<b>03</b>
	(b) Explain general-purpose of cathode ray Oscilloscope (CRO) with diagram.	<b>04</b>
	(c) Explain variable resistance type sensors, temperature sensors.	<b>07</b>
<b>Q.4</b>	(a) State various sensors used in automobile Application.	<b>03</b>
	(b) Explain working and construction of Adaptive power Steering (APS) system in Automobile.	<b>04</b>
	(c) Explain Injectors and Exhaust gas recirculation actuators in details.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain Motors and Solenoids in briefs.	<b>03</b>
	(b) Explain Amplifiers, filters, Data Acquisition System (DAS).	<b>04</b>
	(c) Explain working and construction of ABS actuators.	<b>07</b>
<b>Q.5</b>	(a) Explain Safety and comfort systems in vehicle.	<b>03</b>
	(b) Explain Active suspension control system in vehicle.	<b>04</b>
	(c) Explain Anti-lock braking System (ABS) in details.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain Electronic transmission control.	<b>03</b>
	(b) Explain working and construction of Adaptive cruise control (ACC) system in Automobile.	<b>04</b>
	(c) Explain Traction control system (TCS) in Automobile detailed.	<b>07</b>

\*\*\*\*\*