

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024**

**Subject Code:3171720**

**Date:11-12-2024**

**Subject Name: Automotive 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.

	<b>MARKS</b>
<b>Q.1</b> (a) Enlist sensors used in automobile system.	<b>03</b>
(b) Explain function of ECU.	<b>04</b>
(c) Explain in detail current trends in automobile industry with increasing role of electronics.	<b>07</b>
<b>Q.2</b> (a) What is safety system in automotive system ?	<b>03</b>
(b) Discuss the advantages of ABS over conventional breaking system.	<b>04</b>
(c) Discuss in detail the key features and components of AUTOSAR.	<b>07</b>
<b>OR</b>	
(c) Explain different automotive subsystems and components in brief.	<b>07</b>
<b>Q.3</b> (a) Explain the function of adaptive power steering.	<b>03</b>
(b) Explain the aspects of hardware design for automotive systems.	<b>04</b>
(c) Explain active suspension system with necessary diagram in detail.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Explain the function of adaptive cruise control.	<b>03</b>
(b) Enlist and explain safety and comfort features necessary in automotive vehicles.	<b>04</b>
(c) Explain ABS in detail.	<b>07</b>
<b>Q.4</b> (a) Explain Electronic transmission control.	<b>03</b>
(b) Explain traction control with example.	<b>04</b>
(c) Explain need of immobilizers in automotive vehicle.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Explain body electronics for automotive vehicles in brief.	<b>03</b>
(b) Explain the concept of remote keyless entry.	<b>04</b>
(c) Explain electronic stability program for automobile system.	<b>07</b>
<b>Q.5</b> (a) Explain about function and importance of electronic instrument clusters	<b>03</b>
(b) Explain assembly process of automotive and instrumentation systems.	<b>04</b>
(c) Discuss necessity of air bags for automotive vehicles and explain working principle of air bags in brief.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) Explain about dashboard electronics in modern automobiles.	<b>03</b>
(b) Explain about fuel control module.	<b>04</b>
(c) Justify need of battery management system for automotive vehicles.	<b>07</b>

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