

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VI EXAMINATION – SUMMER 2025**

**Subject Code: 3160214**

**Date: 26-05-2025**

**Subject Name: Vehicle Testing and Homologation**

**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.

- Q.1** (a) What is homologation? Justify the need of automotive homologation. **03**  
(b) Define Category M and Category N vehicle as per IS and AIS standard? **04**  
(c) Which are the good habits of driving, the driver should have? Explain in detail. **07**

- Q.2** (a) Define: (1) Dynamometer (2) Brake Power (3) Flue Gases **03**  
(b) Describe measurement of IHP. **04**  
(c) Classify dynamometer. Explain hydraulic dynamometer with sketch. **07**

**OR**

- (c) Explain construction and working of ORSAT apparatus method with neat sketch **07**

- Q.3** (a) Demonstrate gradability test. **03**  
(b) What is Turning radius? Explain turning circle diameter test. **04**  
(c) Explain steering effort test. **07**

**OR**

- Q.3** (a) Write short note on side slip tester. **03**  
(b) Describe dynamic wheel balancing. **04**  
(c) Explain four wheel chassis dynamometer with neat sketch. **07**

- Q.4** (a) Explain fundamental of acoustic. **03**  
(b) Illustrate pass by noise test. **04**  
(c) Explain various sources of noises in an automobile vehicle. **07**

**OR**

- Q.4** (a) Differentiate active safety and passive safety. **03**  
(b) Explain effect of noises on human being. **04**  
(c) Explain four wheel alignment testing procedure. **07**

- Q.5** (a) What do you mean by EURO standards and AIS standards? **03**  
(b) Explain ISO 26262 standards for functional safety of electrical and/or electronic systems in automobiles. **04**  
(c) Explain SHED test on chassis dynamometer. **07**

**OR**

- Q.5** (a) Explain SAE standard. **03**  
(b) Explain headlight beam alignment testing. **04**  
(c) Explain in brief: AIS – 038 standards. **07**

Enrolment No./Seat No \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3160214

Date:20-05-2024

Subject Name:Vehicle Testing and Homologation

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.

- Q.1** (a) Why to perform testing and Homologation for automotive? **03**  
(b) List the various homologation centers across the country. Also, write the functions of each. **04**  
(c) Explain AIS-037 in details. **07**
- Q.2** (a) List the types of Dynamometers. **03**  
(b) Define: (1) Brake Power (2) Indicated Power (3) Frictional Loss **04**  
(c) Explain with sketch Flame Ionization Detector equipment. **07**
- OR**
- (c) Explain with neat sketch Non Dispersive Infrared equipment. **07**
- Q.3** (a) Describe Noise, Vibration and Harshness. **03**  
(b) What is the need of Brake performance test? **04**  
(c) Explain pass by noise testing method along with diagram. **07**
- OR**
- Q.3** (a) Explain about the wind noises of the vehicle? **03**  
(b) Differentiate Air borne and Structure borne noise. **04**  
(c) Explain with neat sketch brake squeal noise test method. **07**
- Q.4** (a) List the point for evaluating vehicle performance. **03**  
(b) With the neat sketch explain Turning Circle Diameter test. **04**  
(c) With the neat sketch explain Steering Impact test. **07**
- OR**
- Q.4** (a) list the various road testing tracks for automotive. **03**  
(b) Write an application of “Wading Troughs” and “Serpentine” test tracks. **04**  
(c) Explain accelerated fatigue track with suitable sketch.. **07**
- Q.5** (a) Write an objective of chassis dynamometer. **03**  
(b) Explain side slip test. **04**  
(c) Explain with sketch chassis dynamometer. **07**
- OR**
- Q.5** (a) List the various EURO and AIS standards for vehicle. **03**  
(b) AIS-003 (Starting Grade-ability). **04**  
(c) AIS-038 (Battery Operated Vehicles). **07**

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3160214****Date:10-07-2023****Subject Name:Vehicle Testing and Homologation****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) What is homologation? Justify the need of automotive homologation.	<b>03</b>
	(b) What are the types of approval?	<b>04</b>
	(c) Explain conformity of production test, COP period and COP testing.	<b>07</b>
<b>Q.2</b>	(a) Define: (1) Dynamometer (2) Brake Power (3) Flue Gases	<b>03</b>
	(b) State various noise sources from vehicle and explain wind noise.	<b>04</b>
	(c) Classify dynamometer. Explain hydraulic dynamometer with sketch.	<b>07</b>
<b>OR</b>		
	(c) Explain Spectroscopic methods.	<b>07</b>
<b>Q.3</b>	(a) Explain fundamental of acoustic.	<b>03</b>
	(b) Illustrate pass by noise test.	<b>04</b>
	(c) Explain Gas Chromatography and Smoke meters.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Write short note on side slip tester	<b>03</b>
	(b) Explain effect of noises on human being.	<b>04</b>
	(c) Describe AIS-037	<b>07</b>
<b>Q.4</b>	(a) What is the function of Vehicle Test lane for laboratory testing of vehicle.	<b>03</b>
	(b) What is Turning radius? Explain turning circle diameter test.	<b>04</b>
	(c) What is FIP calibrating? Explain FIP calibrating testing	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Demonstrate gradability test.	<b>03</b>
	(b) Describe dynamic wheel balancing.	<b>04</b>
	(c) Explain steering effort test.	<b>07</b>
<b>Q.5</b>	(a) What do you mean by EURO standards and AIS standards?	<b>03</b>
	(b) Explain headlight beam alignment testing.	<b>04</b>
	(c) Explain SHED test on chassis dynamometer.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Explain Brake stopping distance.	<b>03</b>
	(b) Describe measurement of IHP.	<b>04</b>
	(c) What is Emission test ? Explain Emission test for CO and HC	<b>07</b>

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3160214****Date:06/06/2022****Subject Name:Vehicle Testing and Homologation****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
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4. Simple and non-programmable scientific calculators are allowed.

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 (c) Which are the good habits of driving, the driver should have? Explain it detail. **07**
- Q.2** (a) Define: (1) Dynamometer (2) Brake Power (3) Flue Gases **03**  
 (b) Describe measurement of IHP. **04**  
 (c) Classify dynamometer. Explain hydraulic dynamometer with sketch. **07**
- OR**
- (c) Explain construction and working of ORSAT apparatus method with neat sketch **07**
- Q.3** (a) Explain fundamental of acoustic. **03**  
 (b) Illustrate pass by noise test. **04**  
 (c) Explain various sources of noises in an automobile vehicle. **07**
- OR**
- Q.3** (a) Differentiate active safety and passive safety. **03**  
 (b) Explain effect of noises on human being. **04**  
 (c) Explain four wheel alignment testing procedure. **07**
- Q.4** (a) Demonstrate gradability test. **03**  
 (b) What is Turning radius? Explain turning circle diameter test. **04**  
 (c) Explain steering effort test. **07**
- OR**
- Q.4** (a) Write short note on side slip tester. **03**  
 (b) Describe dynamic wheel balancing. **04**  
 (c) Explain four wheel chassis dynamometer with neat sketch. **07**
- Q.5** (a) What do you mean by EURO standards and AIS standards? **03**  
 (b) Explain ISO 26262 standards for functional safety of electrical and/or electronic systems in automobiles. **04**  
 (c) Explain SHED test on chassis dynamometer. **07**
- OR**
- Q.5** (a) Explain SAE standard. **03**  
 (b) Explain headlight beam alignment testing. **04**  
 (c) Explain in brief: AIS – 038 standards. **07**

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