

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3152009****Date:13-01-2023****Subject Name:Automobile Engineering****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) What is the different safety provisions made in a modern car?	<b>03</b>
	(b) Define (1) Camber (2) Caster (3) Toe-in & Toe-out (4) Slip angle	<b>04</b>
	(c) Explain the working of a single plate clutch with the help of a simple diagram.	<b>07</b>
<b>Q.2</b>	(a) What are the major functions of engine lubricating oil?	<b>03</b>
	(b) Give comparisons of front wheel drive and rear wheel drive in front engine mounted chassis.	<b>04</b>
	(c) Explain hydraulic braking system. Explain construction and working of Master cylinder with neat sketch.	<b>07</b>
<b>OR</b>		
	(c) Classify automobile gearbox and explain any one with neat sketch in detail.	<b>07</b>
<b>Q.3</b>	(a) Point out need of clutch in the automobile.	<b>03</b>
	(b) What is the function of universal joints in power transmission?	<b>04</b>
	(c) What is hybrid vehicle? Explain the scope of development in Indian context.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) List different types of lining materials used in brakes	<b>03</b>
	(b) Write notes on (i) Torsion bar, (ii) Helper spring.	<b>04</b>
	(c) What is Continuous variable transmission in automobile? Explain working principal of continuous variable transmission.	<b>07</b>
<b>Q.4</b>	(a) What are objectives of suspension system?	<b>03</b>
	(b) Explain functions of automobile frame. Give comparison of conventional frame and frameless construction.	<b>04</b>
	(c) Discuss weight transfer phenomenon indicating the forces acting when brakes applied to front wheels only in moving vehicle.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) What are pressed steel disc wheels? List their merits.	<b>03</b>
	(b) What is meant by independent suspension system? How does it is achieved in front and rear wheel suspension?	<b>04</b>
	(c) Enumerate the various troubles of a clutch system along with their causes, and suggest suitable remedies for them.	<b>07</b>
<b>Q.5</b>	(a) What are the different types of starter motor drives used in an automobile?	<b>03</b>
	(b) Write short note on (i) Electric car	<b>04</b>
	(c) Compare the constructional aspects of the conventional, radial ply and tubeless tyres.	<b>07</b>

**OR**

- Q.5** (a) Sketch arrangement of fully floating rear axle and identify various loads that it has to withstand **03**
- (b) Write down difference between Battery ignition system and Magneto ignition system. **04**
- (c) State the function of each unit provided in the lighting system of a car. **07**

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