

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023

Subject Code:3152009

Date:13-12-2023

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.

- Q.1**
- | | |
|---|-----------|
| (a) What is the different safety provisions made in a modern car? | 03 |
| (b) What are the requirements of suspension system? | 04 |
| (c) What is chassis? Name its various components and give its classification. | 07 |

- Q.2**
- | | |
|---|-----------|
| (a) What are the advantages of light alloy casting wheels? | 03 |
| (b) Define (1) Camber (2) Caster (3) Toe in & Toe out (4) Slip angle | 04 |
| (c) Explain with figure construction and working principle of fluid flywheel. | 07 |

OR

- | | |
|---|-----------|
| (c) Classify automobile gearbox and explain any one with neat sketch in detail. | 07 |
|---|-----------|
- Q.3**
- | | |
|--|-----------|
| (a) Compare CI engine with SI Engines. | 03 |
| (b) Give detailed classification of automobile brakes. | 04 |
| (c) What is Ackermann's principle? Explain in detail. | 07 |

OR

- Q.3**
- | | |
|--|-----------|
| (a) Explain principles of suspension system. | 03 |
| (b) Give the various types and applications of lubrication and cooling system in I.C.engine. | 04 |
| (c) Draw a neat sketch and compare a disc and drum brake. | 07 |

- Q.4**
- | | |
|---|-----------|
| (a) Sketch arrangement of fully floating rear axle and identify various loads that it has to withstand. | 03 |
| (b) Explain starting system with neat sketch | 04 |
| (c) State the different methods of supercharging and discuss any one of them with figure. | 07 |

OR

- Q.4 (a)** Draw any two vehicle layouts in Automobile. **03**
- (b)** Explain : (1) BTE (2) BSFC Mechanical efficiency,(3) Indicated Power and (4) Brake Power **04**
- (c)** Explain vehicle aerodynamics system. **07**

- Q.5 (a)** What are the different types of starter motor drives used in an automobile? **03**
- (b)** Write about hybrid vehicle and concept car. **04**
- (c)** Write a short note on (i) Electric car and (ii) Hybrid car **07**

OR

- Q.5 (a)** State the objectives of Vehicle Suspension system. **03**
- (b)** Differentiate Under steer and Over steer with neat sketch. **04**
- (c)** Explain ABS with neat sketch. **07**
