

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Winter 2022-23 Examination

Semester: 7
Subject Code: 03109432
Subject Name: Automobile Engineering

Date: 12/10/2022
Time: 02:00 pm to 04:30 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than five in case of MCQ) (All are compulsory) (Each of one mark) **(15)**

1. What is the main function of the differential in transmission system of an automobile?
2. Enlist two major functions of the gear box?
3. The angle between the steering axis and the vertical in the plane of the wheel is known as?
4. What are the functions of an alternator in an automobile?
5. Where will an underinflated tire wear the tread most?
6. Enlist different types of final drive?
7. Define toe in and toe out.
8. Which is the most common type of battery used in automobile?
9. Enlist types of frames used in an automobile.
10. What are the advantages of electric vehicle over conventional automobile?
11. Enlist factors affecting tyre life.
12. In which of the gearbox sun and planet gear set is used?
a) Constant-mesh gearbox b) Sliding mesh gearbox c) Synchromesh gearbox d) Epicyclical gearbox
13. On what principle does the conventional braking system in the car work?
a) Frictional force b) Gravitational force c) Magnetic force d) Electric force
14. What should be done if the facings on the friction disc are worn down to the rivet heads?
A) Rivets should be replaced b) The friction disc should be replaced c) The clutch should be replaced
d) The linkage should be adjusted
15. In the automobile, the power train carries the engine power from the engine to the rear wheels. The power train includes the clutch, _____, propeller shaft and differential.
a) Front axis b) Steering gear c) Gear box d) Chassis

Q.2 Answer the following questions. (Attempt any three) **(15)**

- A) Compare automobiles with engine mounting at front and rear.
- B) Enlist and explain the requirements of the good clutch.
- C) Describe working air bag system with neat sketch showing location of major components.
- D) Describe working of anti-lock braking system with neat sketch.

Q.3 A) Compare continuously variable transmission (CVT) with conventional gearbox. Describe construction and working of continuously variable transmission (CVT) with neat sketch **(07)**

B) Define and write significance of the camber, king pin inclination, steering ratio and under steering & over steering. **(08)**

OR

B) Enlist at least four types of steering gears. Briefly explain any two of steering gears with neat sketch. **(08)**

Q.4 A) Compare between: 1) Conventional and independent suspension 2) Hydraulic and air suspension **(07)**

OR

A) Describe the tire designation and define important terms used in tire designation. Compare radial ply tire with bias ply tire. **(07)**

B) Write the main function of the propeller shaft. Enlist four desired characteristics of a good propeller shaft. Enlist different types of the propeller shaft and explain any one with sketch. **(08)**