

314343

24225

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Solve any FIVE of the following :

5 × 2 = 10

- (a) List any two types of front stub axle arrangements.
- (b) State the necessity of brakes in vehicle.
- (c) Enlist any two types of brakes friction lining materials.
- (d) Enlist any two types of rear wheel independent suspension system.
- (e) Define the function of suspension system.
- (f) Enlist any four types of auto car bodies.
- (g) State two types of safety system used in cars.

2. Solve any THREE of the following :

3 × 4 = 12

- (a) Define and explain effect of understeering and oversteering while turning.
- (b) List any four properties of brake fluid.



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- (c) Justify – The Macpherson-Strut type suspension is suitable for light passenger car than leaf spring suspension.
- (d) Explain role of adaptive cruise control in modern vehicle.

3. Solve any THREE of the following :

3 × 4 = 12

- (a) Draw a neat sketch of steering linkages for the vehicle with rigid axle and label following components :
 - (i) Tie rod
 - (ii) Link rod
 - (iii) Gear box
 - (iv) Tie rod arm
- (b) Differentiate between disc and drum brake system on the basis of following parameters :
 - (i) Brake efficiency
 - (ii) Heat dissipation
 - (iii) Maintenance
 - (iv) Cost
- (c) Explain construction and working of telescopic shock absorber.
- (d) Enlist and explain function of body accessories (any four).

4. Solve any THREE of the following :

3 × 4 = 12

- (a) “Rack and pinion type steering gear box” is popular in passenger car. Justify it.
- (b) Explain construction and working of air braking system layout.
- (c) State the use of antiroll bar or stabilizer bar in vehicle handling.
- (d) Define :
 - (i) Air Resistance
 - (ii) Rolling Resistance
- (e) Explain types of materials used in body construction.

5. Solve any TWO of the following :**2 × 6 = 12**

- (a) Define and explain effect of following steering geometry on vehicle performance :
 - (i) Camber
 - (ii) Toe in and Toe out
- (b) Justify how the leaf spring suspension is better than independent suspension for heavy goods carrier vehicle.
- (c) Explain construction and working of air bag systems in vehicle.

6. Solve any TWO of the following :**2 × 6 = 12**

- (a) Explain advantages and disadvantages of electric power steering over hydraulic power steering. (any 4 advantages and 2 disadvantages)
 - (b) Explain construction and working of Antilock Braking System Layout.
 - (c) Explain step by step procedure for painting and denting.
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