

22442

12223

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answer with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following:** **10**
- Define ‘Camber’ and ‘Caster’.
 - State two requirements of steering system.
 - List two advantages of air braking system.
 - State classification of brakes.
 - List two functions of suspension system.
 - State materials used for automobile body.
 - Define tractive effort.
- 2. Attempt any THREE of the following:** **12**
- Draw a neat sketch of recirculating ball type steering gear box. Write its working principle.
 - Distinguish between drum brakes and disc brakes. (Any four points.)
 - Describe operation of gas filled shock absorber with sketch.
 - Explain the concept of air bag with suitable sketch.

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- 3. Attempt any THREE of the following:** **12**
- a) Describe with sketch construction of wheel assembly.
 - b) State any four advantages of power steering used in an automobile.
 - c) Describe with sketch working principle of master cylinder.
 - d) Draw a neat sketch of semi-elliptical leaf spring and label it.
- 4. Attempt any THREE of the following:** **12**
- a) Explain Ackerman steering mechanism with neat sketch.
 - b) List the types of stub axle arrangement and draw any one.
 - c) Give the difference between Rigid and Independent suspension system. (Any four points.)
 - d) State properties of Brake Fluid. (Any four)
 - e) Draw a neat layout of the air suspension system and label all the parts.
- 5. Attempt any TWO of the following:** **12**
- a) Describe with sketch working of torsion bar.
 - b) Briefly explain procedure of parking of a new car.
 - c) Describe working of car air conditioning system with its layout.
- 6. Attempt any TWO of the following:** **12**
- a) Describe the effects of stream lining of vehicle body on vehicle performance with suitable sketch.
 - b) State the different types of refrigerants used in car A/c with their properties.
 - c) Define :-
 - i) Air resistance
 - ii) Rolling resistance
 - iii) Gradient resistance.
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