

17409

21819

3 Hours / 100 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) Assume suitable data, if necessary.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any SIX of the following:

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- (i) Define live axle.
- (ii) Define steering gear ratio.
- (iii) List any two types of brake liner material.
- (iv) Write any four component's in automobile air conditioning system.
- (v) State any two advantages of streamline shape of vehicle body.
- (vi) Define term "Brake fade" related with brake system.
- (vii) Draw general layout of mechanical steering system.
- (viii) Write any two function of suspension system.

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- b) **Attempt any TWO of the following:** **8**
- (i) Explain re-painting procedure for accidental vehicle.
 - (ii) Define
 - 1) Traction
 - 2) Pitching
 - (iii) Explain construction and working of air bags in four wheeler.
2. **Attempt any FOUR of the following:** **16**
- a) Describe construction and working of hydraulic power assisted steering.
 - b) Draw neat and label sketch of Elliot and Reverse Lamoine type stub axles.
 - c) Explain construction of Ackerman steering mechanism with diagram.
 - d) List out any two properties of brake fluids and explain it.
 - e) Describe working of exhaust brake in vehicle with neat sketch.
 - f) State the function and necessity of brake system.
3. **Attempt any FOUR of the following:** **16**
- a) Differentiate between Drum and Disc type brake system (any four points).
 - b) Explain necessity of antilock brake system.
 - c) Explain the advantages of independent suspension system over rigid suspension (any four points).
 - d) Explain any two refrigerants used in automobile air conditioning with their properties.
 - e) Explain any two material used in body construction of vehicle.
 - f) Describe protective treatment for new automobile body.

- 4. Attempt any TWO of the following:** **16**
- a) Describe construction and working of worm and roller type steering gear box with diagram.
 - b) Describe construction and working of hydraulic brake system with diagram.
 - c) Describe construction and working of air suspension system with diagram.
- 5. Attempt any FOUR of the following:** **16**
- a) Define following steering geometry term:
 - (i) Correct steering angle
 - (ii) Caster
 - b) Draw a labelled sketch of semielliptical leaf spring and state its two applications.
 - c) Explain working of Anti Roll Bar or Stabilizer Bar in vehicle.
 - d) Describe human comfort condition for occupants.
 - e) Describe construction and working of wishbone type independent suspension system.
 - f) Explain how the temperature is controlled in automobile HVAC system.
- 6. Attempt any TWO of the following:** **16**
- a) Describe construction and working of central locking system and write two advantages and disadvantages of central locking system.
 - b) Explain construction and working of automobile air conditioning with block diagram.
 - c) List out various resistance faced by the vehicle and explain any three in details.
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