

# 22442

**21819**

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

**Marks**

- 1. Attempt any FIVE of the following: **10****
- List different types of “stab axle”.
  - Define:
    - Under steering
    - Over steering
  - State the necessity of brake.
  - List desirable properties of ‘braking fluid’.
  - Classify ‘suspension system’.
  - State the functions of shock absorber.
  - Name the different material are used for vehicle body construction.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Explain working of Ackerman steering gear mechanism with neat sketch.
  - b) List any 4 applications of 'Air braking system'.
  - c) Describe working of stabilizer bar with neat sketch
  - d) Define:
    - (i) Draw bar pull
    - (ii) Tractive effort
- 3. Attempt any TWO of the following:** **12**
- a) Draw a sketch of rack and pinion steering gear mechanism. Explain its working.
  - b) Explain with sketch the constructional feature of 'Anti lock braking' system.
  - c) Describe with neat sketch the working of 'Air suspension system'.
- 4. Attempt any TWO of the following:** **12**
- a) List any three safety devices used in modern cars with their functions.
  - b) Explain in detail the procedure of 'protective treatment' on vehicle body with example.
  - c) Explain body accessories and write their functions.
- 5. Attempt any TWO of the following:** **12**
- a) Explain the term 'streamlining'. State its effect on vehicle with suitable example.
  - b) Draw layout of 'car-air-conditioning'.
  - c) State the functions of 'Refrigerants'. Name the popular refrigerants used in modern cars.

**6. Attempt any THREE of the following:****12**

- a) Name the steering gear box used in following:
    - (i) Maruti 'Alto'
    - (ii) Tata 'Sumo'
    - (iii) Ashok Leyland Truck
    - (iv) Road roller
  - b) Differentiate between 'Mechanical braking system' and 'Hydraulic braking system'.
  - c) Draw the constructional arrangement of 'Leaf spring' showing all the parts.
  - d) List out safety devices used in modern car and write down their functions.
  - e) List the friction material used in 'Brakes'? State its important characteristics.
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