



12098

13141

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**.

MARKS

1. A) Attempt **any six** of the following : **(2×6=12)**
- i) List four types of stub axle arrangement.
 - ii) Define camber.
 - iii) Classify brakes on the basis of actuation.
 - iv) Define correct steering angle.
 - v) State two advantages of air suspension system in terms of noise and passenger fatigue.
 - vi) List any four parts in layout of refrigeration system for car air conditioning.
 - vii) Write any three material used for body work in a car.
 - viii) State two advantages of air bag.
- B) Attempt **any two** of the following : **(2×4=8)**
- i) Draw a labeled sketch of steering linkage for rigid axle suspension.
 - ii) State function of stabilizer. Also draw labeled sketch for stabilizer for front axle independent suspension.
 - iii) Describe Ackerman principle with neat labeled sketch.
2. Attempt **any four** of the following : **(4×4=16)**
- i) Draw layout of air braking system.
 - ii) State the requirements of automobile body in following terms
 - a) Strength
 - b) Space
 - c) Corrosion
 - d) Air drag
 - iii) List the devices used for safety in car and explain any one.
 - iv) Draw labeled sketch of telescopic type shock absorber.
 - v) List the resistance faced by vehicle and explain any one.
 - vi) Explain concept and working of antilock braking system.

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3. Attempt **any four** of the following : **(4×4=16)**
- i) Draw a layout of HVAC and explain its working.
 - ii) With the help of labeled sketch explain the construction of drum brake.
 - iii) Define :
 - a) Pitching b) Bouncing
 - c) Rolling d) Traction
 - iv) State the need of painting and write procedure of painting.
 - v) What are the different human comfort conditions considered in car air conditioning ?
4. Attempt **any two** of the following : **(8×2=16)**
- i) With sketch explain toe-in and toe-out.
 - ii) Draw a sketch of disc brake with fixed caliper and explain the construction of disc brake.
 - iii) Draw a sketch of Rack and Pinion type of steering gear box and explain its working.
5. Attempt **any two** of the following : **(8×2=16)**
- i) Classify the suspension spring and draw a sketch of leaf spring.
 - ii) State the functions of
 - a) Emergency brake b) Collapsible steering
 - c) Central locking d) Bumper
 - iii) With the help of sketch state types of bodies. Name any two material used for body.
6. Attempt **any two** of the following : **(8×2=16)**
- i) Draw a layout of vapour compression system and explain its working.
 - ii) With the help of sketch explain
 - a) Under steer
 - b) Over steer
 - iii) Draw a sketch of wishbone type independent suspension and explain its working.
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