17409

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3 Hours / 100 Marks Seat No. | | | | | | | | |

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) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**

(i) How dead axle is different from live axle?

(ii) Define king pin inclination.

(iii) Define coefficient of friction.

(iv) State chemical name and chemical formula for refrigerant R-12.

(v) Define the terms rolling and pitching.

(vi) State four properties of brake fluid.

(vii) List four components of hydraulic power assisted steering system used in car.

(viii) State two advantages of independent suspension system.

Marks

b) **Attempt any TWO of the following:** **8**

(i) Describe working of collapsible steering with sketch.

(ii) Define - Tractive effort, Drawbar pull, Air resistance and Gradient resistance.

(iii) Draw neat sketch of any four body styles used for cars.

2. Attempt any FOUR of the following: **16**

a) Why stub axle is fitted on front axle? Sketch Elliot type stub axle.

b) Draw a neat labelled sketch of front wheel assembly.

c) Describe with neat sketch electrical power steering.

d) State use of calliper in disc brake and state any two advantages of disc brake.

e) Describe with sketch stabilizer bar for rigid axle suspension.

f) Describe working of antilock braking system.

3. Attempt any FOUR of the following: **16**

a) Differentiate between drum brake and disc brake.

b) Draw a layout of air brake system and label it.

c) State the suspension used on front wheel of Maruti 800/Santro and describe its working with neat sketch.

d) Describe four properties of refrigerants used in automobiles.

e) Describe materials used for body construction.

f) Explain working of central locking system. Write one advantage and one disadvantage of it.

4. Attempt any TWO of the following: **16**

a) Describe with neat sketch working of recirculating ball type steering gearbox and state its applications.

b) Describe with neat sketch working of Tandem Master cylinder.

c) Describe construction and working of gasfilled shock absorber with neat sketch.

Marks

5. Attempt any FOUR of the following: **16**

a) What do you understand by understeering and oversteering? State its effects on vehicle stability.

b) Describe with sketch working of exhaust brake.

c) Draw a layout of air suspension and describe its working.

d) Describe how temperature and humidity is controlled in HVAC system.

e) Describe construction of semi-elliptical leafspring with neat sketch.

f) State role of a dehydrator and evaporator in air conditioning system.

6. Attempt any TWO of the following: **16**

a) Describe repainting procedure for a car met with accident.

b) Draw a layout of vapour compression cycle and describe its working.

c) (i) Describe stability of vehicle on slopes.

(ii) Describe the effect of streamlining on vehicle performance.

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