

12052

13141

3 Hours / 100 Marks

Seat No.

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- Instructions :** (1) All Questions are *compulsory*.
- (2) Illustrate your answers 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 TEN of the following :**

(2 × 10 = 20)

- State the loads acting on a chassis frame.
- Classify friction clutches used in automobile.
- State the function of gear box.
- State the necessity of propeller shaft in a vehicle.
- State the two effects of higher tyre inflation pressure.
- State the location of clutch in transmission system.
- State the types of rear axle.
- How gear ratio is calculated ?
- State the materials for the tyre.
- Draw a neat sketch of tube tyre.
- Give the classification of chassis.
- State different types of constant velocity joints.

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2. Attempt any FOUR of the following : (4 × 4 = 16)

- (a) Draw a neat labelled sketch of front engine rear wheel drive vehicle.
- (b) With neat sketch explain working of centrifugal clutch.
- (c) Why cable operated clutch linkage is used in two wheeler ?
- (d) Draw a layout of constant mesh gear box with first gear in engaged position and show power flow-lines.
- (e) State the necessity and functions of final drive.
- (f) Draw a neat sketch of fluid coupling and state its principle.

3. Attempt any FOUR of the following : (4 × 4 = 16)

- (a) Explain with neat sketch gear shifting mechanism mounted on top of gear box casing.
- (b) How does a synchronizer achieve smooth gear change ?
- (c) Draw a neat sketch of multiplate clutch.
- (d) Compare Torque tube drive and Hotchkiss drive (4 points each).
- (e) Draw a neat sketch of full floating type rear axle and label it.
- (f) What is the difference between a three speed and four speed gear box ? Write one application of each.

4. Attempt any TWO of the following : (8 × 2 = 16)

- (a) State the types of vehicle layout. Explain layout of four wheel drive in detail with a neat sketch.
- (b) Describe with neat sketch the working of sliding mesh gear box.
- (c) Draw a neat sketch of torque converter and explain how it achieves variation in torque.

5. Attempt any TWO of the following : (8 × 2 = 16)

- (a) (i) Distinguish between tube tyres and tubeless tyre on the basis of weight, fuel efficiency, life and road holding.
- (ii) Draw a sequence of tyre rotation for cars and write its importance.
- (b) Explain the working of differential with sketch.
- (c) (i) Why universal joint is used at the rear end of propeller shaft in Hotchkiss drive ?
- (ii) Draw a neat labelled sketch of torque tube drive.

6. Attempt any TWO of the following : (8 × 2 = 16)

- (a) Explain the working of single plate clutch with a neat sketch.
 - (b) Explain mechanical and hydraulic clutch linkages with sketch.
 - (c) Explain with neat labelled sketch working of differential lock.
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