

22309

24225

3 Hours / 70 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.

**Marks**

**1. Attempt any FIVE :**

**2 × 5 = 10**

- (a) List any four materials used for frame.
- (b) List any four materials used for clutch lining.
- (c) State requirements of automotive clutch.
- (d) State necessity of gear box in automobiles.
- (e) State functions of universal joint and slip joint in propeller shaft.
- (f) State necessity of differential in automobile.
- (g) State types of tyre tread pattern.

**2. Attempt any THREE :**

**3 × 4 = 12**

- (a) Draw layout of front engine rear wheel drive vehicle showing
  - (i) Engine
  - (ii) Clutch
  - (iii) Gear box
  - (iv) Axle
- (b) Classify vehicle layout with respect to following :
  - (i) Location of engine



- (ii) No. of live axles
- (iii) Application
- (iv) Drive to wheel
- (c) Draw power flow diagram of sliding mesh gear box showing first, second, third and reverse gear.
- (d) Explain working of torque converter with neat sketch.

**3. Attempt any THREE :****3 × 4 = 12**

- (a) List frame sections used in automobile chassis. State loads acting on frame.
- (b) Explain working of continuously variable transmission (CVT) with neat sketch.
- (c) Draw neat labelled sketch of gear selector mechanism.
- (d) Explain torque tube drive with neat sketch.

**4. Attempt any THREE :****3 × 4 = 12**

- (a) State types of frame. Explain any one.
- (b) Explain construction and working of centrifugal clutch with neat sketch.
- (c) Draw neat labelled sketch of clutch plate.
- (d) Explain full floating axle with neat sketch.
- (e) Differentiate between tube and tubeless tyre.

**5. Attempt any TWO :****2 × 6 = 12**

- (a) State types of clutch. Explain single plate clutch with neat sketch.
- (b) Explain construction and working of synchromesh gear box with neat sketch.
- (c) State necessity of tyre rotation. State effects of incorrect tyre inflation.

**6. Attempt any TWO :****2 × 6 = 12**

- (a) List clutch operating mechanisms. Explain any one with neat sketch.
  - (b) Explain working of hotchkiss drive with neat sketch.
  - (c) Explain working of final drive and differential with neat sketch.
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