



17307

15162

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. A) Attempt any six.

12

- a) State the materials used in any four wheeler frame.
- b) List the loads acting on a chassis frame.
- c) State application of frame channel section and box section one each.
- d) State the necessity of clutch.
- e) State the function of main shaft and lay shaft of a gearbox.
- f) List the components of propeller shaft in a vehicle.
- g) State the principle of differential.
- h) State the types of rear axle casing.

B) Attempt any two :

8

- a) Differentiate between conventional and semi integral frame.
- b) Draw a neat labeled sketch of fluid coupling.
- c) With neat sketch explain working of centrifugal clutch.

2. Solve any four.

16

- a) Distinguish between dry and wet clutches (4 points).
- b) State the vehicles in which centrifugal clutch and single plate clutch are used.
- c) State the working of hydraulically operated clutch with neat sketch.
- d) Explain need of clutch in automobile and suggest material for clutch lining.
- e) Draw a neat sketch of single plate clutch.
- f) Differentiate between sliding mesh and constant mesh gear box.

P.T.O.

**3. Solve any four :****16**

- a) Draw a constant mesh gear box in neutral gear position (3-forward and 1- reverse).
- b) Explain with neat sketch gear selector mechanism with gear lever on top of gear box.
- c) Write short note on lubrication of gear box.
- d) What is transfer case ? Explain with neat sketch.
- e) Why synchromesh gear box is preferred to sliding mesh gear box in a car ?
- f) Compare Torque tube drive and Hotchkiss drive (4 points each).

4. Solve any four :**16**

- a) State with brief explanation loads acting on the rear axle.
- b) Differentiate full floating and semi-floating types of rear axles.
- c) Write the function of universal and slip joints.
- d) Draw a neat sketch of sliding mesh gear box (3-forward and 1- reverse) engaged in second gear and show power flow for the same.
- e) Explain tyre inflation and its effect.
- f) Write a short note on aspect ratio.

5. Attempt any two :**16**

- a) State the necessity of rear axle. Explain with neat sketch double reduction axle.
- b) Describe construction and working of differential with neat sketch.
- c) Explain the construction and operation of hollow tube propeller shaft.

6. Attempt any two :**16**

- a) State the types of vehicle layout. Explain four wheel drive in detail with a neat sketch.
 - b) Draw a neat sketch showing tyre-tube construction. Explain tyre rotation procedure for a four wheeler.
 - c) Give the classification of wheels. Explain in brief any one type of wheel with neat sketch.
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