



# 17307

16172

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

**Marks**

1. A) Attempt **any six** :

**(6×2=12)**

- a) What is meant by vehicle layout ? Give any two examples of layout.
- b) State the necessity of frame.
- c) Why frame is narrow at the front ?
- d) State the working principle of automobile clutch.
- e) State the principle of operation of gear box.
- f) Give the function of universal joint and slip joint.
- g) What is meant by double reduction axle ?
- h) State the various type of loads acting on rear axle.

B) Attempt **any two** :

**(2×4=8)**

- a) State the types of frame used in four wheeler. Explain any one with neat sketch.
- b) Compare dry and wet clutch (any four points).
- c) Explain the working of “variator drive” with neat sketch.

2. Attempt **any four** :

**(4×4=16)**

- a) Give the classification of clutch. Suggest the appropriate type of clutch for following vehicles :
  - i) Moped without gear
  - ii) Motor cycle
  - iii) Truck
  - iv) Racing car.
- b) Explain operating mechanism in cable operated clutch with suitable sketch.
- c) Explain the working of multiplate clutch with neat sketch.
- d) Explain hydraulic operated clutch mechanism with neat sketch.
- e) Describe working of fluid coupling with neat sketch.
- f) Explain how speed synchronization is obtained by synchromesh drive.

**P.T.O.**

**Marks****(4×4=16)****3. Attempt any four :**

- a) State any two advantages and disadvantages of synchromesh gear box.
- b) Compare sliding mesh and constant mesh gear box (any four points).
- c) Explain the constructional features of Hotchkiss drive with neat sketch.
- d) Explain the working of transfercase. State its application.
- e) Why constant mesh gearbox requires double de-clutching ? Explain.
- f) How the lubrication of gearbox is done ?

**4. Attempt any four :****(4×4=16)**

- a) State the necessity of differential and rear axle.
- b) Explain Banjo type of rear axle casing with suitable sketch.
- c) Describe construction and working of propeller-shaft with neat sketch.
- d) Draw a neat sketch of gear selector mechanism with gear lever on top of gearbox.
- e) Explain salient features of alloy wheel with neat sketch.
- f) Explain specification of tyre with suitable example.

**5. Attempt any two :****(2×8=16)**

- a) Explain with neat sketch
  - i) Semi floating rear axle.
  - ii) Three quarter floating rear axle.
- b) Describe the construction and working of differential with neat sketch. Explain “differential lock”.
- c) i) State the function of Hook’s joint.  
ii) Explain “constant velocity joint” with neat sketch.

**6. Attempt any two :****(2×8=16)**

- a) i) Draw any four sections of chassis frames with their merits.  
ii) Draw a neat labelled layout of front-engine rear wheel driven vehicle.
  - b) i) State the effects of inflation on life of tyre.  
ii) Draw the tyre rotation pattern for heavy vehicle.
  - c) i) Compare tubed tyre with tubeless tyre (four points).  
ii) Write the different causes of tyre wear. (four points).
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