



17307

11819

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) List main components of an automobile.
 - b) Name the type of clutch used in two wheelers and four wheeler vehicles.
 - c) Why helical gears are used in transmission ?
 - d) Name any two vehicles in which synchromesh gearbox is used.
 - e) List two basic types of constant velocity joints.
 - f) Write main components of a differential assembly.
 - g) State the types of rear axles used for LMV and HMTV.
 - h) State the functions of a car wheel.
- B) Attempt **any two** : 8
- a) Draw a layout of Front engine rear wheel driven vehicle and label the details.
 - b) Give the detail classification of clutches.
 - c) Write the functions of a gearbox used in automobiles. State major components of synchromesh gearbox.
2. Attempt **any four** : 16
- a) What are the different loads acting on a frame ?
 - b) State any two advantages and two disadvantages of frameless construction.
 - c) List types of frame sections, draw their sketches and write significance of each.
 - d) List different materials used for a clutch friction lining and state their coefficient of friction.
 - e) Differentiate between single plate and multiplate clutch (any 4 pts).
 - f) Describe working of Centrifugal clutch with a neat sketch.

P.T.O.

**3. Attempt any four :**

- a) Compare dry plate clutch with wet plate clutch.
- b) Describe hydraulic type of clutch operating mechanism and write its advantage.
- c) Why clutch is necessary device in an automobile transmission system ?
- d) Describe with neat sketch working of a constant mesh gearbox.
- e) Write any two advantages of constant mesh gearbox, also state any two disadvantages of sliding mesh gearbox.
- f) Explain how the lubrication of an automobile gearbox is done.

4. Attempt any four :

16

- a) What is transfer case ? Where it is used ? State its functions.
- b) State merits and demerits of synchromesh gearbox over sliding mesh and constant mesh gearbox.
- c) Describe working of torque convertor with neat sketch.
- d) Explain with neat sketch construction of a propeller shaft.
- e) Compare between Hotchkiss drive and torque tube drive.
- f) Why hollow propeller shaft is used in automobiles ? Give its one application.

5. Attempt any four :

16

- a) Draw a neat sketch of Hook's type universal joint and label the parts.
- b) Explain with neat sketch working principle a differential.
- c) What are the different types of loads acting on a rear axle ?
- d) Explain with neat sketch semi-floating type of rear axle.
- e) State advantages and disadvantages of fully-floating type of rear axle.
- f) Write the functions of a rear axle casings. Also state types of rear axle casing.

6. Attempt any four :

16

- a) Compare between semi-floating and fully-floating type of rear axles.
 - b) State advantages and disadvantages of disc type of wheel.
 - c) Differentiate between conventional tube tyre and tubeless tyre.
 - d) What are the advantages of radial ply tyre over cross ply tyre ?
 - e) What do you mean by specification of a tyre ? Explain with suitable example.
 - f) What are the effects of under inflation pressure and over inflation pressure in tyres ?
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