



17307

21718

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) Use of Non-programmable Electronic Pocket Calculator is **permissible**.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.
 - (7) Use of Steam tables, logarithmic, Mollier's chart is **permitted**.

Marks

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

(6×2=12)

- a) What are the materials used for chassis of vehicle ?
- b) Enlist two applications of conventional frame.
- c) What is the frameless construction of vehicle ?
- d) State the necessity of Automobile clutch.
- e) What is the need of gearbox for vehicle ?
- f) State the need of propellar shaft in a truck.
- g) State the functions of differential.
- h) Describe the operation of rear axle.

B) Attempt **any two** :

(2×4=8)

- a) Classify the vehicle layout with respect to location of engine, No. of live axle, luggage section, application.
- b) Differentiate between single plate clutch and multiplate clutch.
- c) What is fluid coupling ? State its working principle.

2. Attempt **any four** :

(4×4=16)

- a) Enlist main requirements of clutch.
- b) Explain with neat sketch the construction of clutch plate.
- c) What are the different materials used for clutch lining ? State its necessity.

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- d) Explain with neat sketch the working of 'Diaphragm clutch'.
- e) What is 'Variator drive'? State any two applications in which variator drive is used.
- f) State the classification of Automobile gear box.

3. Attempt any four :**(4×4=16)**

- a) Explain with power flow diagram of sliding mesh gear box.
- b) How lubrication of gear boxes are carried out? Explain any one method in brief.
- c) Explain with sketch the constructions of 'Synchroniser' used in synchromesh gear box.
- d) What is 'Transfer case'? Explain its working with neat sketch.
- e) State the advantages and disadvantages of 'Torque converter'.
- f) Explain the constructional features of propeller shaft with sketch.

4. Attempt any four :**(4×4=16)**

- a) Explain with neat sketch the semi floating rear axle.
- b) Enlist the loads acting on the rear axle.
- c) Explain with neat sketch the construction of gear shifting mechanism.
- d) State the functions of universal joint and slip joint.
- e) What are the advantages and disadvantages of 'Spoke wheel'?
- f) Enlist different types of tyres. How they are designated?

5. Attempt any two :**(2×8=16)**

- a) Explain with sketch the layout of chassis frame indicating the functions of main components with their locations.
- b) Distinguish between torque tube drive and Hotchkiss drive.
- c) Enlist different types of rear axle casing? Explain the construction of any one with sketch.

6. Attempt any two :**(2×8=16)**

- a) Explain the working of 'Differential' with neat sketch.
 - b) What is 'Tyre terminology'? Explain with sketch indicating all components of tyre.
 - c) Explain with neat sketch the construction of tubeless tyre? State the advantages of Tubeless tyre.
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