



17307

16117

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.

Marks

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

12

- a) State the necessity of four wheeler chassis frame.
- b) State four advantages of front engine rear wheel drive.
- c) State any two applications of rear engine rear wheel drive.
- d) List out various friction and non friction clutch.
- e) List any four components of a gear box.
- f) Why hollow propeller shaft is used in four wheelers ?
- g) State the condition of differential locking and unlocking.
- h) Explain two types of rear Axle Casing.

B) Solve **any two** :

8

- a) Redraw and complete the fig. No. 1 label it and identify the layout of vehicle.

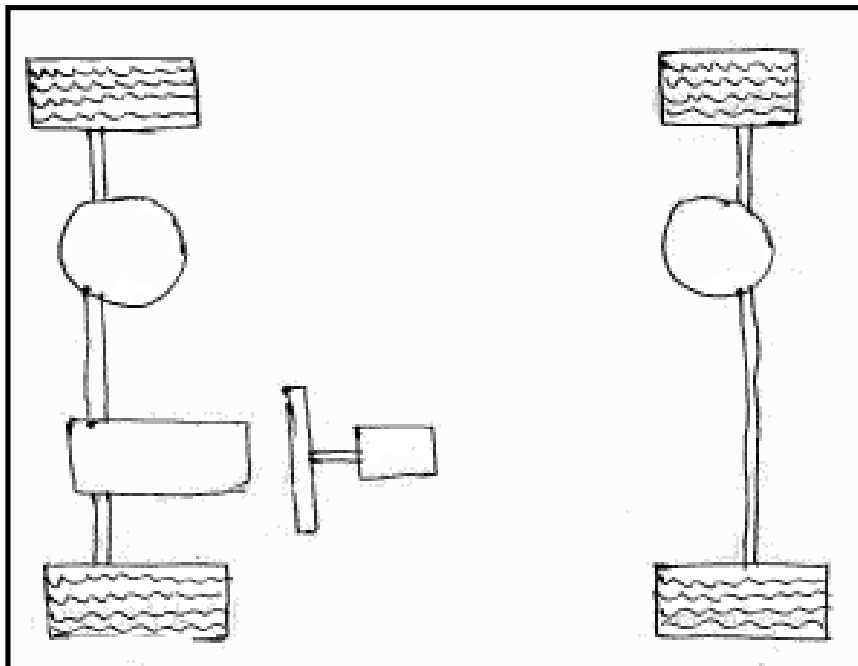


Fig. No. 1

P.T.O.



- b) Explain the constructional details of single plate (diaphragm type) clutch with neat sketch.
- c) Explain rod type clutch operating mechanism with block diagram.

2. Solve any four. 16

- a) Explain hydraulic clutch operating mechanism works in four wheeler.
- b) Differentiate between single plate clutch and multiplate clutch.
- c) Explain with neat sketch how fluid coupling is different from torque converter.
- d) Explain construction and working of centrifugal clutch.
- e) Explain the need of clutch in automobile.
- f) Classify gear selector mechanisms. Explain gear lever on top with neat sketch.

3. Solve any four. 16

- a) Explain functions and necessity of gear box in automobile.
- b) Describe construction of Torque converter with label sketch.
- c) Explain how universal joint and slip joint play important role in propeller shaft while transmitting power.
- d) Explain the working of synchromesh gear box and draw its power flow for four speed gear box.
- e) Differentiate sliding mesh gear box with constant mesh gear box.
- f) Explain the working of transfer case also draw the condition of transfer case in 2WD and 4WD.

4. Solve any four. 16

- a) Classify rear axles. Explain three quarter floating in detail.
- b) Explain construction of differential with label sketch.
- c) Describe various types of constant velocity joints.
- d) Explain the need of lubrication for gear box in automobile.
- e) Differentiate between disc and alloy type wheels.
- f) State the necessity and requirement of a tyres used in four wheeler.



[3]

17307

Marks

5. Solve any two.

16

- a) Describe the necessity of rear axle and explain the various loads acting on rear axle.
- b) Explain with neat labeled diagram of semi floating type rear axle and full floating type rear axle.
- c) Describe with neat labeled diagram of Hotchkiss drive and torque tube drive.

6. Solve any two.

16

- a) Explain the conventional, semi-integral and integral type frame. List various materials used for chassis frame.
 - b) Draw a neat sketch of tyre tube construction. Explain tyre rotation procedure for a four wheeler with neat sketch.
 - c) State the different types of tread patterns and explain the effect of inflation pressure on the tyre life.
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