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3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer 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. Attempt any FIVE of the following: **10**

a) State the working principle of friction clutch.

b) State necessity of Gearbox.

c) State any two function of slip joint in vehicle.

d) Enlist the different types of automotive gear boxes.

e) Write down the types of vehicle layout.

f) State any two function of clutch.

g) Define 'Aspect Ratio' of tyres.

P.T.O.

Marks

2. Attempt any THREE of the following: **12**

a) Explain working of centrifugal clutch with neat sketch.

b) Describe construction of propeller shaft with neat sketch.

c) Classify vehicle layout on the basis of :–

i) Location of engine

ii) Number of live axles.

iii) Arrangement of engine

iv) Applications.

d) Explain with neat labelled sketch construction of Disc Wheel.

3. Attempt any THREE of the following: **12**

a) Distinguish clearly between conventional frame and unitary frame.

b) Illustrate the working of transfer case with neat sketch.

c) Explain with neat sketch front engine rear wheel drive type vehicle layout

d) Describe with neat sketch working of full floating axle.

e) Explain the load acting on chassis frame.

4. Attempt any THREE of the following: **12**

a) Illustrate advantages and disadvantages of Synchromesh gear box over constant mesh gear box.

b) State with brief explanation load acting on the rear axle.

c) Explain with neat sketch gear selector mechanism with gear lever on top of gear box.

d) Compare between dry clutch and wet clutch on the basis of construction, torque transmission, heat dissipation and application.

e) Explain with neat sketch construction and operation of simple Hook's universal joint.

Marks

5. Attempt any TWO of the following: **12**

a) Illustrate with neat sketch construction and working of differential.

b) Describe construction and working of sliding mesh gear box with neat sketch showing three forward and one reverse gear box.

c) Describe the constructional details of Hotchkiss drive. Also state its two advantages over torque tube drive.

6. Attempt any TWO of the following: **12**

a) Describe application, construction and working of torque converter with neat sketch.

b) Illustrate with neat sketch construction of tubeless tyre. State two advantages of tubeless tyre.

c) Describe construction and working of clutch used in heavy vehicle (Truck) with neat labelled sketch.