17307

21314

3 Hours / 100 Marks Seat No. | | | | | | | | |

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.

Marks

1. a) **Attempt any <u>SIX</u> of the following:** **12**

i) What is meant by 'Vehicle Layout' ? Give one example.

ii) Define - An Automobile. State its major parts.

iii) What is the working principle of automotive clutches ?

iv) List the types of gear boxes.

v) What is transfer case.

vi) State the components of differential unit.

vii) Write functions of following-

1) Universal joint

2) Slip joint

viii) State the materials used for chassis frame.

Marks

b) **Attempt any <u>TWO</u> of the following:** **08**

i) Draw four sections of chassis frame and write their significance.

ii) State the loads acting on chassis frame.

iii) Sketch and describe hydraulically operated clutch mechanism.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Differentiate between Torque convertor and Fluid coupling.

b) Differentiate between Dry and Wet clutch.

c) Describe construction and working of fluid coupling.

d) Draw a neat labelled diagram of Diaphragm type single plate clutch in disengaged position.

e) Describe the lubrication of gear box.

f) Explain the clutch operating mechanism with single sketch in friction clutch.

3. Attempt any <u>TWO</u> of the following: **16**

a) Draw a schematic diagram of constant mesh gear box in neutral position and label it. Describe its construction and working.

b) Write in detail classification of clutches. Describe working of centrifugal clutch with schematic diagram.

c) What is meant by ‘Tyre Inflation’ ? Describe the effect of inflation pressure on tyre life. What is importance of tyre rotation.

Marks

4. Attempt any FOUR of the following: **16**

a) What is multi-plate clutch ? Give its three applications with specific reasons.

b) Draw a power flow diagram for a synchromesh gear box, when third gear is engaged and describe it.

c) With sketch describe how synchronisation of speed is obtained by synchromesh device ?

d) Describe working of 'Hotchkiss drive' with sketch.

e) Differentiate between Torque tube drive and Hotchkiss drive.

f) State necessity of final drive and differential. Also write its location in different types of vehicle layouts.

5. Attempt any FOUR of the following: **16**

a) Sketch cross and yoke type universal joint and describe its working.

b) What is constant velocity (C. V) joint ? State its two types. In which vehicle C. V. joints are used ? Why ?

c) Describe principle of working of differential with sketch.

d) Explain necessity and types of loads acting on rear axle.

e) Sketch and describe any two types of rear axle casings.

f) Give one example of tyre nomenclature and write meaning of each term.

Marks

6. Attempt any FOUR of the following: **16**

a) Write functions of wheel. Describe with sketch construction of alloy wheel.

b) Compare Tubed tyre with Tubeless tyre.

c) State types of tyres based on construction and compare them with each other.

d) Sketch the arrangement of live rear axle and describe how torque transmission takes place ?

e) What is meant by 'Double reduction axle' ? State its two applications.

f) Draw a neat sketch of full floating type rear axle and lable the parts.

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