17307

15116

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

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) Attempt **any six** of the following : **12**
a) Classify the vehicle layout with respect to application.
b) State any four loads acting on chassis frame.
c) State the materials used for frames and sub frames.
d) List any two necessities of clutch.
e) Enlist the different types of automotive gear boxes.
f) State any two functions of universal joint.
g) List different types of loads acting on rear axles.
h) Enlist the necessities of rear axle in an automotive.

B) Attempt **any two** of the following : **8**
a) Draw neat labelled layout of front engine rear wheel driven vehicle.
b) Draw neat labelled sketch of clutch plate and list clutch lining materials.
c) Describe with neat sketch the principle of torque transmission in fluid coupling.

2. Attempt **any four** of the following : **16**
a) Compare mechanical and vacuum methods of operating clutch (any four points).
b) Compare dry and wet types of friction clutches.
c) Classify the different friction and non-friction type clutches and state the use of multiplate clutch.
d) Describe the constructional features of diaphragm spring type clutch.
e) Describe construction and operation of centrifugal clutch.
f) Draw power flow diagrams for a three speed constant mesh gear box for each gear ratio.

3. Attempt **any four** of the following : **16**
a) Describe with neat sketch operation of interlocking mechanism in automotive gear box.
b) State the importance of gear box lubrication and enlist the different lubrication points of gear box.
c) Describe the constructional details of any one rear axle drive.
d) Describe the arrangement used to increase the higher efficiency range of a torque converter.
e) Draw a labelled sketch of transfer case and state its functions.
f) State the merits and demerits of synchromesh gear box as compared to constant mesh gear box.

P.T.O.

Marks

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

a) Explain the necessity of a differential in an automobile.

b) Describe the construction and operation of the differential.

c) Describe with neat sketch construction of propeller shaft.

d) Differentiate between sliding mesh gear box and constant mesh gear box on the basis of construction and operation.

e) Describe with neat sketch construction of tubleless tyres.

f) State the functions of wheels and enlist types of wheels.

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

a) Distinguish between "Semi-floating" and "Fully floating" rear axles with aid of suitable sketches and explain their relative merits and demerits.

b) Sketch the general arrangement of a live rear axle of a front engine, rear driven vehicle and describe its workings.

c) Describe the functions of following with neat sketch :

i) Slip joint ii) Universal joint

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

a) State the different types of chassis frames. Describe with neat sketch different types of frame sections.

b) Describe with neat sketch any two types of tyre carcass and also mention materials used for them.

c) Describe the effect of over inflation and under inflation on the life of tyre wear.
