Scheme – I

Sample Question Paper

Program Name : **Automobile Engineering**
Program Code : **AE**
Semester : **Third**
Course Title : **Automobile Transmission Systems**
Marks : **70**

22309

Time: 3 Hrs.

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following. **10 Marks**

(a) Define 'An Automobile' and 'Vehicle Layout'.
(b) State the principle on which friction clutch works.
(c) State two functions of automotive clutch.
(d) Define 'Gear ratio'.
(e) List types of universal joints.
(f) Write functions of Final drive and Differential.
(g) Give meaning of tyre aspect ratio.

Q.2) Attempt any THREE of the following. **12 Marks**

(a) Sketch a layout of Front engine rear wheel drive vehicle and label the major parts.
(b) Classify friction and non-friction type automotive clutches.
(c) Describe advantages of synchromesh gear box over constant mesh gear box.
(d) Describe with sketch working of Hotchkiss drive.

Q.3) Attempt any THREE of the following. **12 Marks**

(a) Compare with sketches conventional frame with Integral frame.
(b) Illustrate with the sketch functional relationship of major components of power transmission system.
(c) Describe with sketch working of centrifugal clutch.
(d) Describe with sketch working of gear selector mechanism mounted on the top of gear box.

Q.4) Attempt any THREE of the following. **12 Marks**

(a) Describe with sketch working of Single plate dry clutch.
(b) Suggest clutch friction materials for wet and dry clutches and justify their use with suitable illustrations.
(c) Compare Single plate dry clutch with Multi-plate dry clutch on the basis of –

i) Construction ii) Torque transmission iii) Size iv) Applications.

(d) In a synchromesh gear box, No. of teeth of Driver gear on lay shaft - 18, Driven gear on main shaft - 39, Reverse Idler gear – 21 and First gear on lay shaft - 20. Determine the gear ratio for – i) Reverse gear is in engaged position
ii) First forward gear is in engaged position.

(e) In modern automobiles Synchromesh gear box is preferred over Constant mesh gear box. Justify its application with suitable illustrations.

Q.5) Attempt any TWO of the following. 12 Marks

(a) Describe with schematic diagram working of Transfer case.

(b) Compare simple Hooke's type universal joint with Constant velocity joint and justify their use in relevant transmission system.

(c) Sketch the arrangement of following types of rear axles and give one application of each: (i) Semi-floating (ii) Full floating.

Q.6) Attempt any TWO of the following. 12 Marks

(a) Describe with sketch working of final drive and differential mechanism.

(b) Describe with sketch construction of Light Alloy wheel and state its two advantages over other types.

(c) Compare with sketches Tube tyre with Tubeless tyre on the basis of specifications, construction, and performance.

Scheme – I

Sample Test Paper - I

Program Name : **Automobile Engineering**
Program Code : **AE**
Semester : **Third**
Course Title : **Automobile Transmission Systems**
Marks : **20**

22309

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FOUR of the following. **08 Marks**

a) State the meaning of 'Chassis'.
b) List two major components of power transmission system of FERWD vehicle and write their location.
c) List the clutch friction lining materials.
d) State location and purpose of following components in single plate clutch assembly – i) Clutch plate/friction plate ii) Pressure plate
e) State the types of automotive gear boxes.
f) Define the term semiautomatic and automatic transmission.

Q.2) Attempt any THREE of the following. **12 Marks**

a) Describe with sketch layout of Four wheel drive vehicle.
b) Sketch any two types of frame sections and state the significance of each.
c) Compare Dry type plate clutch with Wet type plate clutch on the basis of –
i) Construction ii) Torque transmission iii) Size iv) Applications.
d) Describe the necessity of gear box in transmission system.
e) Describe with sketch working of centrifugal clutch.
f) Sketch power flow diagrams for Constant mesh gear box when second forward and reverse gears are in engaged positions.

Scheme – I

Sample Test Paper - II

Program Name : **Automobile Engineering**
Program Code : **AE**
Semester : **Third**
Course Title : **Automobile Transmission Systems**
Marks : **20**

22309

Time: 1 Hour

Instructions:
(1) All questions are compulsory.
(2) Illustrate your answers with sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FOUR of the following. **08 Marks**

a) List the parts which require lubrication in the manually operated gear box.
b) State types of rear axle drives with their applications.
c) List the types of differential according to type of gears used.
d) State function of- i) Propeller shaft ii) Universal joint
e) Write functions of Wheel and Tyre.
f) State the types of incorrect tyre inflation along with their effects.

Q.2) Attempt any THREE of the following. **12 Marks**

a) Describe working of variator drive used in mopeds with sketch.
b) Compare Torque converter with Fluid coupling.
c) Describe the construction and working of the Hollow propeller shaft.
d) Explain the necessity of final drive and differential with relevant justification.
e) Sketch the layout of rear axle used in LMV and describe its working.
f) Give tyre designation with one example and interpret the meaning of terms involved in it.