

**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.**

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**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**

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**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**

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**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.