

“Please check whether you have got the right question paper.”

- N.B**
- i) Solve any three questions from each section
 - ii) Assume suitable data wherever found necessary.

SECTION-A

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|------------|----|---|----|
| Q.1 | a) | Give the detail classification of automobilists, as per the automobile authority. | 08 |
| | b) | Draw neat layout of a vehicle with front cross mounted engine and front wheel drive. Briefly state the function of the main components on the vehicle. | 07 |
| Q.2 | a) | Draw a neat sketch and explain the construction and working of multiple plate clutes. Explain why these clutches are used in two wheelers? | 07 |
| | b) | What is a torque converter? Explain the working of the torque converter stating the reason, why it is used in automatic transmission. | 06 |
| Q.3 | a) | Explain the consideration of the following factors in the design and performance of the vehicles.
i) Resistances → Gradient, Rolling and aero dynamic or wind resistances.
ii) Tractive effect. | 06 |
| | b) | What is a synchromesh gear box? Explain with neat sketch the synchromesh arrangement used in an automobile gear box. | 07 |
| Q.4 | a) | What is a rigid axle suspension system? With neat sketch explain a rigid axle suspension system used in the front axle of a 4 wheel drive vehicle. | 07 |
| | b) | What is an air suspension system? How is it used in the active suspension in the vehicles? | 06 |
| Q.5 | | Write short note <u>any two</u> | 14 |
| | | <ol style="list-style-type: none"> i) Selection of an engine in the automobile ii) Automatic transmission in the automobiles iii) Differential used in automobile iv) Telescopic suspension used in the two wheeler | |
| SECTION -B | | | |
| Q.6 | a) | With neat diagram. Explain steering geometry –tursing circle caster, camber, toe-in –toe out. K.P.I, included 06 angle, scrub radius and state their effects. | 06 |
| | b) | What is the function of steering gearbox? With neat sketch explain construction & working of any one steering gear box? | 07 |
| Q.7 | a) | What is antilock brake system? How does it differ from conventional brake system? | 06 |
| | b) | With neat sketch explain the hydraulic power steering. What are its advantages and limitation? | 07 |
| Q.8 | a) | Draw neat sketch of drum brake system and explain its construction and working. | 07 |
| | b) | Draw neat sketch and explain construction & working of master cylinder & slave cylinders. | 06 |
| Q.9 | a) | What are the different starter motor drives? Explain with neat sketch the bendix drive. | 07 |
| | b) | Explain the central locking and the power windows used in the automobiles. List the components used in each of them. | 06 |
| Q.10 | | Write short note on <u>any two</u> | 14 |
| | | <ol style="list-style-type: none"> i) Tube less tyres & conventional tyres ii) mechanical brake system & parking brakes iii) Leading and trailing dram brakes iv) Safety system in automobile | |