



- Notes :
1. All questions carry marks as indicated.
  2. Solve Question 1 OR Questions No. 2.
  3. Solve Question 3 OR Questions No. 4.
  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Solve Question 11 OR Questions No. 12.
  8. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Draw a neat sketch of chassis layout and its components Write the function of any five components in brief. **8**

b) Explain working of Electric car and write down its advantages. **6**

**OR**

2. a) What are the requirement of engine cooling system. With neat sketch explain Thermosyphon water cooling system with its advantages. **7**

b) What is the necessity of lubrication system in automobile. Explain with neat sketch dry sump lubrication system. **7**

3. a) Explain necessity of clutch in automobile and with neat sketch write working of multi plate clutch. **7**

b) With neat sketch explain working of fluid flywheel and write its advantages. **6**

**OR**

4. a) Explain the need of gear box? Explain with neat sketch working of constant mesh type of gear box. **7**

b) With neat sketch explain working of transfer gear box. **6**

5. a) Explain Hotchkiss drive with neat sketch. Detail all the components. **6**

b) Explain the construction and operation of differential. **7**

**OR**

6. a) Describe with neat sketch working of hydraulic brake system with its advantages. **7**

b) Compare Disc brake with drum brake. **6**

7. a) Explain the term: Camber, castor and steering axis inclination with its effect on steering characteristics. 7
- b) Explain briefly working of rack & pinion steering gear with neat sketch. 7

**OR**

8. a) Write down function of suspension system. Explain with neat sketch Macpherson strut suspension system. 7
- b) Explain with neat sketch Air suspension system and write their advantages. 7
9. a) Explain various panel board Instrument display used in automobile with their importance. 6
- b) With the help of neat sketch, describe Electronic ignition system used in automobile. 7

**OR**

10. a) Explain Automobile Air-Conditioning system with neat sketch. 7
- b) Explain the various factors affecting Tyre life. 6
11. a) Write down the requirement of Automobile body and discuss what are the various materials used for Automobile bodies. 7
- b) What is ABS? Explain ABS with its importance. 6

**OR**

12. a) Explain what is active Suspension system. Write its working and importance. 6
- b) Discuss about the various collision avoidance techniques used in automobile. 7

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