



- 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. Due credit will be given to neatness and adequate dimensions.
 9. Diagrams and chemical equations should be given whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Enlists different types of chassis frames. Give the advantages of ladder frame chassis over other. **4**
 - b) Describe valve timing diagram for 4-S petrol engine. Give importance of valve timing diagram. **6**
 - c) What is the function of thermostatic valve in engine cooling system? Explain with neat sketch wax type thermostat valve. **4**
- OR**
2. a) What is necessity of fuel supply system in automobile. Explain with neat sketch SU carburetor. **7**
 - b) Classify lubrication systems. Explain with neat sketch splash- pressure feed lubrication. **7**
3. a) State the operation principle of clutch. Give the requirements for clutch and clutch plates. **4**
 - b) Explain with neat sketch spring loaded ball type gear selector mechanism with interlocking mechanism in it. **6**
 - c) Explain the necessity of transmission system in automobile with simple sketch. **3**
- OR**
4. a) Classify gear boxes. Explain in detail construction and working of epicyclic (planetary) Gear box. **7**
 - b) Explain with neat sketch in detail Torque converter. Give the advantages of torque converter over other types of clutches. **6**
5. a) With the help of simple sketches show and explain the effect of horizontal and vertical forces on semifloating, three quarter floating and full floating axle. **6**
 - b) Differentiate between Hotchkiss and torque tube drive also comment on why Hotchkiss drive is preferred for heavy load application. **3**
 - c) Why differential is essential in four wheeler? Explain with simple sketches. **4**

OR

6. a) Explain with neat sketch construction and working of vacuum brake. How this braking systems works. 7
- b) Enlist the components of Hydraulic braking system. Explain in detailed Tandem Master cylinder. 6
7. a) Compare Ackermann and Davis steering. 4
- b) What is center point steering? What is the effect of center point steering on vehicle performance? 4
- c) Explain in detail construction and working of electronic power steering. 6
- OR**
8. a) How suspension helps to improve performance of vehicle? Explain in detailed Torsion bar suspension. 7
- b) Explain in detailed leaf spring suspension. Why it is used in heavy load vehicle. 7
9. a) Sketch and explain automobile electrical circuit. 6
- b) Explain in detailed Battery ignition system and draw comparison with magneto ignition system. 7
- OR**
10. a) Explain the components of Belted Bias tyre in detailed with the help of neat sketch. 7
- b) What are the factor's affecting the tyre performance? Explain. How tyre life can be improved. 6
11. a) What is the purpose of navigation system in automobile and how it works? 4
- b) Explain with neat sketch. How collision avoidance system works in automobile to reduce/avoid accidents. 5
- c) What are the safety considerations for driver's and passengers in automobile? 4
- OR**
12. a) With help of neat sketch explain construction & working of Antilock braking system. Also explain its importance in vehicle safety. 7
- b) What are the parameter's for selecting material for constructing vehicle body? 4
- c) What is intelligent lightning? 2
