



- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Diagrams and Chemical equation should be given wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.
 6. Solve Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6, Q. 7 or Q. 8, Q. 9 or Q. 10.

1. a) Define 'an automobile'. Name major components of an automobile. Explain any two of them in brief. **8**
- b) How to classify automobile? Name important transport vehicles and describe the salient features of each. **8**

OR

2. a) What are the current trends in the automotive industry? What are future trends in automobile? **8**
- b) What is the biggest challenge facing the auto industry? What factors affect the automobile industry? **8**
3. a) What is the function of a clutch? Explain the principal of friction clutches with the help of neat diagrams. **8**
- b) Explain 2WD and 4WD? Explain the construction and working of transfer case gear box. **8**

OR

4. a) Explain with neat sketch gear selector mechanism. **8**
- b) What are the drawbacks of a sliding mesh gear box? Explain with neat sketch construction and operation of a Constant mesh gear box. Also explain how the clashing of dog clutch can be avoided while gear shifting? **8**
5. a) Explain with neat sketch construction and working propeller shaft and universal joint? State the purpose of front and rear universal joints. **8**
- b) How does a Hotchkiss drive differ from a torque tube drive? Explain with neat sketch torque tube and Hotchkiss drive. **8**

OR

6. a) Explain construction and types of disc brake with neat sketch. **8**
- b) List out the various types of brake system and explain with neat sketch the construction and operation Hydraulic brake system. **8**

7. a) Explain with neat sketch Rack and pinion steering gear. **8**
- b) Explain the necessity of suspension system. Describe the working of telescopic type shock absorber with neat sketch. **8**

OR

8. a) Explain the following terms: **8**
- | | |
|-------------------------|---------------|
| i) Camber | ii) Castor |
| iii) Toe - in | iv) Toe - out |
| v) King pin inclination | |
- What are the effects of each on the life of tyres?
- b) Explain the necessity of power steering system in an automobile. Explain working and construction of power steering system. **8**
9. a) Explain the Electronic Ignition system with neat circuit diagram. **8**
- b) Explain automobile air-conditioning system in brief. **8**

OR

10. a) State functions of Battery. What are the main components of Battery? **8**
- b) Explain briefly the following. **8**
- i) Standard Bendix drive
- ii) Over running clutch type starting drive.
