

N.B.:(1) Question No. 1 is **compulsory**.

(2) Attempt any **four** questions from **remaining**.

(3) **All** questions carry **equal** marks.

(4) Support your answers with **suitable sketches**.

1. (a) Sketch block diagram of four wheel drive with engine in the front and indicate the flow of power. Also mention function of each unit in brief. 10
- (b) Discuss materials used, manufacturing methods used and inspection procedures employed for the following engine components; with their function : 10
 - (i) Piston
 - (ii) Connecting rod.
2. (a) Explain the term 'total resistance' which is encountered by the vehicle. Also discuss vehicle performance curves. 10
- (b) Explain working of cone clutch, its applications and limitations. 10
3. (a) Compare sliding mesh gear box and synchromesh gear box. State advantages of synchromesh gear box. 10
- (b) Explain the following :— 10
 - (i) Epicyclic gear box
 - (ii) Overdrive.
4. (a) Compare alternator versus generator. 10
- (b) Explain electronic ignition system. 10
5. (a) Explain methods of charging battery. Also describe battery ratings. 10
- (b) Explain the requirement of a starting system. Also explain Bendix drive. 10
6. (a) What are the requirement of wheels. Discuss different types of wheels ? 10
- (b) Compare cross ply and radial ply tyres. What are tyre designations. 10
7. Write notes on the following :— 20
 - (a) Factors affecting tyre life
 - (b) Automatic transmission
 - (c) Computerised engine control
 - (d) Automotive sensors.