Instructions:
(1) All Questions are compulsory.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE of the following : 12
   (i) Write any four advantages of front engine rear wheel drive.
   (ii) Explain different types of automobile chassis.
   (iii) State the advantages of LPG and CNG operated engines.
   (iv) Draw general layout of front engine front wheel drive car.

(B) Attempt any ONE of the following : 6
   (i) State and explain different forces acting on the vehicle body related to aerodynamics.
   (ii) Explain with neat sketch working of constant mesh gear box.
2. Attempt any FOUR of the following:

(i) Describe with neat sketch single plate clutch.

(ii) State function of universal and slip joint used in propeller shaft.

(iii) Why differential is used in automobile? Explain working of differential.

(iv) State different types of real axle. Explain working of any one.

(v) What are the requirements of steering system?

3. Attempt any TWO of the following:

(i) With neat sketch write construction and working of rack and pinion type steering system.

(ii) Explain construction and working of two wheeler gear box.

(iii) Give any four probable causes of tyre wear and give its remedies.

4. (A) Attempt any THREE of the following:

(i) Define and give range of angles –

(1) Castor

(2) Camber

(ii) Explain need of suspension system in automobiles.

(iii) Compare tubed tyres with tubeless tyres.

(iv) Describe with neat sketch the effect of –

(1) under inflation

(2) over inflation on tyre
(B) Attempt any ONE of the following : 6

(i) What are the components of hydraulic braking system? Explain construction and working of master cylinder.

(ii) Differentiate between drum brakes and disc brakes.

5. Attempt any FOUR of the following : 16

(i) Describe construction of Macpherson suspension system with neat sketch.

(ii) Explain function of Bendix drive in starter system.

(iii) State advantages of CDI ignition system.

(iv) Write different colour codes used in an automobile wiring system.

(v) State and explain air conditioning parameters for human comfort.

6. Attempt any TWO of the following : 16

(i) State the function of battery in an automobile. List the main components of lead acid battery. Explain its construction with neat sketch.

(ii) Explain typical wiring diagram of four wheeler automobile with neat sketch.

(iii) Write any eight important precautions to be taken while using AC system in automobiles.