

Automobile Engineering (315372)

MSBTE Diploma · K-Scheme · Model Question Paper — Set C

Time: 3 Hours**Max. Marks: 70****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 the examination hall.

Q.1 Attempt any FIVE of the following:**10**

- a) Define automobile. State the function of any two major components of an automobile.
- b) State any four requirements of a good clutch.
- c) State the functions of propeller shaft.
- d) Define: i) Camber ii) King pin inclination.
- e) Give any two points of difference between tube type and tubeless tyres.
- f) State the functions of starting system of an automobile.
- g) State any four components mounted on the chassis.

Q.2 Attempt any THREE of the following:**12**

- a) Compare rigid axle suspension and independent suspension (any four points).
- b) Explain diaphragm spring type single plate clutch with neat sketch.
- c) Differentiate between disc brake and drum brake (any four points).
- d) Explain the tyre designation 205/55 R16 91V. Calculate the sidewall height and the overall diameter of this tyre.

Q.3 Attempt any THREE of the following:**12**

- a) Compare conventional frame and unitized (frameless) construction (any four points).
- b) Explain synchromesh gear box with neat sketch.
- c) Explain recirculating ball type steering gear box with neat sketch.
- d) Compare cross ply and radial ply tyres with neat sketches.

Q.4 Attempt any THREE of the following:**12**

- a) State the need of electric vehicles. Explain the functions of main components of an electric vehicle with block diagram.

- b) State the necessity of shock absorber. Draw a labelled sketch of telescopic shock absorber.
- c) State the necessity of power steering. Explain the principle of hydraulic power steering with sketch.
- d) State the necessity of wheel alignment. Explain the procedure of wheel alignment.
- e) Explain electronic ignition system with block diagram.

Q.5 Attempt any TWO of the following:

12

- a) Explain construction and working of differential with sketch. The differential cage of a car rotates at 400 rpm while the car takes a turn of 10 m radius (measured at the vehicle centre line). If the track width is 1.4 m, find the speeds of the inner and outer rear wheels.
- b) Describe construction and working of MacPherson strut suspension with neat sketch. State its advantages and disadvantages.
- c) Explain semi-floating rear axle with neat sketch. Compare semi-floating and fully floating axles (any four points).

Q.6 Attempt any TWO of the following:

12

- a) Draw the layouts of front engine front wheel drive (FEFWD) and four wheel drive (4WD) vehicles. State two advantages of each.
- b) State the requirements of steering system. Explain steering linkage for a rigid axle front suspension with neat sketch.
- c) Explain magneto ignition system with neat sketch. Compare battery ignition and magneto ignition systems (any four points).

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in