

Automobile Engineering (315372)

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

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) Classify automobiles on the basis of: i) Load capacity ii) Drive.
- b) State the necessity of clutch in an automobile.
- c) State any two functions of gear box.
- d) Define toe-in and toe-out with neat sketch.
- e) State the functions of wheel in an automobile.
- f) Enlist any four sensors used in an automobile with their applications.
- g) Define sprung weight and unsprung weight.

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

- a) With neat sketch explain front engine rear wheel drive (FERWD) layout. State its two advantages over FEFWD layout.
- b) Differentiate between single plate clutch and multi-plate clutch (any four points).
- c) State the requirements of a good steering system.
- d) Describe the construction and working of semi-elliptic leaf spring with neat sketch.

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

- a) State different types of rear axle. Explain fully floating rear axle with neat sketch.
- b) Explain the working of constant mesh gear box with neat sketch.
- c) Explain construction and working of disc brake with neat sketch. State two advantages over drum brake.
- d) State the types of independent suspension. Explain MacPherson strut type with neat sketch.

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

- a) State the need of hybrid vehicle. Explain the components of a parallel hybrid vehicle with block diagram.
- b) State the functions of propeller shaft. Explain universal joint with neat sketch.
- c) Explain positive camber and positive caster with neat sketches. State their effects.
- d) Why are tubeless tyres preferred over tube type tyres in modern cars? Give any four reasons.
- e) State the functions of alternator. Explain its working principle.

Q.5 Attempt any TWO of the following:**12**

- a) Why is differential required in an automobile? Explain its working when the vehicle takes a turn, with neat sketch.
- b) Draw a labelled sketch of telescopic shock absorber. Explain its working during bump and rebound. State why it is necessary.
- c) Explain air (pneumatic) brake system with neat sketch. State its advantages.

Q.6 Attempt any TWO of the following:**12**

- a) Classify chassis frames. Explain the conventional (ladder) frame with neat sketch and state its advantages and disadvantages.
- b) Explain construction and working of multi-plate clutch with neat sketch. State its applications.
- c) Explain working of lead acid battery during charging and discharging. A 12 V, 75 Ah battery supplies a load of 15 A. Find the current at 20-hour rate and the approximate time for which it can supply the load.

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