

Automobile Engineering (315372)

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

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. Enlist its major components.
- b) State the functions of clutch.
- c) State the functions of universal joint and slip joint in propeller shaft.
- d) Define: i) Camber ii) Caster.
- e) Differentiate between tube type and tubeless tyre (any two points).
- f) Define battery rating. A 12 V battery is rated 60 Ah at 20-hour rate. Find the discharge current at this rate.
- g) State the functions of chassis frame.

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

- a) Draw the layout of front engine front wheel drive (FEFWD) vehicle. State its advantages.
- b) Describe the construction and working of single plate coil spring clutch with neat sketch.
- c) Compare disc brake and drum brake (any four points).
- d) Explain MacPherson strut suspension system with neat sketch.

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

- a) Explain the following types of frame: i) Conventional frame ii) Sub-frame iii) Unitized (frameless) construction.
- b) Explain the working of torque converter with neat sketch.
- c) State any two requirements of steering system. Explain rack and pinion steering gear box with neat sketch.
- d) State the purpose of wheel balancing. Explain the procedure of wheel balancing.

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

- a) Explain the different loads acting on the chassis frame.
- b) Describe the construction of propeller shaft with neat sketch.
- c) Explain the concept of antilock brake system (ABS) with block diagram.
- d) Explain construction of lead acid battery with neat sketch.
- e) Define with neat sketch: i) Toe-in ii) King pin inclination.

Q.5 Attempt any TWO of the following:

12

- a) Explain the construction and working of differential with neat sketch.
- b) Explain construction and working of telescopic shock absorber with neat sketch.
- c) Explain battery ignition system for a four-cylinder engine with neat sketch.

Q.6 Attempt any TWO of the following:

12

- a) Draw the layout of a battery electric vehicle. Explain the functions of its main components. State its advantages and disadvantages.
- b) Explain semi-floating and fully floating rear axles with neat sketches. Compare them (any two points).
- c) Explain hydraulic brake system with layout. Draw and explain master cylinder.

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