



USN

18AU754

Seventh Semester B.E. Degree Examination, Dec.2024/Jan.2025 Introduction to Electric Vehicle

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss on the historical development of electric vehicle. (08 Marks)
- b. Explain briefly the need of an electric drive. (08 Marks)
- c. Write the major difference in an electric vehicle and the conventional IC engine vehicle. (04 Marks)

OR

- 2 a. Make a comprehensive discussion on the concept of EV's and key technologies. (10 Marks)
- b. What are the major issues with electric vehicle? Discuss. (10 Marks)

Module-2

- 3 a. Explain the following components of a electric vehicle circuits and mention their functions.
i) Conductor ii) Insulators iii) Solenoids iv) Capacitors. (10 Marks)
- b. Write the weight and size parameters under consideration while designing the electric vehicles. (10 Marks)

OR

- 4 a. Write the comparison between AC and DC motors. With suitable sketch, explain the working principle of DC motor. (10 Marks)
- b. List out different EV parameters and explain. (10 Marks)

Module-3

- 5 a. Write the major components of a BOEV (Battery Operated Electric Vehicle) with a suitable block diagram. (10 Marks)
- b. List the merits and demerits of BOEV. (10 Marks)

OR

- 6 a. What is the function of a flywheel? Explain how energy is stored using a flywheel. (10 Marks)
- b. With a neat diagram, explain the regenerative braking system. (10 Marks)

Module-4

- 7 a. With neat sketch, explain the lead acid battery. (10 Marks)
- b. Explain briefly the parameters of the battery of electric vehicles. (10 Marks)

OR

- 8 a. Describe the construction and working of Nickel Cadmium and Nickel metal hydride battery with neat sketch. (10 Marks)
- b. Briefly explain the types of battery rating methods. (10 Marks)

Module-5

- 9 a. With a neat sketch the basic structure of a fuel cell explain its working, clearly stating the chemical reactions. (10 Marks)
- b. Write a brief account of fuel cell characteristics. (10 Marks)

OR

10 Explain the following:

- i) Solid oxide fuel cell
- ii) Hydrogen storage system
- iii) Reformers
- iv) Fuel cell electric vehicle.

(20 Marks)

* * * * *