



Term Evaluation (Even) Semester Examination March 2025

Roll no.....

Name of the Course: B. Tech.

Semester: 6th

Name of the Paper: Electric Vehicle Technology

Paper Code: TOE-602

Time: 1.5 hour

Maximum Marks: 50

Note:

- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1.

(10 Marks)

- a. What are functions of the components used in an electric vehicle? Explain the impacts of electric vehicles on the environment. (CO1)

OR

- b. What are the different types of batteries used in electric vehicles? Describe the working principle of lithium-ion batteries and their advantages in EV applications. (CO2)

Q2.

(10 Marks)

- a. What is the significance of vehicle dynamics. Derive governing equations to calculate tractive force to drive the vehicle? (CO1)

OR

- b. Define the function of a Battery Management System (BMS) and its major components. (CO2)

Q3.

(10 Marks)

- a. Describe the types of electric vehicles. Explain the working of two of them. (CO1)

OR

- b. What are the different communication protocols used in a Battery Management System (BMS). (CO2)

Q4.

(10 Marks)

- a. Explain power flow control in series and parallel hybrid electric vehicle with suitable block diagram. (CO1)

OR

- b. Define State of Charge (SOC) and Depth of Discharge (DOD) in a battery. A 12V battery capacity of 500AH (Initially fully charged) that supplies a load of 0.6 ohm. Find the SOC of the battery after 3 Hrs.

(CO2)

Q5.

(10 Marks)

- a. What is a driving cycle? Demonstrate the impact of different drive cycles on energy consumption and battery life in an EV. (CO1)

OR

- b. Explain the significance of the battery thermal management system(BTMS) required in EV? What are the different technologies used in BTMS? (CO2)