Seat No.

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OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Electric Vechile

Sub. Code: 81529/81806

Day and Date: Thursday ,18-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: **1. All questions are compulsory**
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary

Q1) Q1) Attempt any two from the following. **[12]**

a. Explain historical background of EV and HEV technology involvement [06]
b. Explain with neat diagram of Electric Vehicle configuration with two Electric Motors (EM) [06]
c. Compare with graph tractive effort and vehicle speed between gasoline engines powered vehicle and electric **motor powered** vehicle. [06]

Q2) Q.2 Attempt any two from the following. **[12]**

a. Explain Nickel-Iron battery (Ni-Fe) with neat sketch with reactions at positive and negative electrode [06]
b. Explain with example Amp-hr capacity, State of Charge (SOC), Depth of Discharge (DoD), Specific energy and specific power of a battery. [06]
c. Explain the Parallel Configurations of Electric Drive train with Neat Diagram. [06]

Q3) Q3) Attempt any two from the following. **[12]**

a. Explain wire (conductive) and wireless (Inductive) battery charging in Electric Vehicles with neat sketch. [06]
b. Explain Battery charging algorithm with Flow chart. [06]
c. Why an energy management control system is required in an HEV? [06]

Q4) Q4. Attempt any two from the following. **[12]**

a. Explain selection criteria of motor in EVS. [06]
b. Compare PMSM with BLDC motor. Write applications of PMSM. [06]
c. Classify in detail DC motor. Explain DC series motor with neat sketch. [06]

Q5) Q.5 Attempt any two from the following. **[12]**

a. Explain speed control of BLDC motor with neat sketch. [06]
b. Explain the need of power conversion required in EVs. [06]
c. Design a battery-operated electrical vehicle with suitable assumptions? [6]

Q6) Q6) Attempt any two from the following. **[10]**

a. Explain in detail the environment and human health impact assessments of Electrical vehicle batteries. [05]
b. Explain with neat sketch conductive DC charging system [05]
c. Explain self-driving technology from level 1 to level 5 [05]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (81806) Electric Vechile Part 3 SEM 6
2] (1154) B.Tech. CBCS (81529) Electric Vechile Part 3 SEM 6