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Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Hybrid Vehicle Technology

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. State social and environmental importance of hybrid and electric vehicles. (10 Marks)
 b. Summarize the basic constituents of hybrid electrical vehicles. (10 Marks)

OR

- 2 a. Analyze the vehicle model with suitable equations. (10 Marks)
 b. Highlights the series hybrid vehicle. Explain construction and working. (10 Marks)

Module-2

- 3 a. Explain the Mild hybrid electric vehicle with suitable sketch. (10 Marks)
 b. Discuss the plug in hybrid vehicle with a neat sketch. (10 Marks)

OR

- 4 a. Conclude the regenerating braking used in HEV. (10 Marks)
 b. Describe vibration and noise reduction in HEV's (10 Marks)

Module-3

- 5 a. Highlight the construction and working of BLDC motors. (10 Marks)
 b. Demonstrate the construction and working of switched Reluctance motors. (10 Marks)

OR

- 6 a. Discuss the design and sizing of motor with suitable equations. (10 Marks)
 b. How thermal analysis and modeling of traction motors carried out? Explain in details. (10 Marks)

Module-4

- 7 a. Summarize the working of Lithium ion battery. (10 Marks)
 b. Demonstrate the working of ultra capacitor. (10 Marks)

OR

- 8 a. Conclude the operating principle of fuels cells with suitable diagram. (10 Marks)
 b. Analyze the Fuel and oxidant consumption in fuel cells. (10 Marks)

Module-5

- 9 a. Illustrate the matching of electric machine and ICE. (10 Marks)
 b. Interpret for selection of energy storage technology. (10 Marks)

OR

- 10 a. Illustrate the learning based energy management system. (10 Marks)
 b. Identify the implementation issues of energy management system. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.