



# CBCS SCHEME

15AU662

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## Sixth Semester B.E. Degree Examination, Jan./Feb. 2023 Hybrid and Electric Vehicle

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Write a note on Fuel Economy of Hybrid vehicles. (08 Marks)
- b. Explain performance characteristics of road vehicles. Explain any one in detail. (08 Marks)

OR

- 2 a. Describe the shunt wound D.C. motor with a neat sketch. (08 Marks)
- b. Describe the series wound D.C. motor with a neat sketch. (08 Marks)

### Module-2

- 3 a. Explain Brushless D.C. motor with a neat sketch. (08 Marks)
- b. Explain A.C. Induction motor with a neat sketch. (08 Marks)

OR

- 4 a. Write a note on power split with shift. (08 Marks)
- b. Describe Continuous Variable Transmission (C.V.T.). (08 Marks)

### Module-3

- 5 a. Explain the following: (08 Marks)
  - i) Grade ii) Launching iii) Boosting.
- b. Summarize the importance of Regenerative braking. (08 Marks)

OR

- 6 a. What is a wheel motor? Explain various arrangements of wheel motors with sketches. (08 Marks)
- b. Explain engine down sizing. (08 Marks)

### Module-4

- 7 a. Explain the epicyclic gear set used in matching the electric drives and IC engines with sketches. (08 Marks)
- b. Briefly discuss the sizing of power electronics. (08 Marks)

OR

- 8 a. Describe the construction and working of a Lead-Acid battery. (08 Marks)
- b. Explain any four battery parameters in detail. (08 Marks)

### Module-5

- 9 a. Sketch and explain the proton exchange membrane fuel cell. (08 Marks)
- b. Analyze the fuel cell characteristics in detail. (08 Marks)

OR

- 10 a. Write short notes on Hydrogen storage methods. (08 Marks)
- b. Explain the importance of Reformers and fuel cell EV. (08 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.