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10AU841

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Hybrid Vehicles

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Explain the calculation of Road loads in hybrid vehicles. (10 Marks)
b. What are grid connected hybrids? Compare the attributes of conventional vehicles with plug-in hybrid vehicle (HEV0, HEV20, HEV60). (10 Marks)
- 2 a. Explain construction and working of various types of DC motors along with torque speed characteristics. (10 Marks)
b. Explain the switched reluctance motor with a neat sketch. State the advantages and drawback of the same. (10 Marks)
- 3 a. Explain the construction and working of a induction motor with torque-speed characteristics. (10 Marks)
b. Write a short note on:
i) Induction machines advantages and disadvantages.
ii) Regenerative braking. (10 Marks)
- 4 a. Write a note on Power Split with shift. (08 Marks)
b. Describe Continuously Variable Transmission (C.V.T). (06 Marks)
c. Explain briefly the significance of Mild Hybrid. (06 Marks)

PART – B

- 5 a. Discuss in detail, drive cycle simplification. (06 Marks)
b. Explain Regenerative Breaking. (05 Marks)
c. Explain : i) Grade ii) Launching iii) Boosting. (09 Marks)
- 6 a. Briefly discuss the sizing of power electronics. (10 Marks)
b. Explain the epicyclic gear set used in matching, The electric drive and IC engines with sketches. (10 Marks)
- 7 a. Explain the cell construction and working of a lead acid battery with a neat sketch. (10 Marks)
b. Explain the various battery parameters. (10 Marks)
- 8 a. With a neat sketch, explain a hydrogen air-fuel system and its characteristics. (10 Marks)
b. Explain the six-types of fuel cells used based on the type of their electrolyte. (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.