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Eighth Semester B.E. Degree Examination, July/August 2022

Electric and Hybrid Vehicle

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Briefly explain the performance characteristics of road vehicles. (10 Marks)
- b. Write a short note on Grid connected vehicles. (10 Marks)

OR

- 2 a. Explain the construction and operating characteristics of a series DC motor. (10 Marks)
- b. With a neat sketch explain the working of a separately excited DC motor. (10 Marks)

Module-2

- 3 a. Explain the working of a switched reluctance motors with a neat sketch. (10 Marks)
- b. With neat diagram, explain brushless DC motor. (10 Marks)

OR

- 4 a. With the neat diagram, explain the working of Continuous Variable Transmission (CVT). (10 Marks)
- b. Write a short note on : i) Mild hybrid ii) Power Assist. (10 Marks)

Module-3

- 5 a. Explain the launching and Boosting in vehicles. (10 Marks)
- b. What do you mean by engine downsizing? How one can get benefits from that? (10 Marks)

OR

- 6 a. Explain the following :
i) Series RBS (Regenerative Braking System)
ii) Parallel RBS. (10 Marks)
- b. Explain the drive cycle implications. (10 Marks)

Module-4

- 7 a. Explain the epicyclic gear set used in matching. The electric drive and IC engine with sketch. (10 Marks)
- b. Briefly discuss the sizing the power electronics. (10 Marks)

OR

- 8 a. What are the battery parameters? Explain each briefly. (10 Marks)
- b. With help of neat sketch, explain the construction and working of lead Acid battery. (10 Marks)

Module-5

- 9 a. Explain the different types of fuel cells. (10 Marks)
- b. Write a short notes on :
i) Proton exchange membrane ii) Alkaline fuel cell. (10 Marks)

OR

- 10 a. With a neat block diagram, explain fuel cell EV system. (10 Marks)
- b. What are the different technologies used for hydrogen storage system? Explain one briefly. (10 Marks)