

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

15AU662

Sixth Semester B.E. Degree Examination, June/July 2018 Hybrid and Electric Vehicles

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain in detail various forces and resistance acting on a vehicle. (08 Marks)
b. Explain with a neat sketch performance characteristic of gasoline engine in full throttle and on electric motor at full load. (08 Marks)

OR

- 2 a. Explain the four types of wound field dc motors depending on the mutual interconnection between the field and armature winding. (08 Marks)
b. Explain the principle, construction and working of Brushless DC motor. (08 Marks)

Module-2

- 3 a. Explain the switched reluctance motor drive system and configurations with neat sketch. (08 Marks)
b. With a neat sketch explain the cross section and operation principles of induction motors. (08 Marks)

OR

- 4 a. Explain the following :
i) Series HEV's
ii) Parallel HEV's. (08 Marks)
b. What are the advantages and disadvantages of series and parallel hybrids? (08 Marks)

Module-3

- 5 a. Explain the following :
i) Series Regenerative brake system
ii) Parallel Regenerative brake system. (08 Marks)
b. List the types of drive cycles and illustrates drive line matching impact due to various drive cycles. (08 Marks)

OR

- 6 a. Explain the electric fraction with respect to hybrid power Trains. (08 Marks)
b. Explain the following terms with respect to hybrid propulsion system.
i) Braking and energy recuperation
ii) Launching and Booshing (08 Marks)

Module-4

- 7 a. With a neat sketch, explain the Simpson type stepped automatic transmission. (08 Marks)
b. Explain the schematic of hybrid AC drive system, with neat sketches. (08 Marks)

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.

15AU662

OR

- 8 a. Explain the construction and working principle of lead - acid battery. (08 Marks)
b. Explain the following Battery parameters.
i) Specific energy
ii) Specific Power
iii) Energy efficiency
iv) Depth of discharge. (08 Marks)

Module-5

- 9 a. Explain with a block diagram fuel cell EV system. (10 Marks)
b. Explain the following :
i) Hydrogen air fuel cell system. (06 Marks)
ii) Operation characteristics of hydrogen air fuel cell system. (06 Marks)

OR

- 10 a. Explain with a neat sketch Proton exchange membrane fuel cell. (08 Marks)
b. Explain solid oxide fuel cell with a neat sketch. (08 Marks)

* * * * *