CBCS SCHEME

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18AU754

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
Introduction to Electric Vehicles

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 need of electric drive. **(10 Marks)**
b. Explain briefly the past 30 years development of electric vehicle. **(10 Marks)**

OR

2 a. Briefly explain the historical development of electric vehicles. **(10 Marks)**
b. Write the engineering philosophy of electric vehicles. **(10 Marks)**

Module-2

3 a. Explain the following components of an electric vehicle circuit and mention their functions :
i) Conductors ii) Insulators iii) Solenoids iv) Capacitors. **(10 Marks)**
b. With a neat sketch, explain the AC and DC motors. **(10 Marks)**

OR

4 a. Describe the weight and size parameters of electric vehicles. **(10 Marks)**
b. Briefly explain the energy parameters, performance parameters. **(10 Marks)**

Module-3

5 a. Explain briefly the advantages and disadvantages of Battery Operated Electric Vehicle (BOEV). **(10 Marks)**
b. Using suitable block diagram, explain the major components of a Battery Operated Electric Vehicle. **(10 Marks)**

OR

6 a. Explain briefly the controller and inverter. **(10 Marks)**
b. With a neat diagram, explain the regenerative braking. **(10 Marks)**

Module-4

7 a. Sketch and explain the any two types of batteries. **(10 Marks)**
b. List out the different types of batteries used in the electric vehicles. **(10 Marks)**

OR

8 a. With a neat diagram, explain the basic component of the battery. **(10 Marks)**
b. Define the following battery parameters : i) Battery capacity ii) Discharge rate
iii) State of discharge iv) State of charge v) Depth of discharge. **(10 Marks)**

Module-5

9 a. With a neat sketch of the basic structure of a fuel cell explain its working. **(10 Marks)**
b. Write a brief account of fuel cell characteristics. **(10 Marks)**

OR

10 a. Sketch and explain the proton exchange membrane. **(10 Marks)**
b. Briefly explain the hydrogen storage systems. **(10 Marks)**

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