No. of Printed Pages : 4 220951
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5th Sem / Electrical

Subject : Electric Vehicle Technology

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which type of motor is commonly used in EV due to its high efficiency? (CO2)

a) Permanent Magnet Synchronous Motor
b) Brushless DC Motor
c) Induction Motor
d) Stepper Motor

Q.2 What is the main disadvantage of electric vehicles? (CO1)

a) Higher running costs
b) Longer charging times
c) Lower environmental impact
d) High fuel consumption

Q.3 What does the acronym PHEV stand for? (CO1)

a) Plugged Hybrid Electric Vehicle
b) Power Hybrid Electric Vehicle
c) Plug-in hybrid Electric Vehicle
d) Powered Hybrid Electric Vehicle

Q.4 The regenerative braking system in EVs is mainly used for :- (CO4)

a) Reducing speed quickly
b) Improving braking efficiency
c) Storing kinetic energy back in the battery.
d) Boosting acceleration

Q.5 Which type of Hybrid Electric Vehicle (HEV) uses both a battery and a fuel cell? (CO5)

a) Gasoline ICE & Battery
b) Diesel & Battery
c) Battery & Flywheel
d) Battery & Fuel Cell

Q.6 What is a main difference between a Simple EV and a Hybrid EV?

a) Simple EVs use gasoline
b) Hybrid EVs can use both gasoline and electricity
c) Simple EVs have no battery
d) Hybrid EVs have no electric motor

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 List two advantages of Electric Vehicles. (CO1)

Q.8 Name two types of motors used in electric vehicles. (CO2)

Q.9 Mention two alternative charging sources for electric vehicles. (CO3)

Q.10 What is the function of a Battery Management System in an EV? (CO4)

Q.11 State one key difference between a simple EV and a Hybrid EV. (CO5)

Q.12 Which battery type is known for having high energy density and being lightweight? (CO4)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Describe the evolution of Electric Vehicles and explain why they are gaining importance today. (CO1)

Q.14 Explain the working principle of Brushless DC motors used in electric vehicles. (CO2)

Q.15 Discuss the safety precautions that need to be taken during EV charging. (CO3)

Q.16 Compare lead-acid batteries and lithium-ion batteries in terms of their usage in electric circles. (CO4)

Q.17 List and explain three advantages and two disadvantages of Hybrid Electric Vehicles compared to simple EVs. (CO5)

Q.18 What is regenerative braking? Explain how it contributes to the efficiency of an electric vehicle. (CO4)

Q.19 Identify and explain three mandatory safety precautions to be observed while handling electric vehicles. (CO1)

Q.20 Discuss the components and working of an EV charger. (CO3)

Q.21 What are the advantages of Permanent Magnet Synchronous Motors (PMSM) in electric vehicles compared to other motors? (CO2)

Q.22 Explain the role of the battery cooling system in EVs and its significance.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Analyze the working of a battery Management System (BMS) in electric vehicles and its importance for vehicle performance and safety. (CO4)

Q.24 Discuss the working principle and control of Permanent Magnet Synchronous Motors. (PMSM) used in electric Vehicles. (CO2)

Q.25 Write a detailed note on different types of Hybrid Electric Vehicles (HEV) and their comparison with traditional Electric Vehicles(EV). (Co5)