Section-D

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

Q.23 With a neat sketch, explain the configuration of series hybrid drive train.

Q.24 Discuss different strategies of battery management.

Q.25 Write down detailed analysis and modeling of switched mode power convertors.

Roll No. .....

4th Sem.
Branch : Instrumentation & Control Engineering
Subject : Electric Vehicles

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple Choice Questions. All Questions are compulsory. (6x1=6)

Q.1 What is the main component that stores electrical energy in an electric vehicle?

a) Radiator b) Battery pack

c) Carburetor d) Exhaust pipe

Q.2 What feature in electric vehicles converts kinetic energy generated during braking into electrical energy to recharge the battery?

a) Solar panels b) Regenerative braking

c) Turbocharger d) Radiator fan

Q.3 Which type of electric vehicle has both an electric motor and an internal combustion engine?

a) Battery Electric Vehicle (BEV)

b) Hybrid Electric Vehicle (HEV)

c) Plug-in Hybrid Electric Vehicle (PHEV)

d) Fuel Cell Electric Vehicle (FCEV)

Q.4 What is the process of charging an electric vehicle at home using a regular electrical outlet called?

a) Fast charging b) Level 3 charging

c) Level 2 charging d) Trickle charging

Q.5 What is the term used for the process of supplying electric power to an electric vehicle for charging purposes?

a) Electrification b) Charging

c) Plugging in d) Re-fueling

Q.6 Sodium nickel chloride battery uses

a) One electrolyte b) Two electrolytes

c) Three electrolytes d) None

Section-B

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

Q.7 Define speed ratio.

Q.8 What is reluctance motor?

Q.9 What is tractive effort?

Q.10 Define a battery.

Q.11 What is drive train?

Q.12 Write a full form of PMSM.

Section-C

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

Q.13 What is the necessity of a rolling resistance and aerodynamic drag in vehicles?

Q.14 What is meant by constant torque speed ratio as applied in electric vehicle?

Q.15 Write an overview of government policies related to electric vehicles.

Q.16 What are the major challenges facing implementation of hybrid and electric vehicles?

Q.17 Write the functions of and need of onboard charger.

Q.18 Briefly explains the operation of induction motor.

Q.19 What are differences between Indian and international standards for AC and DC EV charging?

Q.20 How components sizing affects the working behaviour of a hybrid electric vehicle?

Q.21 Write down about battery leakage and battery testing terms.

Q.22 What are the differences between series and parallel hybrid electric vehicles.