Total No. of Questions : 8]

SEAT No. :

P-463

[Total No. of Pages : 2

[6003]-570

T.E. (Semester - I)

Honors In Electric Vehicles

E-VEHICLE TECHNOLOGY

(2019 Pattern) (302021MJ)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.***
2) ***Figures to the right side indicate full marks.***
3) ***Draw the neat sketch wherever necessary.***

Q1) a) Write a short note on li-ion battery with its working principal? **[4]**

b) What are the different chemistries of li-ion batteries? Make its comparative analysis on basis of power, energy and lifespan? **[8]**

c) Explain the advantages and disadvantages of li-ion batteries. **[8]**

OR

Q2) a) What are the Lithium ion battery charging precautions? **[4]**

b) What is battery cell balancing? Explain the Issues and remedies for battery balancing. **[8]**

c) What are the effects of overcharging and termination voltage accuracy on pack capacity of li-ion battery? Explain with suitable graph. **[8]**

Q3) a) Compare lead acid and li-ion batteries on basis of following parameters. **[8]**

i) access and expensive
ii) energy efficiency
iii) temperature performance
iv) weight
v) life cycle
vi) energy density
vii) power density
viii) self discharge rate

b) Explain lead acid batteries with advantages, disadvantages and applications. **[8]**

OR

P.T.O.

Q4) a) Explain Nickel-Metal Hydride Batteries with advantages, disadvantages and applications. **[8]**

b) Explain Li-ion supercapaciter with advantages, disadvantages and applications. **[8]**

Q5) a) What do you mean by drive system in electric vehicles? Explain with its significance for manufacturers and drivers. **[8]**

b) Write in short different types of motors used in electric vehicle? Differentiate between AC motors and DC motors. **[8]**

OR

Q6) a) What are the factors to be considered while Selection and sizing of the motor? **[8]**

b) Explain different types of drives used in electric vehicle with neat sketches. **[8]**

Q7) a) Explain the significance of implementation of lOT in electric vehicle on basis of Intelligent transportation applications? **[10]**

b) Write a short note on Recycling Technology of Waste Batteries? **[8]**

OR

Q8) a) Explain the Significance of IOT for modes of fast and efficient charging in electric vehicles. **[8]**

b) Write a short note on Charging algorithms for fast and efficient charging? **[10]**