Total No. of Questions : 4]

SEAT No. :

P9029

[Total No. of Pages : 2

Oct-22/TE/Insem - 651
T.E. (Mechanical / Automobile) (Honors / Minors)
ELECTRIC VEHICLES
e - Vehicle Technology
(2019 Pattern) (Semester - I) (302031MJ)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Figures to the right indicate full marks.***
3) ***Draw the neat sketch wherever necessary.***

Q1) a) Calculate the no. of battery cell required, justifying its connections in series and parallel combination for running e-bicycle involving 100 watt of energy which should run for approximately 1.5 hrs on daily basis. Use 18650 li-ion batteries with specification of 3.2V and 2.5A? **[4]**

b) Explain working principal of li-ion battery cell, along with components involved in li-ion battery pack formation? **[6]**

c) Explain Suspension system in Electric Vehicle with any one type in detail? **[6]**

OR

Q2) a) Compare types of batteries used in electric vehicle on basis of following parameters? **[4]**

i) Access to use

ii) Energy efficiency

iii) Temperature performance

iv) Life cycle

P.T.O.

b) Explain Transmission system in Electric Vehicle with working, advantages and disadvantages? **[6]**

c) Explain the key components and architecture of pure electric vehicle with neat sketch? **[6]**

Q3) a) Explain the features of Hybridization of Solar and Battery with advantages and disadvantages? **[4]**

b) Explain any justify suitable efficient types of batteries used in Indian automobile sector? **[4]**

c) Explain the significance of Ragone plot with neat graph, for electric vehicle and its hybridization? **[6]**

OR

Q4) a) Explain the features of Hybridization of Battery with IC Engine? **[4]**

b) Explain Current scenarios and its availability in India for different batteries used in e-vehicles taking suitable example of any four types? **[4]**

c) Explain degree of hybridization? What are its value for micro, mild, fully hybrid and pure electric vehicle? Calculate the hybridization ratio for HEV with motor rated at 50 KW and engine rated at 75 KW. **[6]**