

Total No. of Questions : 8]

SEAT No. :

PA-1628

[Total No. of Pages : 2

[5926]-262

T.E. (Mechanical/Automobile) (Honor)

ELECTRIC VEHICLES

e-Vehicle Technology

(2019 Pattern) (Semester - I) (302031MJ)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q.No.1 or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, Q.No.7 or Q.No.8.
- 2) Figures to the right of each question indicate full marks.
- 3) Draw the neat sketch wherever necessary.

- Q1)** a) Write a short note on different components of li-ion battery with neat sketch? [4]
- b) What are the different chemistries of li-ion batteries? Mention in short significance of each of them for electric vehicle. [8]
- c) Explain the advantages and disadvantages and applications of li-ion batteries. [8]

OR

- Q2)** a) Explain the following parameters of li-ion batteries in short (any two).[4]
- i) Cell voltage.
  - ii) Energy density.
  - iii) Power density.
- b) What is the type of charging li-ion battery? Explain the precautions needs to be taken while charging. [8]
- c) Write a short note on Availability of lithium ion batteries and government policies to fulfill the demands of lithium batteries for Indian e-vehicles.[8]
- Q3)** a) Explain battery management system with working mechanism and neat sketch? [8]
- b) Explain lead acid batteries with advantages, disadvantages and applications. [8]

OR

- Q4)** a) Write a short not on need of thermal management system in e-vehicles? Explain with mechanism. [8]
- b) Explain Li-ion supercapaciter with advantages, disadvantages and applications. [8]

P.T.O.

**Q5) a)** Write a short note on Mechanical and electrical connections of motors. [8]

b) List out the output characteristics of electric motor drives for EVs? [8]

OR

**Q6) a)** Write a short note on Output Characteristics of Motor Drives in Evs?[8]

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

**Q7) a)** Explain the significance of implementation of IOT in electric vehicle on basis of wireless sensor network with neat sketch wherever required.[10]

b) What is battery swapping? Explain with Advantages and challenges of battery Swapping. [8]

OR

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

b) Write a short note on Battery Standards in electric vehicles with any two types? [10]

