Total No. of Questions : 8]

SEAT No. :

PB-3811

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T.E. (Electrical Engineering)

ELECTRICAL MOBILITY

(2019 Pattern) (Semester - II) (303151B) (Elective-II)

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

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q 3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicates full marks.***
4) ***Use of Calculator is allowed.***
5) ***Assume Suitable data if necessary.***

Q1) a) Why Balancing of cells is required in battery? Explain any two Active cell balancing method with neat diagram. **[9]**

b) Explain Constant current charging algorithm used in battery charging. **[8]**

OR

Q2) a) State various SOC estimation methods used in batteries, Explain any two methods. **[9]**

b) Draw block diagram of Battery Management System and explain it. **[8]**

Q3) a) Draw and Explain Antilock Brake System In Electric vehicle. **[9]**

b) Draw Control Architecture of HEV and all electronic control systems. **[9]**

OR

Q4) a) Explain energy consumption of Electric Vehicle in braking. **[9]**

b) Draw schematic diagram of series HEV drive train and explain its working. **[9]**

P.T.O.

Q5) a) Write a note on sizing the motor for electric hybrid vehicles. **[9]**

b) Write KW rating of AC chargers. Explain Fast Charger types and state applications. **[8]**

OR

Q6) a) Explain BLDC drives for HEV and list advantages of it. **[9]**

b) Write note on battery swapping. **[8]**

Q7) a) Compare V2H, V2V and V2G (any 3 points). **[9]**

b) Explain V2G concept and state advantages of V2G **[9]**

OR

Q8) a) Draw Flowchart for EV Charging Infrastructure and explain it. **[9]**

b) Draw and Explain Diagram for modeling of V2G ancillary serives. **[9]**