

Total No. of Questions : 8]

SEAT No. :

P574

[Total No. of Pages : 2

[6004] 510

B.E. (Electrical)

ELECTRICAL AND HYBRID VEHICLE

(2019 Pattern) (Semester - VII) (Elective - IV) (403144B)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Solve Ques. 1 or Ques. 2, Ques. 3 or Ques. 4, Ques. 5 or Ques. 6 and Ques. 7 or Ques. 8*
- 2) *Draw neat diagrams whenever necessary.*
- 3) *Assume suitable data, if necessary.*

- Q1)** a) Draw and explain various BEV configurations. [7]
b) Describe any one energy management strategies for EV's. [6]
c) Explain different methods of Battery Swapping System. [5]

OR

- Q2)** a) Which are the various sensors used for battery pack and EV motor? [6]
b) Describe electric truck with suitable example. [5]
c) Explain working of Fuel cell vehicle with merits and demerits. [7]

- Q3)** a) Explain Vehicle dynamics importance and its consideration for EV performance. [9]
b) Explain in detail Power Flow control in HEV. [8]

OR

- Q4)** a) What is energy hybridization and explain operation of a hybrid energy system? [9]
b) Draw parallel HEV configuration and explain its different operating modes. [8]

- Q5)** a) Write a short note on CAN vehicle network. [5]
b) Mention important considerations for battery pack design. [6]
c) Draw and explain Induction motor control for an EV application. [7]

OR

P.T.O.

- Q6)** a) Which are various factors to be consider for the sizing of Power converter design? Derive the equation for buck converter. [7]
b) How to select size of HEV motor? Which are the factors considered for the same? [6]
c) State the criteria for battery selection in HEV. [5]

- Q7)** a) Explain the various standards for charging infrastructure? [6]
b) What is star labelling schemes for Li-ion packs? [6]
c) List Li-ion recycling policy and standards used in EV in India. [5]

OR

- Q8)** a) Explain EV tariff rate considerations declare by government for EV charging. [6]
b) Describe the FAME-II policy for EV in brief. [6]
c) Mention any one EV start-up in detail as per Indian norms. [5]

