

Total No. of Questions : 8]

SEAT No. :

PB-2273

[Total No. of Pages : 2

[6263]-111

B.E. (Electrical)

ELECTRIC AND HYBRID VEHICLE

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

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, Ques. 7 or Ques. 8.*
- 2) *Draw neat diagrams wherever necessary.*
- 3) *Assume suitable data, if necessary.*

Q1) a) Draw & explain the EV subsystem. [8]

b) Explain the concept of electric bus and state its challenges for adoption. [6]

c) Mention the advantages and disadvantages of fuel cell vehicles. [4]

OR

Q2) a) Explain the mechanism of a fuel cell electric vehicles drive train. [7]

b) List and describe the various sensors applicable to electric vehicles. [6]

c) Write a short note on EV Fleet Management system. [5]

Q3) a) What is called as hybridization of energy sources in EV's explain it with suitable diagram. [7]

b) Write a short note on fuel efficiency analysis for an PHEV. [5]

c) Draw and explain series HEV configuration. [5]

OR

Q4) a) Write a short note on vehicle dynamics. [5]

b) State different drivetrains configuration in HEVs and explain Hybridization of any one in detail. [6]

c) Why power management is crucial for HEV? Explain any one strategy for the same. [6]

P.T.O.

- Q5)** a) State the criteria for battery selection in EV. [5]
b) Mention important considerations for battery pack design. [6]
c) Draw and explain PMSM motor control for an EV application. [7]

OR

- Q6)** a) Which are various forces to be consider for EV design? Write equations for power calculation. [7]
b) How to select size of EV motor? Which are the factors considered for the same? [6]
c) Write a short note on CAN vehicle network. [5]

- Q7)** a) Explain revised guidelines and standards for charging infrastructure? [7]
b) What is star labelling of BEE? Why it is necessary for battery pack? [6]
c) List any two Li-ion recycling policy and standards. [4]

OR

- Q8)** a) Explain EV tariff rate considerations declare by government for EV charging. [6]
b) State important highlights about FAME-II policy. [6]
c) What is start up? Mention any one EV startup in detail. [5]

