Total No. of Questions : 08]

SEAT No. :

PA-928

[Total No. of Pages : 2

[5927]-362

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 Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 , Q.7 or Q.8.*
2) *Draw neat diagrams whenever necessary.*
3) *Assume Suitable Data if necessary.*

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

b) State the strategies and explain the general architecture of Energy management system. [6]

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

OR

Q2) a) Explain the mechanism of a fuel cell electric vehicle's drive train. [5]

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

c) Write a short note on Battery swapping system. [3]

Q3) a) Describe the HEV modelling considering forward approach and reverse approach. [6]

b) How fuel efficiency analysis is carried for PHEV. [5]

c) Draw and explain HEV Subsystem. [6]

OR

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

b) Describe the control of power flow in Series-Parallel Hybrid Vehicle with neat diagram. [7]

c) Explain the strategies used in Power Management systems for HEV. [5]

P.T.O.

Q5) a) State the criteria for battery selection in EV. [5]

b) Mention important considerations for Sizing the Power converter. [5]

c) Draw and explain PMSM motor control for an EV application. [8]

OR

Q6) a) Which are various forces to be consider for EV design? Write equations for power calculation. [8]

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. [4]

Q7) a) Explain revised guidelines and standards for charging infrastructure? [8]

b) What are Star Labeling Schemes for Lithium - ion Packs and Systems? [5]

c) List Li-ion recycling policy and standards. [4]

OR

Q8) a) Explain EV tariff rate considerations declare by government for EV charging. [6]

b) State the Fame - II policy for EV and which type of EV is eligible for Fame - II. [6]

c) What is start up? Mention any one EV startup in detail. [5]

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