

Total No. of Questions : 10]

SEAT No. :

P2236

[Total No. of Pages : 3

[5254]-567

B.E. (Automobile Engineering)
HYBRID & FUEL CELL VEHICLES
(2012 Pattern) (Semester -I) (Elective -II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) *Neat diagrams must be drawn wherever necessary.*

- Q1)** a) Explain the working of Synchronous Motor with neat sketch. [6]
b) Enlist the various applications of the Electric Vehicle. [4]

OR

- Q2)** a) Explain the working of Switched Reluctance Motor with neat sketch.[5]
b) What is Engine downsizing? Why engine downsizing is done in hybrid vehicle. [5]
- Q3)** a) Explain vehicle dynamics attribute in HVs. How it affects performance characteristics. [5]
b) Write a note on Grid Connected Hybrid Vehicle. [5]

OR

- Q4)** a) Explain parallel configuration and its various operating modes. [6]
b) Explain the Power split Hybrid Electric Vehicle. [4]

P.T.O

Q5) a) Which are the devices used to matching of electric drives and ICE. How epicyclic gear train used in matching. **[10]**

b) Classify the Traction batteries. Explain any one with neat sketch. **[7]**

OR

Q6) a) Explain different battery parameters. **[10]**

b) How the sizing the propulsion motors is done explain in with sketch.[7]

Q7) a) Explain following any two with neat sketch: **[12]**

i) Proton exchange membrane fuel cell (PEM)

ii) Direct methanol fuel cell (DMFC)

iii) Solid oxide fuel cell (SOFC)

b) Explain fuel cell characteristics. **[5]**

OR

Q8) a) Explain hydrogen storage system. **[6]**

b) With neat sketch explain fuel cell electrical vehicles. **[6]**

c) Explain Ultra capacitor. **[5]**

Q9) a) Explain continuously variable transmission. **[8]**

b) Explain hydraulic pumps and motors. **[8]**

OR

- Q10)**a) Explain Pneumatic Hybrid Engine systems operating mode. [10]
b) Explain hydraulic accumulators. [6]

