

Total No. of Questions : 6]

SEAT No. :

P226

[Total No. of Pages : 2

Oct./BE/Insem. - 542

B.E. (Electrical)

ELECTRIC AND HYBRID VEHICLES

(2015 Course) (Semester - I) (403144 D) (Elective - II)

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right indicate full marks.*
- 3) *All questions carry equal marks.*
- 4) *Assume Suitable data, if necessary.*

Q1) a) Draw & explain fuel cell Electric Vehicles. **[6]**

b) Explain hybrid electric vehicle & its components. **[4]**

OR

Q2) a) Why there is a need for hybrid energy storage? Explain different combination. **[6]**

b) Explain various factors which determines performance of vehicle. **[4]**

Q3) a) What is Flywheel energy storage? Explain challenges associated with it. **[6]**

b) Which are the factors to be considered while selecting energy storage device? **[4]**

OR

Q4) a) Explain working principle & benefits of Ultra capacitor energy storage. **[4]**

b) Which are the various Hybrid drive train topologies? **[6]**

P.T.O.

- Q5)** a) Why Balancing of cells is required in battery? Explain Active cell balancing method. [6]
- b) What is Battery Management System? Explain its function. [4]
- Q6)** a) Explain thermal monitoring of battery unit. [6]
- b) How to estimate battery SoC? [4]
