

B.E./B.TECH. Degree Examination, December 2020
Fifth Semester
AE18502- Battery and Fuel Cell Technology for Electric Vehicles
(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. Number of cells connected in parallel provide a _____
 - (a) high current carrying capacity
 - (b) higher voltage
 - (c) higher power
 - (d) higher cost
2. Which of the following cells has the highest voltage?
 - (a) Nickel-Metal Hydride
 - (b) Lithium-Ion
 - (c) Lead-Acid
 - (d) Sodium-Sulfur
3. How do you boost the amount of electricity a fuel cell system produces?
 - (a) Adding oxygen
 - (b) Adding hydrogen
 - (c) Adding protons
 - (d) Adding cells
4. If you see a car operating with a fuel cell, most probably the cell is _____.
 - (a) Phosphoric Acid Fuel Cell
 - (b) Solid Oxide Fuel Cell
 - (c) Proton Exchange Membrane Fuel Cell
 - (d) Direct Methanol Fuel Cell
5. Compare tubular plate with flat plate battery.
6. Why memory effect should be eliminated?
7. Compare battery and fuel cell.
8. Discuss the importance of humidifiers used in fuel cells.

PART B - (4 X16 = 64 marks)

09. (a) Illustrate constructional components and working of a 12V Automotive **(16)** battery.

(OR)

- (b) Compare the different methods used to charge an automotive battery. **(16)**
10. (a) Discuss the constructional and working details of Electric Vehicle Battery. **(16)**
- (OR)**
- (b) Discuss the importance of battery management system with relevant sketches. **(16)**
11. (a) Discuss the construction of a fuel cell stack with six cells connected in series and the components involved in them. **(16)**
- (OR)**
- (b) Compare the characteristics of any three fuel cells with a neat table. **(16)**
12. (a) Illustrate with a neat sketch the fuel cell performance characteristics. **(16)**
- (OR)**
- (b) Discuss the procedure involved in fuel cell stack sizing and configuration. **(16)**