



B.E DEGREE EXAMINATIONS: APRIL 2015

(Regulation 2009)

Seventh Semester

AUTOMOBILE ENGINEERING

AUE128 : Fuel cells Technology

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. What is the lightest and most abundant element in our universe?
 - a) Hydrogen
 - b) Methane
 - c) CO
 - d) Metal hydride
2. Which one is low temperature fuel cell
 - a) Alkaline fuel cell
 - b) Phosphorus fuel cell
 - c) Molten carbonate
 - d) Solid oxide fuel cell
3. The optimum pressure for storing Hydrogen gas under
 - a) 100 bar to 150 bar
 - b) 60 bar to 90 bar
 - c) 250 bar to 350 bar
 - d) None of these
4. What is Enthalpy
 - a) $H = V+PV$
 - b) $H = V+PV$
 - c) $H = U+PV$
 - d) $H = U+PV$
5. The material used in membrane electrode assembly
 - a) Aluminum
 - b) Chromium
 - c) Carbon Nano tubes
 - d) Teflon
6. Where is hydrogen connected in fuel cells
 - a) Cathode
 - b) Anode
 - c) Partial cathode & catalyst
 - d) Chemisorption
7. The temperature of cryogenic hydrogen state is around
 - a) 253 degree Celsius
 - b) 50 degree Celsius
 - c) -50 degree Celsius
 - d) -253 degree Celsius
8. Which is the easiest method of storing hydrogen in onboard fuel cell

23. a) Explain the components of membrane electrode assembly and elaborate their performance with relevant curves.

(OR)

b) (i) Explain the fuel stacks system in automotive application (7)

(ii) Write short notes on humidifiers and cooling plates (7)

24. a) Elaborate the different methods for reforming fuels.

(OR)

b) Discuss the construction and working of nickel-metal hydride battery.

25. a) Explain the components of battery powered vehicle and Hybrid electric vehicle

(OR)

b) (i) Compare vehicles powered by fuel cells with that of vehicles driven by batteries, natural gas and hydrogen and hybrid electric vehicle. (10)

(ii) What is fuel cycle analysis? (4)
