**Week 2-Assignment**

**1. How much purity of hydrogen gas produced via partial oxidation?**

A. Less than 50 %

B. 100%

C. 97-98%

D. Less than 60%

**2. Reforming of bio-oil steam reforming for producing hydrogen undergoes**

A. CxHy + 1/2O2 + H2O + energy mH2 + nCO2

B. CxHy + 1/2O2 + energy mH2 + nCO2 + H2O

C. CnHmO= + (2n–k)H2O mCO2 + (2n+m/2–k)H2

D. H2O + energy 1/2H2 + O2

**3. What is source of bio-oil steam reforming?**

A. Coal/Charcoal

B. Biomass sources.

C. Fossil fuels

D. All above

**4. What are the disadvantages of hydrogen production via fossil sources?**

A. Finite resources.

B. Carbon sequestration.

C. Purification and separation of H is challenging.

D. All above.

**5. What are the advantages of hydrogen production via water splitting?**

A. Facile production way.

B. “zero” CO2 emission.

C. Very purified H2 generation.

D. All above.

**6. A basic electrolyzer consists of**

A. Solar Panel, Battery, Regulator, and the load.

B. Anode, Cathode, electrolyte, and membrane.

C. Solar Panel, Battery, Electrolyte, and Electrodes.

D. Membrane, Battery, Regulator, and the load

**7. Which of the following statement is NOT correct for PEM electrolyzer?**

A. Electrolyte is a solid specialty plastic material.

B. Electrons flow through external circuit and hydrogen ions selectivity move across the PEM to the cathode

C. Operates at room temperature

D. Operates at 70-90 C

**8. Which of the following statement is correct for alkaline electrolyzer?**

A. The use of liquid alkaline solution (KOH, NaOH…) as the electrolyte

B. Transport of hydroxide ions through the electrolyte from cathode side to anode side

C. Operates at 100-150 C

D. All above

**9. In electrolyzer, what is the full form of SOE?**

A. Solid oxide electrolyzer.

B. Siegesbeckia orientalis ethanol extract.

C. Self-assembled organic electronics.

D. None of above.

**10. In electrochemical water splitting, the reaction 4H2O + 4e- 2H2 +4OH- could be attributed to?**

A. Hydrogen evolution reaction

B. Oxygen evolution reaction

C. Oxygen reduction reaction

D. All of above

**11. In electrochemical water splitting, the reaction 4OH- O2 +2H2O + 4e- could be attributed to?**

A. Hydrogen evolution reaction

B. Oxygen evolution reaction

C. Oxygen reduction reaction

D. None of above

**12.** **During electrolysis, the reaction undergoes**

A. O2 + H2O + energy 1/2H2

B. H2O + energy 1/2H2 + O2

C. 1/2H2 + O2  H2O + energy

D. H2O + O2  1/2H2 + energy

**13. Sodium hydroxide is insoluble in water**

A. True

B. False

**14. Which of the following is a disadvantage of membrane cell process?**

A. Environmental-friendly

B. Facile production approach

C. Zero CO2 emission

D. Low efficiency due to the high-cost catalyst

**15. Why is hydrogen hazardous as fuel?**

A. Because of high ignition and low combustion energy

B. Because low ignition and low combustion energy

C. Because of high ignition and high combustion energy

D. Because of low ignition and high combustion energy

**16. Which of the following produce hydrogen gas?**

A. Water splitting

B. Anerobic digestion

C. Fuel cells

D. Cooking

**17. What is photocatalytic water splitting?**

A. Splitting of water using catalyst and electricity

B. Splitting of water using electricity

C. Combining hydrogen and oxygen to form water

D. Splitting of water using light as catalyst

**18.** **Which of the electrolyzer types belong to electrolyzer?**

A. PEM (Polymer electrolyte membrane)

B. Alkaline

C. Solid oxide

D. All of above

**19. Decomposition of water (H2O) into oxygen (O2) and hydrogen (H2) due to?**

A. Electric current

B. Mechanical force

C. Automatically happens

D. None of above

**20. In acidic solution, which reaction belongs to oxygen production?**

A. 2H2O O2 +4H+ + 4e-

B. 4H+ + 4e- 2H2

C. 4OH- O2 + 2H2O + 4e-

D. 4H2O + 4e- 2H2 + 4OH-