

1. What is the renewable energy source?

- A. Solar **B. Biomass** C. Nuclear D. Geothermal

2. Why should we develop renewable energy sources?

- A. To lower emissions of carbon dioxide
B. To prevent environmental pollution.
C. To reduce waste
D. All above

3. This is not the process for producing biomass energy

- A. Pyrolysis B. Gasification C. Combustion D. Reforming

4. What are the disadvantages of solar energy system?

- A. The sun has got to shine.
B. The cost of solar panels and the systems range between \$20k-40k
C. The light from the sun produces a very small amount of energy.
D. All above

5. A basic photovoltaic system is used to

- A. Convert wind energy to electric source
B. Convert biomass to electric source
C. Convert geothermal source to electric source
D. Convert light energy into electric source.

6. A basic photovoltaic system consists of

- A. Solar Panel, Battery, Regulator, and the load
- B. Solar Panel, Connecting wires, Regulator, and the load
- C. Solar Panel, Battery, Electrolyte, and Electrodes
- D. Membrane, Battery, Regulator, and the load

7. What are the advantages of hydrogen fuel?

- A. Very High Specific Energy
- B. Efficiency
- C. Clean
- D. Versatile and easily scalable
- E. All above

8. What are the two most common techniques to produce hydrogen gas utilized in fuel cells?

- A. Electromagnetism and quantum mechanics
- B. Steam reforming and electrolysis
- C. Electrolysis and adsorption
- D. Thermal conductivity and refraction

9. How do you refuel a fuel cell electric vehicle?

- A. Fill the tank with water

- B. Plug the vehicle into a charging station
- C. Pump hydrogen gas directly into the tank
- D. Pump gasoline into the tank

10. In terms of greenhouse gas emissions, how good or bad is hydrogen fuel?

- A. Major contributor to greenhouse gas emissions
- B. Lowest contributor of greenhouse gas emissions
- C. Zero-emission fuel
- D. Hydrogen cannot be used as fuel

11. How does electrolysis produce hydrogen?

- A. By running electricity to combine hydrogen and water
- B. By passing electricity into the water to separate it into hydrogen and oxygen
- C. By separating water into hydrogen and oxygen and generating electricity
- D. By passing electricity into the water to evaporate it into hydrogen

12. During electrolysis, the reaction undergoes

- A. $\text{O}_2 + \text{H}_2\text{O} + \text{energy} \rightarrow 1/2\text{H}_2$
- B. $\text{H}_2\text{O} + \text{energy} \rightarrow 1/2\text{H}_2 + \text{O}_2$
- C. $1/2\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O} + \text{energy}$
- D. $\text{H}_2\text{O} + \text{O}_2 \rightarrow 1/2\text{H}_2 + \text{energy}$

13. Reforming of hydrogen carbon for producing hydrogen undergoes

- A. $C_xH_y + 1/2O_2 + H_2O + \text{energy} \rightarrow mH_2 + nCO_2$
- B. $C_xH_y + 1/2O_2 + \text{energy} \rightarrow mH_2 + nCO_2 + H_2O$
- C. $C_xH_y + 1/2O_2 + H_2O \rightarrow mH_2 + nCO_2 + \text{energy}$
- D. $H_2O + \text{energy} \rightarrow 1/2H_2 + O_2$

14. Hydrogen is a

- A. Metal C. Non-metal B. Metalloid D. Solid

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 use hydrogen as fuel?

- A. Fossil fuels
- B. Anerobic digestion
- C. Fuel cells
- D. Cooking

17. Which of the following supplies of hydrogen gas?

- A. Natural gas/biogas
- B. Gasification of coal

- C. Electrolysis
- D. All of the above

18. How is hydrogen gas produced from fossil fuels?

- A. Partial oxidation of hydrocarbon or coal
- B. Electrolysis
- C. Evaporation
- D. Biomass gasification

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

- A. Less than 50 %
- B. 100%
- C. 97-98%
- D. Less than 60%

20. Which of the following statement is correct for hydrogen?

- A. Lightest, Most abundant, Colorless, Odorless and non-toxic
- B. Heaviest, Most abundant, Colorless, Odorless and non-toxic
- C. Lightest, Most abundant, Bad smell and very toxic
- D. None of above statements