

Renewable Energy Mastery

Renewable Energy · Answer Key · 8 Questions

1. Which element is the primary byproduct of the reaction within a hydrogen fuel cell used for electricity generation?

- A) Carbon monoxide
- B) Water vapor**
- C) Nitrogen dioxide
- D) Sulfur dioxide

2. What is the physical principle that allows a photovoltaic cell to convert light directly into electricity?

- A) The photoelectric effect**
- B) The piezoelectric effect
- C) The Seebeck effect
- D) The Thomson effect

3. Which renewable energy source relies on the Earth's internal thermal gradient to produce steam for electricity generation?

- A) Biomass
- B) Tidal energy
- C) Geothermal energy**
- D) Hydroelectric power

4. In the context of wind turbines, what is the 'Betz Limit'?

- A) The maximum voltage output of a single turbine
- B) The theoretical maximum efficiency of a wind turbine**
- C) The minimum wind speed required to engage the gearbox
- D) The structural fatigue limit of turbine blades

5. Which country holds the largest share of global installed capacity for pumped-storage hydropower?

- A) United States
- B) China**
- C) Norway
- D) Brazil

6. What is the primary chemical compound that makes up the majority of biogas generated from anaerobic digestion?

A) Methane

B) Ethane

C) Propane

D) Butane

7. In solar thermal energy systems, what substance is most commonly used in concentrated solar power (CSP) plants to store thermal energy for overnight electricity production?

A) Liquid nitrogen

B) Molten salt

C) Glycerol

D) Silicone oil

8. What is the primary environmental advantage of 'run-of-river' hydroelectric plants compared to traditional large-scale dam reservoirs?

A) Higher energy density

B) Lower carbon emissions

C) Reduced disruption to local river ecosystems

D) Greater voltage stability