

Advanced Environmental Science Challenges

Environmental Science · Answer Key · 8 Questions

1. The process of eutrophication, leading to algal blooms and oxygen depletion in aquatic ecosystems, is primarily caused by an excess of which nutrient?

- A) Potassium
- B) Nitrogen**
- C) Calcium
- D) Magnesium

2. Bioaccumulation refers to the gradual accumulation of substances, such as pesticides, or other chemicals in an organism. Biomagnification, however, describes the increasing concentration of these substances in organisms at successively higher levels in a food chain. Which of the following substances is a well-known example of a contaminant that biomagnifies significantly in aquatic food webs?

- A) Carbon Dioxide
- B) Ozone
- C) DDT (dichlorodiphenyltrichloroethane)**
- D) Sulfur Dioxide

3. The Coriolis effect plays a crucial role in the formation and movement of large-scale weather patterns. In the Northern Hemisphere, this effect deflects moving air and water currents to the:

- A) Left
- B) Right**
- C) North
- D) South

4. Stratospheric ozone depletion, a major environmental concern, is primarily caused by the release of man-made chemicals. Which class of chemicals, once widely used as refrigerants and propellants, is the most significant contributor to this ozone loss?

- A) Volatile Organic Compounds (VOCs)
- B) Polycyclic Aromatic Hydrocarbons (PAHs)
- C) Polychlorinated Biphenyls (PCBs)
- D) Chlorofluorocarbons (CFCs)**

5. The process of desertification, the degradation of land in arid, semi-arid, and dry sub-humid areas, can be accelerated by human activities. Which of the following is a primary anthropogenic driver of desertification?

- A) Afforestation programs
- B) Sustainable grazing practices
- C) Overgrazing and deforestation**
- D) Increased rainfall in affected regions

6. Ocean acidification, a direct consequence of increased atmospheric carbon dioxide absorbed by seawater, leads to a decrease in pH. What is the primary chemical compound formed when CO₂ dissolves in seawater, leading to this acidification?

- A) Sodium Bicarbonate
- B) Carbonic Acid**
- C) Calcium Carbonate
- D) Magnesium Sulfate

7. In ecological succession, the term 'climax community' refers to a stable, mature community that changes very little over time. However, modern ecological understanding suggests that true stability is rare, and many ecosystems are in a state of:

- A) Perpetual equilibrium
- B) Constant flux and disturbance**
- C) Static unchanging conditions
- D) Complete absence of species interaction

8. The Montreal Protocol is an international treaty designed to protect the ozone layer by phasing out the production and consumption of ozone-depleting substances. Which of the following substances, while a greenhouse gas, was specifically targeted for reduction under this protocol due to its ozone-depleting properties?

- A) Methane (CH₄)
- B) Nitrous Oxide (N₂O)
- C) Hydrofluorocarbons (HFCs)
- D) Carbon Tetrachloride (CCl₄)**