

CHAPTER 56-57: Global Ecology

1) What is needed to maintain a self-sustaining ecosystem?

2) Describe the effects of turnover in aquatic biomes.

3) What is the significance of the ozone layer for life on earth?

4) What significance do greenhouse gases play on the global environment?

5) Define the following:

a) gross primary productivity (GPP): _____

b) net primary productivity (NPP): _____

6) Which ecosystems have the highest productivity per unit area?

7) What factors do you think contribute to such high productivity?

Name: _____

Note Set 60

8) Why is the open ocean so low in productivity?

9) Why is it essential that elements move through biogeochemical cycles in the ecosystem?

10) What is the impact of our interfering with the natural hydrological cycle (think freshwater)?

11) What is the impact of combustion on the carbon cycle?

12) What is the effect of greenhouse gases on global temperature?

13) Define and describe the effects of eutrophication in an aquatic ecosystem.

14) What is the source of acid rain?

END OF CHAPTER 56 MULTIPLE CHOICE

1. Earth is not in chemical equilibrium because
 - A) Earth has a moon.
 - B) organisms dissipate energy as heat.
 - C) most continents are in the Northern Hemisphere.
 - D) Earth has living organisms that generate O₂.
 - E) Earth is tilted on its axis.

2. Marine upwelling zones are important because
 - A) they help scientists measure the chemistry of deep ocean water.
 - B) they bring to the surface organisms that are difficult to observe elsewhere.
 - C) ships can sail faster in these zones.
 - D) they increase marine productivity by bringing nutrients back to surface ocean waters.
 - E) they bring oxygenated water to the surface.

3. Which of the following is not true of the troposphere?
 - A) It contains nearly all of the atmospheric water vapor.
 - B) Materials enter it primarily at the intertropical convergence zone.
 - C) It is about 17 kilometers thick in the tropics and subtropics.
 - D) Most global air circulation takes place there.
 - E) It contains about 80 percent of the mass of the atmosphere.

4. The hydrological cycle is driven by
 - A) the flow of water into the oceans via rivers.
 - B) evaporation (transpiration) of water from the leaves of plants.
 - C) evaporation of water from the surface of the oceans.
 - D) precipitation falling on the land.
 - E) the fact that more water falls on the ocean as precipitation than evaporates from its surface.

5. Carbon dioxide is called a greenhouse gas because
 - A) it is used in greenhouses to increase plant growth.
 - B) it is transparent to heat, but traps sunlight.
 - C) it is transparent to sunlight, but traps heat.
 - D) it is transparent to both sunlight and heat.
 - E) it traps both sunlight and heat.

6. Micronutrients whose cycles are particularly important for animals include
- A) iodine, cobalt, and molybdenum.
 - B) selenium, iodine, and cobalt.
 - C) molybdenum, iodine, and iron.
 - D) iodine, zinc, and selenium.
 - E) cobalt, selenium, and molybdenum .
7. The cycle of phosphorus differs from the cycles of carbon and nitrogen in that
- A) phosphorus lacks an atmospheric component.
 - B) phosphorus lacks a liquid phase.
 - C) only phosphorus is cycled through marine organisms.
 - D) living organisms do not need phosphorus.
 - E) The phosphorus cycle does not differ importantly from the carbon and nitrogen cycles.
8. The sulfur cycle influences the global climate because
- A) sulfur compounds are important greenhouse gases.
 - B) sulfur compounds help transfer carbon from the atmosphere to the oceans.
 - C) sulfur compounds in the atmosphere are components of particles around which water condenses to form clouds.
 - D) sulfur compounds contribute to acid precipitation.
 - E) The sulfur cycle does not influence the global climate.
9. Acid precipitation results from human modifications of
- A) the carbon and nitrogen cycles.
 - B) the carbon and sulfur cycles.
 - C) the carbon and phosphorus cycles.
 - D) the nitrogen and sulfur cycles.
 - E) the nitrogen and phosphorus cycles.
10. Maintaining the capacity of ecosystems to provide goods and services to humanity is important because
- A) most ecosystem services cannot be replicated by any other means.
 - B) most ecosystem services can be replaced by technology, but only at great cost.
 - C) technological substitutes take up valuable land.
 - D) governments cannot function without taxing ecosystem services.
 - E) It is not important; humans could survive quite well even if ecosystem services declined greatly.

END OF CHAPTER 57 MULTIPLE CHOICE

11. Which of the following is *not* currently a major cause of species extinctions?
- A) Habitat destruction
 - B) Rising sea levels
 - C) Overexploitation
 - D) Introduction of predators
 - E) Introduction of diseases
12. The most important cause of endangerment of species in the United States currently is
- A) pollution.
 - B) invasive species.
 - C) overexploitation.
 - D) habitat destruction.
 - E) loss of mutualists.
13. People care about species extinctions because
- A) more than half of the medical prescriptions written in the United States contain a natural plant or animal product.
 - B) people derive aesthetic pleasure from interacting with other organisms.
 - C) causing species extinctions raises serious ethical issues.
 - D) biodiversity helps maintain valuable ecosystem services.
 - E) All of the above
14. As a habitat patch gets smaller, it
- A) cannot support populations of species that require large areas.
 - B) supports only small populations of many species.
 - C) is influenced to an increasing degree by edge effects.
 - D) is invaded by species from surrounding habitats.
 - E) All of the above
15. A plant species is most likely to become invasive when introduced to a new area if it
- A) grows tall.
 - B) has become invasive in other places where it has been introduced.
 - C) is closely related to species living in the area where it has been introduced.
 - D) has specialized disseminators of its seeds.
 - E) has a long life span.

16. Conservation biologists are concerned about global warming because
- A) the rate of change in climate is projected to be faster than the rate at which many species can shift their ranges.
 - B) it is already too hot in the tropics.
 - C) climates have been so stable for thousands of years that many species lack the ability to tolerate variable temperatures.
 - D) climate change will be especially harmful to rare species.
 - E) None of the above
17. Scientists can determine the historical frequency of fires in an area by
- A) examining charcoal in sites of ancient villages.
 - B) measuring carbon in soils.
 - C) radioactively dating fallen tree trunks.
 - D) examining fire scars in growth rings of living trees.
 - E) determining the age structure of forests.
18. Captive propagation is a useful conservation tool, provided that
- A) there is space in zoos, aquariums, and botanical gardens for breeding a few individuals.
 - B) the areas of origin of all individuals are known.
 - C) the threats that endangered the species are being alleviated so that captive-reared individuals can later be released back into the wild.
 - D) there are sufficient caretakers.
 - E) None of the above. Captive propagation should never be used because it directs attention away from the need to protect the species in their natural habitats.
19. Restoration ecology is an important field because
- A) many areas have been highly degraded.
 - B) many areas are vulnerable to global climate change.
 - C) many species suffer from demographic stochasticity.
 - D) many species are genetically impoverished.
 - E) fire is a threat to many areas.
20. The new discipline of reconciliation ecology has developed because
- A) all other methods of preserving biodiversity have failed.
 - B) protected areas should be able to maintain biodiversity.
 - C) protected areas alone are not sufficient to maintain biodiversity.
 - D) scientists are unable to control diseases today.
 - E) we are not reconciled with other species.