

Advanced Ecological Principles

Ecology · Answer Key · 18 Questions

1. Which process is primarily responsible for the conversion of atmospheric nitrogen into a form usable by plants?

- A) Denitrification
- B) Nitrogen fixation**
- C) Nitrification
- D) Ammonification

2. In an energy pyramid, what percentage of energy is typically transferred from one trophic level to the next higher level?

- A) 1%
- B) 5%
- C) 10%**
- D) 25%

3. Which term describes the maximum population size of a species that an environment can sustain indefinitely?

- A) Biotic potential
- B) Environmental resistance
- C) Carrying capacity**
- D) Logistic growth

4. What is the primary role of saprotrophs in a forest ecosystem?

- A) Fixing carbon dioxide
- B) Breaking down dead organic matter**
- C) Predating on primary consumers
- D) Producing glucose via chemosynthesis

5. Which type of symbiosis occurs when one organism benefits while the other is neither helped nor harmed?

- A) Mutualism
- B) Parasitism
- C) Commensalism**
- D) Competition

6. What is the correct sequence of succession on bare rock?

- A) Shrubs -> Lichens -> Trees -> Grasses
- B) Lichens -> Mosses -> Grasses -> Shrubs -> Trees**
- C) Grasses -> Shrubs -> Lichens -> Trees
- D) Trees -> Shrubs -> Grasses -> Lichens

7. Which terrestrial biome is characterized by permafrost and low-lying vegetation like mosses and lichens?

- A) Taiga
- B) Temperate Deciduous Forest
- C) Tundra**
- D) Savanna

8. What is an example of an abiotic factor that influences the distribution of organisms in a freshwater lake?

- A) Predation density
- B) Dissolved oxygen levels**
- C) Pathogen prevalence
- D) Inter-species competition

9. Which gas is removed from the atmosphere during the process of photosynthesis?

- A) Oxygen
- B) Nitrogen
- C) Carbon dioxide**
- D) Methane

10. What is the term for the specific role or function an organism plays within its habitat?

- A) Niche**
- B) Biome
- C) Community
- D) Population

11. Which organisms are considered primary consumers in a food web?

- A) Carnivores
- B) Omnivores
- C) Herbivores**
- D) Decomposers

12. What is the primary source of energy for almost all terrestrial ecosystems?

- A) Geothermal heat
- B) Solar radiation**
- C) Chemical bonds in minerals
- D) Wind energy

13. Which biogeochemical cycle involves the processes of sublimation, condensation, and precipitation?

- A) Carbon cycle
- B) Nitrogen cycle
- C) Phosphorus cycle
- D) Water cycle**

14. What occurs during the process of biological magnification (biomagnification)?

- A) Energy increases up the food chain
- B) Toxins accumulate in higher concentrations in top predators**
- C) Biodiversity increases in disturbed areas
- D) Population growth rates exceed the carrying capacity

15. Which group of organisms is responsible for the majority of oxygen production in marine ecosystems?

- A) Coral
- B) Phytoplankton**
- C) Deep-sea fish
- D) Macro-algae

16. What is a 'keystone species'?

- A) A species with a small population that has a disproportionately large impact on its ecosystem**
- B) The most abundant species in a community
- C) A species that is at the bottom of the food chain
- D) A species that has been introduced to a new environment

17. Which interaction involves two species fighting over the same limited resource?

- A) Mutualism
- B) Interspecific competition**
- C) Intraspecific predation
- D) Amensalism

18. What is the primary chemical product of cellular respiration in both plants and animals?

- A) Glucose
- B) Oxygen
- C) Carbon dioxide**
- D) Nitrogen gas