

Advanced Ecological Concepts for Young Scientists

Ecology · Answer Key · 18 Questions

1. Which process describes how nitrogen gas from the atmosphere is converted into ammonia by soil bacteria?

- A) Nitrogen fixation**
- B) Denitrification
- C) Photosynthesis
- D) Respiration

2. What is the term for the maximum population size of a species that an environment can sustain indefinitely?

- A) Biotic potential
- B) Carrying capacity**
- C) Population density
- D) Ecological niche

3. Which level of an ecological pyramid contains the least amount of stored energy?

- A) Primary producers
- B) Primary consumers
- C) Secondary consumers
- D) Tertiary consumers**

4. What defines a 'keystone species' within an ecosystem?

- A) The largest animal in the habitat
- B) A species that has a disproportionately large effect on its environment**
- C) The most abundant plant species
- D) A predator that hunts only at night

5. In a food web, which organisms are responsible for recycling nutrients back into the soil?

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

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

- A) Geothermal heat
- B) Moonlight
- C) Chemical reactions
- D) Solar radiation**

7. Which type of succession occurs in an area where no soil exists, such as on a new volcanic island?

A) Secondary succession

B) Primary succession

C) Climax succession

D) Cyclical succession

8. What term describes the variety of all living things and their interactions within a specific area?

A) Biomass

B) Biodiversity

C) Biosphere

D) Biota

9. Which biome is characterized by low temperatures, low precipitation, and a layer of permafrost?

A) Taiga

B) Temperate forest

C) Tundra

D) Savanna

10. What is the specialized role or 'job' of an organism within its community called?

A) Habitat

B) Niche

C) Biome

D) Ecosystem

11. Which gas is absorbed from the atmosphere by plants during the process of photosynthesis?

A) Oxygen

B) Nitrogen

C) Carbon dioxide

D) Methane

12. What is the study of the relationships between living organisms and their physical environment?

A) Zoology

B) Botany

C) Ecology

D) Geology

13. In the water cycle, what is the process by which water vapor cools and changes into liquid water droplets?

- A) Evaporation
- B) Transpiration
- C) Condensation**
- D) Precipitation

14. Which organisms are known as 'autotrophs' because they produce their own food?

- A) Fungi
- B) Animals
- C) Plants**
- D) Bacteria

15. What term describes a relationship where one organism benefits and the other is neither helped nor harmed?

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

16. Which layer of the atmosphere contains the ozone layer that protects Earth from UV radiation?

- A) Troposphere
- B) Stratosphere**
- C) Mesosphere
- D) Thermosphere

17. What is the total mass of living organisms in a given area or volume called?

- A) Biomass**
- B) Biodiversity
- C) Population
- D) Community

18. Which nutrient is primarily cycled through the weathering of rocks?

- A) Nitrogen
- B) Carbon
- C) Phosphorus**
- D) Oxygen