

Advanced Animal Ecology and Habitat Dynamics

Biology · Answer Key · 18 Questions

1. Which process describes the migration of nutrients from the nutrient-rich deep ocean to the surface in upwelling zones, supporting high marine productivity?

A) Ekman transport

- B) Thermohaline circulation
- C) Coriolis deflection
- D) Hadley cell convection

2. In the context of the tundra biome, what is the specific term for the layer of soil that remains frozen year-round, limiting deep-root vegetation?

A) Gleysol

B) Permafrost

- C) Cryosol
- D) Lithosol

3. Which Australian marsupial is considered an 'ecosystem engineer' due to the extensive, climate-controlled burrow systems it constructs?

A) Greater Bilby

B) Common Wombat

- C) Long-nosed Bandicoot
- D) Yellow-footed Rock-wallaby

4. What is the primary factor that restricts the distribution of mangrove forests to tropical and subtropical coastal zones?

- A) Salinity of the soil
- B) Low nutrient availability

C) Temperature sensitivity

D) Tidal amplitude

5. Which evolutionary adaptation allows xerophytes in arid habitats to minimize transpiration during the day?

A) C4 photosynthesis

B) CAM photosynthesis

- C) C3 photosynthesis
- D) Photorespiration

6. The 'competitive exclusion principle' states that two species competing for the exact same limiting resource cannot coexist at constant population values. Who proposed this?

- A) Charles Darwin
- B) Alfred Russel Wallace
- C) Georgy Gause**
- D) Robert MacArthur

7. In temperate deciduous forests, which mechanism is primarily responsible for the rapid cycling of nutrients from leaf litter back into the soil?

- A) Photolysis
- B) Mycorrhizal fungal networks**
- C) High precipitation leaching
- D) Rapid vertebrate herbivory

8. Which group of organisms serves as the primary base of the food web in deep-sea hydrothermal vent communities?

- A) Chemosynthetic bacteria**
- B) Photosynthetic phytoplankton
- C) Detritivores
- D) Filter-feeding zooplankton

9. What defines an 'obligate' inhabitant of an extreme environment like a hypersaline lake?

- A) An organism that can tolerate salt but prefers fresh water
- B) An organism that requires high salinity to survive**
- C) An organism that migrates to avoid salinity spikes
- D) An organism that uses salt for camouflage

10. In which habitat would you predominantly find plants exhibiting 'drip tips' on their leaves, an adaptation to high rainfall?

- A) Savanna
- B) Boreal forest
- C) Tropical rainforest**
- D) Temperate grassland

11. What is the ecological term for the total range of environmental conditions and resources that a species can theoretically occupy?

- A) Realized niche
- B) Fundamental niche**
- C) Habitat range
- D) Spatial distribution

12. Which phenomenon describes the increase in concentration of a substance, such as a toxic chemical, in the tissues of organisms at successively higher levels in a food chain?

- A) Bioaccumulation
- B) Biomagnification**
- C) Eutrophication
- D) Nitrogen fixation

13. What is the primary limiting factor for primary productivity in most open-ocean (pelagic) ecosystems?

- A) Carbon dioxide levels
- B) Availability of iron or nitrogen**
- C) Water temperature
- D) Solar radiation intensity

14. Which evolutionary strategy involves a species producing many offspring with a low probability of survival to adulthood?

- A) K-selection
- B) R-selection**
- C) Iteroparity
- D) Semelparity

15. What is the term for an animal that maintains a constant internal body temperature regardless of the ambient environmental temperature?

- A) Poikilotherm
- B) Ectotherm
- C) Endotherm**
- D) Heterotherm

16. Which terrestrial biome is characterised by distinct wet and dry seasons and is dominated by grasses with scattered drought-resistant trees?

- A) Steppe
- B) Taiga
- C) Savanna**
- D) Chaparral

17. What characterizes the 'photic zone' of a lake or ocean?

- A) The zone where photosynthesis occurs**
- B) The zone where aphotic organisms reside
- C) The zone of highest pressure
- D) The sediment-water interface

18. Which of the following is an example of an 'allochthonous' energy source in a stream ecosystem?

A) Algal growth on rocks

B) Leaf litter falling from riparian trees

C) Aquatic macrophyte production

D) Dissolved organic carbon produced in-stream