

# A-LEVEL

## Multiple-choice questions on Ecology .

1. **What is the primary focus of ecology?**

- A) Animal behavior
- B) Relationships between organisms and their environment
- C) Cellular processes
- D) Human anatomy

**Answer: B**

Explanation: Ecology is the study of the relationships between organisms and their environment.

**2. Which level of ecology deals with the interactions among organisms of different species in a community?**

- A) Population ecology
- B) Community ecology
- C) Ecosystem ecology
- D) Landscape ecology

**Answer: B**

Explanation: Community ecology focuses on interactions among different species in a community.

**3. What term is used to describe the total variety of living organisms in a particular habitat?**

- A) Abundance
- B) Biodiversity
- C) Biomass
- D) Biogeography

**Answer: B**

Explanation: Biodiversity refers to the total variety of living organisms in a particular habitat.

**4. Which ecological pyramid represents the flow of energy through different trophic levels in an ecosystem?**

- A) Pyramid of numbers
- B) Pyramid of biomass
- C) Pyramid of energy
- D) Pyramid of productivity

**Answer: C**

Explanation: The pyramid of energy represents the flow of energy through trophic levels in an ecosystem.

**5. What is the primary source of energy for most ecosystems on Earth?**

- A) Sunlight
- B) Geothermal energy
- C) Wind
- D) Fossil fuels

**Answer: A**

Explanation: Sunlight is the primary source of energy for most ecosystems through photosynthesis.

**6. Which ecological concept refers to the role of a species in an ecosystem, including its use of resources and functional contributions?**

- A) Niche
- B) Habitat
- C) Population
- D) Community

**Answer: A**

Explanation: Niche describes the role of a species in an ecosystem, including its use of resources and functional contributions.

**7. What is the term for the maximum population size that a specific environment can support indefinitely?**

- A) Carrying capacity
- B) Population density
- C) Growth rate
- D) Biotic potential

**Answer: A**

Explanation: Carrying capacity is the maximum population size that an environment can support.

**8. Which ecological relationship benefits one organism while the other is unaffected?**

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

**Answer: B**

Explanation: Commensalism benefits one organism while the other is unaffected.

**9. What is the primary factor limiting the distribution of terrestrial ecosystems?**

- A) Sunlight
- B) Temperature
- C) Precipitation
- D) Soil composition

**Answer: B**

Explanation: Temperature is a significant factor limiting the distribution of terrestrial ecosystems.

**10. Which biogeochemical cycle involves the movement of water between the atmosphere, land, and oceans?**

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

**Answer: B**

Explanation: The water cycle involves the movement of water between the atmosphere, land, and oceans.

**11. What is the process by which bacteria convert atmospheric nitrogen into a form usable by plants?**

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

**Answer: C**

Explanation: Nitrogen fixation is the process by which bacteria convert atmospheric nitrogen into a form usable by plants.

**12. Which biome is characterized by cold temperatures, permafrost, and a short growing season?**

- A) Tundra
- B) Desert
- C) Rainforest
- D) Taiga

**Answer: A**

Explanation: The tundra biome is characterized by cold temperatures, permafrost, and a short growing season.

**13. What term is used to describe the gradual and predictable changes in species composition over time in a given area?**

- A) Succession
- B) Invasion
- C) Adaptation
- D) Extinction

**Answer: A**

Explanation: Succession refers to the gradual and predictable changes in species composition over time in a given area.

**14. Which level of organization in ecology includes all the living organisms in a given area and their physical environment?**

- A) Population
- B) Community
- C) Ecosystem
- D) Landscape

**Answer: C**

Explanation: Ecosystem includes all the living organisms in a given area and their physical environment.

**15. What is the term for the range of environmental conditions under which an organism can survive and reproduce?**

- A) Habitat
- B) Niche
- C) Tolerance range
- D) Biotic potential

**Answer: C**

Explanation: Tolerance range is the range of environmental conditions under which an organism can survive and reproduce.



**16. Which type of species is crucial for the structure and function of an ecosystem due to its disproportionately large effect on its environment?**

- A) Indicator species
- B) Keystone species
- C) Endangered species
- D) Invasive species

**Answer: B**

Explanation: Keystone species has a disproportionately large effect on the structure and function of an ecosystem.

**17. What is the main factor influencing the biodiversity of an ecosystem?**

- A) Climate
- B) Soil composition
- C) Latitude
- D) Human activity

**Answer: A**

Explanation: Climate is a significant factor influencing the biodiversity of an ecosystem.

**18. Which of the following is an example of a renewable resource?**

- A) Coal
- B) Natural gas
- C) Solar energy
- D) Petroleum

**Answer: C**

Explanation: Solar energy is a renewable resource, while coal, natural gas, and petroleum are non-renewable.

**19. Which process involves the conversion of atmospheric carbon dioxide into organic compounds by plants during photosynthesis?**

- A) Carbon fixation
- B) Combustion
- C) Cellular respiration
- D) Decomposition

**Answer: A**

Explanation: Carbon fixation is the process by which plants convert atmospheric carbon dioxide into organic compounds during photosynthesis.

**20. Which of the following is a primary consumer in a terrestrial ecosystem?**

- A) Herbivore
- B) Carnivore
- C) Decomposer
- D) Omnivore

**Answer: A**

Explanation: Herbivores are primary consumers, as they feed on plants.

**21. What is the term for the variety of different ecosystems within a given region or biome?**

- A) Habitat diversity
- B) Ecosystem diversity
- C) Species diversity
- D) Genetic diversity

**Answer: B**

Explanation: Ecosystem diversity refers to the variety of different ecosystems within a given region or biome.

**22. Which environmental issue is primarily associated with the thinning of the ozone layer?**

- A) Global warming
- B) Acid rain
- C) Ozone depletion
- D) Deforestation

**Answer: C**

Explanation: Thinning of the ozone layer is associated with ozone depletion.

**23. What is the main cause of anthropogenic climate change?**

- A) Deforestation
- B) Ozone depletion
- C) Greenhouse gas emissions
- D) Acid rain

**Answer: C**

Explanation: Greenhouse gas emissions, particularly carbon dioxide, are the main cause of anthropogenic climate change.

**24. Which ecological concept refers to the variety of different species within a given ecosystem?**

- A) Habitat diversity
- B) Ecosystem diversity
- C) Species diversity
- D) Genetic diversity

**Answer: C**

Explanation: Species diversity refers to the variety of different species within a given ecosystem.

**25. What is the primary cause of eutrophication in aquatic ecosystems?**

- A) Industrial pollution
- B) Deforestation
- C) Nutrient runoff from agriculture
- D) Oil spills

**Answer: C**

Explanation: Eutrophication in aquatic ecosystems is primarily caused by nutrient runoff from agriculture.

**26. Which international agreement aims to protect biodiversity by promoting sustainable development and conservation efforts?**

- A) Kyoto Protocol
- B) Paris Agreement
- C) Convention on Biological Diversity
- D) Montreal Protocol

**Answer: C**

Explanation: The Convention on Biological Diversity aims to protect biodiversity through sustainable development and conservation efforts.

**27. What is the term for the process by which water is released from plants into the atmosphere as water vapor?**

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

**Answer: A**

Explanation: Transpiration is the process by which water is released from plants into the atmosphere as water vapor.

**28. Which ecological concept describes the ability of an ecosystem to recover from disturbances and return to its original state?**

- A) Resilience
- B) Stability
- C) Resistance
- D) Fragility

**Answer: A**

Explanation: Resilience describes the ability of an ecosystem to recover from disturbances and return to its original state.

**29. Which type of succession occurs in an area where there was no previous soil, such as after a volcanic eruption?**

- A) Primary succession
- B) Secondary succession
- C) Climax succession
- D) Regenerative succession

**Answer: A**

Explanation: Primary succession occurs in an area with no previous soil, often after a disturbance like a volcanic eruption.

**30. What is the term for the variety of alleles in a population?**

- A) Habitat diversity
- B) Ecosystem diversity
- C) Species diversity
- D) Genetic diversity

**Answer: D**

Explanation: Genetic diversity refers to the variety of alleles in a population.

**31. Which of the following is a consequence of habitat fragmentation?**

- A) Increased biodiversity
- B) Decreased edge effects
- C) Reduced genetic diversity
- D) Enhanced connectivity

**Answer: C**

Explanation: Habitat fragmentation often leads to reduced genetic diversity in isolated populations.

**32. What is the term for the study of the interactions between living organisms and**



**their environment, specifically as influenced by human activities?**

- A) Environmental science
- B) Conservation biology
- C) Environmental economics
- D) Anthropology

**Answer: A**

Explanation: Environmental science is the study of the interactions between living organisms and their environment, including the impact of human activities.

**33. Which term describes the total amount of living tissue within a given trophic level in a food chain?**

- A) Biomass
- B) Biodiversity
- C) Biome
- D) Biogeochemical cycle

**Answer: A**

Explanation: Biomass refers to the total amount of living tissue within a given trophic level in a food chain.

**34. Which of the following is an example of a non-point source of water pollution?**

- A) Industrial discharge pipe
- B) Sewage treatment plant
- C) Oil spill from a tanker
- D) Agricultural runoff

**Answer: D**

Explanation: Agricultural runoff is an example of a non-point source of water pollution because it comes from diffuse sources like fields.

**35. What is the term for the process by which nitrogen gas in the atmosphere is converted into ammonia by soil bacteria?**

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

**Answer: A**

Explanation: Nitrogen fixation is the process by which nitrogen gas in the atmosphere is converted into ammonia by soil bacteria.

**36. Which of the following is an example of a density-dependent factor that can regulate population size?**

- A) Earthquake
- B) Flood
- C) Disease
- D) Fire

**Answer: C**

Explanation: Disease is a density-dependent factor as its impact is influenced by the size of the population.

**37. What is the term for the process by which sulfur compounds are released into the atmosphere from natural sources such as volcanoes?**

- A) Sulfur fixation
- B) Sulfur assimilation
- C) Sulfur deposition
- D) Sulfur outgassing

**Answer: D**

Explanation: Sulfur outgassing is the process by which sulfur compounds are released into the

atmosphere from natural sources such as volcanoes.

**38. Which type of succession occurs in an area where the existing community has been disturbed but the soil remains intact?**

- A) Primary succession
- B) Secondary succession
- C) Climax succession
- D) Pioneer succession

**Answer: B**

Explanation: Secondary succession occurs in an area where the existing community has been disturbed but the soil remains intact.

**39. What is the term for the process by which toxins become more concentrated as they move up the food chain?**

- A) Bioaccumulation
- B) Biomagnification
- C) Biotransformation
- D) Biodegradation

**Answer: B**

Explanation: Biomagnification is the process by

which toxins become more concentrated as they move up .