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Practice questions on Unit 6 – Ecosystem

1. Which of the following best defines an ecosystem?

- A) A group of plants and animals in close proximity
- B) A life-supporting environment including living organisms, nutrients, and physical environment
- C) A collection of biotic components within a habitat
- D) A specific geographical area with a unique climate

2. What are abiotic components in an ecosystem?

- A) Living organisms
- B) Soil and rocks
- C) Predators and prey
- D) Food availability

3. Which of the following is an example of an abiotic component affecting an ecosystem?

- A) Number of predators
- B) Amount of rainfall
- C) Competition for mates
- D) Availability of food

4. What role do biotic components play in an ecosystem?

- A) They affect the physical environment
- B) They regulate the climate
- C) They influence the survival of organisms
- D) They provide nutrients to the soil

5. Which term describes habitats on land?

- A) Marine habitats
- B) Aquatic habitats
- C) Terrestrial habitats

D) Freshwater habitats

6.What defines freshwater habitats?

- A) Habitats in salt water oceans
- B) Habitats on land
- C) Habitats in fresh water of lakes, rivers, ponds, and streams
- D) Habitats with abundant rainfall

7.Which factor is considered an abiotic component?

- A) Competition for mates
- B) Levels of oxygen dissolved in water
- C) Number of parasites
- D) Amount of food available

8.What is the primary role of competition in ecosystems?

- A) To promote cooperation among species
- B) To regulate population sizes
- C) To maintain the balance of abiotic factors
- D) To eliminate predators

9.Which adaptation helps animals avoid direct competition?

- A) Camouflage coloration
- B) Aggressive behavior
- C) Loud vocalizations
- D) Large body size

10.What is the significance of pH in an ecosystem?

- A) It affects the availability of sunlight
- B) It influences the types of plants that can survive
- C) It regulates the levels of dissolved oxygen

D) It determines the number of predators present

11. Which factor is crucial for photosynthesis in plants?

A) Oxygen concentration

B) Soil pH

C) Light availability

D) Temperature fluctuations

12. What do marine habitats primarily consist of?

A) Freshwater lakes

B) Salt water oceans

C) Rivers and streams

D) Terrestrial forests

13. Which statement best describes competition between prey animals?

A) Prey animals cooperate to avoid predators

B) Prey animals compete for mates

C) Prey animals compete to avoid being caught

D) Prey animals compete for food resources

14. What is the primary purpose of camouflage in animals?

A) To attract mates

B) To regulate body temperature

C) To avoid detection by predators

D) To mark territory boundaries

15. Which component of an ecosystem affects the numbers of other organisms in the area?

A) Amount of food available

B) pH level of the soil

C) Temperature fluctuations

D) Humidity levels

16. What determines whether animals and plants can survive in a particular ecosystem?

- A) Biotic components only
- B) Abiotic components only
- C) Both biotic and abiotic components
- D) Neither biotic nor abiotic components

17. Which term describes habitats in water?

- A) Terrestrial habitats
- B) Marine habitats
- C) Freshwater habitats
- D) Aquatic habitats

18. What is the primary function of the biotic components in an ecosystem?

- A) To regulate weather patterns
- B) To provide shelter for organisms
- C) To influence the survival of organisms
- D) To maintain soil fertility

19. How do animals compete for mates?

- A) By avoiding direct confrontation
- B) By cooperating with other species
- C) By displaying physical prowess
- D) By sharing resources equally

20. What role does temperature play in determining the suitability of an ecosystem?

- A) It affects the availability of food
- B) It influences the number of predators
- C) It determines the types of plants that can survive

D) It regulates the levels of dissolved oxygen in water

21. Which factor is essential for plants to make food through photosynthesis?

- A) Wind speed
- B) Soil drainage
- C) Amount of sunlight
- D) Humidity levels

22. How do abiotic components affect the populations of living organisms?

- A) By providing shelter and protection
- B) By regulating nutrient cycles
- C) By influencing reproductive behaviors
- D) By determining habitat suitability

23. What distinguishes marine habitats from freshwater habitats?

- A) Presence of salt water
- B) Absence of predators
- C) Higher levels of oxygen
- D) Lower temperatures

24. Which statement best describes competition among animals of the same species?

- A) It is less intense than competition between different species
- B) It is primarily for food resources
- C) It does not occur in natural ecosystems
- D) It is most intense during mating season

25. How do plants compete with each other in ecosystems?

- A) By avoiding sunlight
- B) By absorbing excess nutrients
- C) By producing toxins

D) By competing for light, water, and nutrients

26. What is the significance of wind levels in an ecosystem?

- A) It affects the availability of food resources
- B) It regulates soil pH
- C) It influences the dispersal of seeds
- D) It determines the number of predators present

27. Which component of an ecosystem is influenced by the drainage of the soil?

- A) Abiotic factors
- B) Biotic factors
- C) Climatic factors
- D) Nutrient availability

28. How do predators affect the populations of other organisms in an ecosystem?

- A) By providing food for prey animals
- B) By competing for mates
- C) By regulating population sizes
- D) By influencing soil fertility

29. What is the primary purpose of freshwater habitats?

- A) To provide shelter for aquatic plants
- B) To regulate climate patterns
- C) To support diverse marine life
- D) To provide habitat for freshwater organisms

30. What distinguishes terrestrial habitats from aquatic habitats?

- A) Presence of water
- B) Absence of sunlight
- C) Lower temperatures

D) Lack of vegetation

31. Which organisms rely on eating other living organisms for energy?

- A) Phototrophs
- B) Heterotrophs
- C) Chemotrophs
- D) Autotrophs

32. What term describes organisms that produce their own food using sunlight?

- A) Heterotrophs
- B) Autotrophs
- C) Consumers
- D) Decomposers

33. What role do plants play in ecosystems?

- A) Consumers
- B) Producers
- C) Decomposers
- D) Predators

34. Which organisms are known as herbivores?

- A) Those that eat plants
- B) Those that eat other animals
- C) Those that eat both plants and animals
- D) Those that produce their own food

35. What type of organisms eat a diet containing both plants and animals?

- A) Carnivores
- B) Autotrophs
- C) Heterotrophs

D) Omnivores

36. What do chemotrophs use to obtain energy?

- A) Sunlight
- B) Sulfur-containing chemicals
- C) Carbon dioxide
- D) Oxygen

37. Which organisms are essential for breaking down the remains of animals and plants?

- A) Producers
- B) Primary consumers
- C) Secondary consumers
- D) Decomposers

38. What term describes the different levels within a food chain?

- A) Producers
- B) Trophic levels
- C) Consumers
- D) Decomposers

39. What is the main source of energy for all communities of living organisms?

- A) Sunlight
- B) Soil nutrients
- C) Water
- D) Air

40. What term describes all the organic material produced by living organisms?

- A) Biomass
- B) Food chain
- C) Energy pyramid

D) Trophic level

41. Which pyramid represents the number of organisms at each trophic level?

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

42. Why is biomass passed on from one trophic level to another less than the previous level?

- A) Due to the breakdown of organic material
- B) Because only a portion of biomass is consumed
- C) Because herbivores consume all biomass
- D) Due to the lack of energy transfer

43. What happens to excess protein eaten by animals?

- A) Converted into energy
- B) Stored as fat
- C) Broken down and excreted
- D) Used for growth

44. Which organisms need to eat more food to maintain body temperature?

- A) Fish
- B) Reptiles
- C) Mammals
- D) Amphibians

45. What represents the energy in producers and how much is passed on at each stage along the food chain?

- A) Pyramid of biomass
- B) Pyramid of numbers
- C) Energy pyramid

D) Trophic level pyramid

46. Which organisms are warm-blooded and need to eat more food to maintain body temperature?

- A) Fish
- B) Amphibians
- C) Reptiles
- D) Mammals

47. What term describes tiny organisms eaten by zooplankton in aquatic food chains?

- A) Phytoplankton
- B) Autotrophs
- C) Decomposers
- D) Chemotrophs

48. In a food web, what do interactions between different food chains demonstrate?

- A) Predator-prey relationships
- B) Energy transfer efficiency
- C) Trophic level hierarchy
- D) Complex ecosystem dynamics

49. Which organisms convert solar energy into stored chemical energy through photosynthesis?

- A) Heterotrophs
- B) Decomposers
- C) Producers
- D) Consumers

50. What term describes organisms that rely on eating other living organisms for energy?

- A) Producers
- B) Consumers

- C) Decomposers
- D) Autotrophs

51. What role do decomposers play in ecosystems?

- A) Break down dead organisms
- B) Produce their own food
- C) Consume primary consumers
- D) Convert sunlight into energy

52. Which organisms are known as primary consumers?

- A) Those that eat plants
- B) Those that eat other animals
- C) Those that produce their own food
- D) Those that decompose dead organisms

53. What type of organisms rely on energy from the breakdown of sulfur-containing chemicals?

- A) Phototrophs
- B) Heterotrophs
- C) Chemotrophs
- D) Autotrophs

54. What is the main source of food for herbivores?

- A) Other animals
- B) Plants
- C) Decomposers
- D) Sunlight

55. What term describes the transfer of energy from one organism to another in a sequence of food consumption?

- A) Food chain

- B) Trophic level
- C) Energy transfer
- D) Biomass conversion

56. Which organisms convert plant biomass into their own biomass?

- A) Producers
- B) Decomposers
- C) Primary consumers
- D) Secondary consumers

57. What is the primary source of energy for all living organisms?

- A) Biomass
- B) Sunlight
- C) Water
- D) Oxygen

58. What term describes the mass of living material in an animal or plant?

- A) Biomass
- B) Trophic level
- C) Energy pyramid
- D) Food chain

59. What happens to excess protein consumed by animals?

- A) Stored as fat
- B) Broken down and excreted
- C) Used for growth
- D) Converted into energy

60. Which organisms need to consume more food to maintain body temperature?

- A) Reptiles

- B) Birds
- C) Mammals
- D) Amphibians

61. What is the role of decomposers in the environment?

- A) Breaking down waste products
- B) Producing oxygen
- C) Absorbing minerals from the soil
- D) Generating heat energy

62. Which group of organisms are responsible for breaking down dead plants and animals?

- A) Herbivores
- B) Carnivores
- C) Decomposers
- D) Producers

63. In what conditions does decay occur more rapidly?

- A) Cold and dry conditions
- B) Warm and dry conditions
- C) Warm and moist conditions
- D) Cold and moist conditions

64. How do sewage treatment plants utilize micro-organisms?

- A) To produce electricity
- B) To break down sewage
- C) To filter water
- D) To purify air

65. What is the primary purpose of a compost heap in gardening?

- A) To store water

- B) To provide habitat for insects
- C) To produce organic fertilizer
- D) To control pests

66. What percentage of the air we breathe is composed of nitrogen?

- A) 20%
- B) 50%
- C) 80%
- D) 100%

67. How do legumes contribute to the nitrogen cycle?

- A) By absorbing nitrogen from the air
- B) By fixing nitrogen in their roots
- C) By releasing nitrogen gas
- D) By converting nitrates into ammonia

68. Which bacteria reduce the amount of nitrates in the soil?

- A) Nitrogen-fixing bacteria
- B) Nitrifying bacteria
- C) Denitrifying bacteria
- D) Decomposing bacteria

69. What is the primary source of carbon dioxide in the atmosphere?

- A) Respiration of plants
- B) Combustion of fossil fuels
- C) Photosynthesis
- D) Volcanic eruptions

70. How do plants contribute to the carbon cycle?

- A) By releasing carbon dioxide

- B) By absorbing carbon dioxide
- C) By producing methane
- D) By emitting oxygen

71. What happens to carbon dioxide levels when trees are cut down?

- A) They decrease
- B) They remain the same
- C) They increase
- D) They fluctuate

72. What is the consequence of deforestation on the carbon cycle?

- A) Decreased levels of methane
- B) Increased levels of carbon sinks
- C) Release of carbon dioxide
- D) Enhanced photosynthesis

73. What is a major source of methane emissions?

- A) Automobiles
- B) Paddy fields
- C) Solar panels
- D) Wind turbines

74. How do cows contribute to methane levels in the atmosphere?

- A) By consuming methane
- B) By releasing methane during digestion
- C) By absorbing methane from the air
- D) By emitting carbon dioxide

75. What effect does the increase in carbon dioxide levels have on the Earth's temperature?

- A) Decreases temperature

- B) No effect
- C) Increases temperature
- D) Stabilizes temperature

76.What is the role of the ozone layer in protecting the Earth?

- A) Trapping heat
- B) Filtering carbon dioxide
- C) Blocking harmful UV rays
- D) Producing oxygen

77.How do chemicals used in refrigerants affect the ozone layer?

- A) They make it thicker
- B) They have no effect
- C) They make it thinner
- D) They create holes in it

78.What is the term used to describe the thinning of the ozone layer over Antarctica?

- A) Ozone depletion
- B) Ozone layer thinning
- C) Ozone depletion zone
- D) Ozone hole

79.What are the consequences of a thinner ozone layer?

- A) Decreased skin cancer rates
- B) Increased UV radiation exposure
- C) Reduced global warming
- D) Improved air quality

80.How can human actions affect the environment unintentionally?

- A) By planting trees

- B) By conserving water
- C) By using renewable energy
- D) By damaging the ozone layer

81. What is the primary role of decomposers in the nitrogen cycle?

- A) Fixing nitrogen
- B) Breaking down proteins
- C) Producing oxygen
- D) Absorbing nitrates

82. What is the main form of nitrogen taken up by plants from the soil?

- A) Ammonium
- B) Nitrites
- C) Nitrates
- D) Nitrogen gas

83. How do legumes contribute to nitrogen fixation?

- A) By producing nitrogen gas
- B) By hosting nitrogen-fixing bacteria
- C) By absorbing nitrates from the soil
- D) By converting ammonium into nitrates

84. Which group of bacteria converts ammonium into nitrates in the soil?

- A) Nitrifying bacteria
- B) Denitrifying bacteria
- C) Nitrogen-fixing bacteria
- D) Decomposing bacteria

85. What is the primary source of carbon dioxide in the atmosphere?

- A) Combustion of fossil fuels

- B) Respiration of plants
- C) Volcanic eruptions
- D) Photosynthesis

86. How do plants contribute to the carbon cycle?

- A) By releasing methane
- B) By absorbing carbon dioxide
- C) By emitting carbon dioxide
- D) By consuming oxygen

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- B) They remain the same
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- C) Wind turbines
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- B) No effect
- C) Increases temperature
- D) Stabilizes temperature

90. What is the primary role of the ozone layer in protecting the Earth?

- A) Trapping heat

- B) Filtering carbon dioxide
- C) Blocking harmful UV rays
- D) Producing oxygen

91. In cold climates, Arctic animals reduce heat loss primarily by:

- A) Increasing their surface area
- B) Decreasing their body size
- C) Consuming more food
- D) Decreasing their physical activity

92. The primary reason for Arctic mammals being relatively large is to:

- A) Increase their agility
- B) Decrease their surface area
- C) Maximize their heat loss
- D) Enhance their camouflage

93. Which adaptation helps Arctic mammals reduce heat loss through their thin-skinned areas?

- A) Thicker fur coat
- B) Blubber layer
- C) Large ears
- D) Camouflage

94. The primary function of blubber in Arctic animals is to:

- A) Provide insulation
- B) Enhance agility
- C) Store excess water
- D) Facilitate camouflage

95. How do many Arctic animals adapt their coat color to match seasonal changes?

- A) By shedding their fur entirely

- B) By changing the texture of their fur
- C) By changing their fur color
- D) By increasing their fur density

96. In dry climates, desert animals typically obtain water from:

- A) Drinking from rivers and lakes
- B) Consuming succulent plants
- C) Absorbing moisture from the air
- D) Extracting water from the soil

97. What is the main challenge for mammals in maintaining a constant body temperature in deserts?

- A) Coping with extreme cold
- B) Balancing water loss and gain
- C) Avoiding predators
- D) Finding suitable shelter

98. Most desert animals are most active during:

- A) Midday
- B) Early morning and late evening
- C) Nighttime
- D) Afternoon

99. How do small desert animals regulate their body temperature more effectively?

- A) By having a higher body fat percentage
- B) By burrowing underground during the day
- C) By increasing their physical activity
- D) By increasing their fur density

100. What physical characteristic helps desert animals lose heat through their skin more efficiently?

- A) Large, thick fur
- B) Small, thick ears
- C) Large, thin ears
- D) Thick, insulating skin

101. One of the main ways plants in dry conditions reduce water loss is by:

- A) Increasing their leaf surface area
- B) Decreasing their root size
- C) Storing excess water in their stems
- D) Reducing their leaf surface area

102. How do desert plants with broad leaves utilize dew for water acquisition?

- A) By absorbing dew through their roots
- B) By collecting dew and funneling it to their roots
- C) By converting dew into water vapor for photosynthesis
- D) By shedding their leaves during dew formation

103. Which adaptation helps desert plants minimize water loss through evaporation?

- A) Thick, waxy cuticle
- B) Large, broad leaves
- C) High surface area:volume ratio
- D) Increased stomata density

104. Cacti are successful in hot, dry climates primarily because of their:

- A) Thick fur coat
- B) Large leaf surface area
- C) Water-storing tissues
- D) Deep root systems

105. The primary function of succulent plants like cacti in dry climates is to:

- A) Enhance camouflage
- B) Attract pollinators
- C) Store water
- D) Maximize sunlight absorption

106. How do plants ensure successful seed dispersal to avoid competition with their own seedlings?

- A) By producing large, heavy seeds
- B) By relying on wind dispersal
- C) By using animal dispersers
- D) By scattering seeds randomly

107. Which plant dispersal method involves using wind to carry seeds away?

- A) Explosion
- B) Animal dispersal
- C) Water dispersal
- D) Wind dispersal

108. What is the purpose of fruits with special adaptations in seed dispersal?

- A) To attract predators
- B) To deter herbivores
- C) To carry seeds away from the parent plant
- D) To increase seed germination

109. Tumbleweeds scatter their seeds by:

- A) Exploding seed pods
- B) Using animal dispersers
- C) Being carried by wind
- D) Rolling along the ground

110. How do plants ensure seed dispersal through water?

- A) By producing sticky seeds
- B) By utilizing animal dispersers
- C) By producing buoyant seeds
- D) By exploding seed pods

111. What do plants offer to animals to encourage seed dispersal?

- A) Poisonous fruits
- B) Nutrient-rich seeds
- C) Fragrant flowers
- D) Sticky leaves

112. Which adaptation increases the likelihood of seeds being dispersed by animals?

- A) Large seed size
- B) Edible fruit
- C) Hard seed coat
- D) Rapid seed germination

113. The primary purpose of juicy fruits produced by plants is to:

- A) Enhance seed germination
- B) Provide shelter for seeds
- C) Attract animals for seed dispersal
- D) Repel herbivores

114. How do seeds dispersed by animals typically survive digestion?

- A) By developing a hard seed coat
- B) By releasing toxins
- C) By forming symbiotic relationships
- D) By being carried in protected pockets

115. What happens to seeds that become attached to animals' fur or feathers?

- A) They germinate immediately
- B) They are consumed by the animals
- C) They are transported to new locations
- D) They become dormant indefinitely

116. How do some plants use mini-explosions to spread their seeds?

- A) By launching seeds with catapult-like structures
- B) By releasing seeds in a burst of air pressure
- C) By relying on animals to trigger seed dispersal
- D) By detonating explosive seed pods

117. Which plant dispersal method involves relying on animals to carry seeds away?

- A) Wind dispersal
- B) Water dispersal
- C) Animal dispersal
- D) Explosion dispersal

118. What is the primary purpose of sticky or hooked fruits produced by plants?

- A) To deter herbivores
- B) To attract insects
- C) To enhance seed dispersal by animals
- D) To prevent seed germination

119. How do plants ensure their seeds are dispersed over long distances?

- A) By producing heavy seeds
- B) By relying on gravity
- C) By using explosive seed pods
- D) By utilizing animal dispersers

120. The main goal of seed dispersal mechanisms in plants is to:

- A) Minimize seed wastage
- B) Maximize seed competition
- C) Avoid self-pollination
- D) Facilitate seed dispersal away from the parent plant

121. Which statement best describes the importance of planting and growing trees?

- A) Trees help reduce air pollution and global warming.
- B) Trees only provide shade and aesthetic value.
- C) Trees have no impact on soil stability or erosion.
- D) Trees contribute to desertification and soil degradation.

122. What percentage of Ethiopia was covered with forests 100 years ago?

- A) 40%
- B) 60%
- C) 20%
- D) 3%

123. What is the main reason for the deforestation in Ethiopia?

- A) Natural disasters
- B) Urbanization
- C) Agricultural expansion
- D) Government policies

124. How many trees were planted in Ethiopia in 2008 as part of the nationwide tree-planting campaign?

- A) 1.4 billion
- B) 687 million
- C) 40%
- D) 3%

125. What is the purpose of planting two-year-old saplings of indigenous trees?

- A) To make money
- B) To prevent soil erosion
- C) To provide shade
- D) To attract wildlife

126. What should be done before planting a tree?

- A) Watering the soil
- B) Placing a stake
- C) Digging a big hole
- D) Adding fertilizer

127. How should the soil be treated after planting a sapling?

- A) Loosely pressed
- B) Firmly pressed
- C) Left untouched
- D) Covered with mulch

128. What may young trees need during their first year after planting?

- A) Extra water
- B) Less sunlight
- C) More fertilizer
- D) No care

129. Who is encouraged to participate in the tree-planting project?

- A) Elderly people
- B) Professionals only
- C) Young people
- D) International tourists

130. What is the ultimate benefit of restoring lost trees according to the passage?

- A) Only benefiting Ethiopia
- B) No benefits globally
- C) Benefiting everyone across the world
- D) Exacerbating environmental issues

Answer Key

1. B) A life-supporting environment including living organisms, nutrients, and physical environment

Explanation: An ecosystem encompasses not only living organisms but also the non-living components like nutrients and physical surroundings that support life.

2. B) Soil and rocks

Explanation: Abiotic components in an ecosystem are non-living factors like soil, rocks, water, sunlight, temperature, etc.

3. B) Amount of rainfall

Explanation: Rainfall is a classic example of an abiotic component as it directly affects the availability of water, which is crucial for various aspects of an ecosystem.

4. C) They influence the survival of organisms

Explanation: Biotic components, which include living organisms, have a significant impact on each other's survival through interactions like predation, competition, and symbiosis.

5. C) Terrestrial habitats

Explanation: Terrestrial habitats refer to habitats on land, as opposed to aquatic habitats, which are in water.

6. C) Habitats in fresh water of lakes, rivers, ponds, and streams

Explanation: Freshwater habitats include bodies of water like lakes, rivers, ponds, and streams, where the water has low salinity compared to seawater.

7. B) Levels of oxygen dissolved in water

Explanation: Dissolved oxygen levels in water are an abiotic component that directly affects the survival of aquatic organisms.

8. B) To regulate population sizes

Explanation: Competition in ecosystems plays a crucial role in regulating population sizes by influencing resource availability and access to mates.



9. A) Camouflage coloration

Explanation: Camouflage helps animals blend into their environment, reducing the chances of being detected by predators or prey and thus avoiding direct competition.

10. B) It influences the types of plants that can survive

Explanation: pH levels affect soil acidity or alkalinity, which in turn influences the types of plants that can thrive in that environment.

11. C) Light availability

Explanation: Light availability is essential for photosynthesis, the process by which plants make food, so it's crucial for plant survival.

12. B) Salt water oceans

Explanation: Marine habitats primarily consist of saltwater oceans, which support a wide variety of aquatic life forms.

13. D) Prey animals compete for food resources

Explanation: Prey animals compete for food resources to ensure their survival and reproduction.

14. C) To avoid detection by predators

Explanation: Camouflage helps animals blend into their surroundings, making it harder for predators to detect them.

15. A) Amount of food available

Explanation: The availability of food directly influences the numbers of organisms in an area through competition for resources.

16. C) Both biotic and abiotic components

Explanation: Both biotic (living organisms) and abiotic (non-living factors) components interact to determine whether animals and plants can survive in a particular ecosystem.

17. D) Aquatic habitats

Explanation: Aquatic habitats are habitats in water, including both freshwater and marine environments.

18. C) To influence the survival of organisms

Explanation: Biotic components influence the survival of organisms through various interactions like predation, competition, and mutualism.

19. C) By displaying physical prowess

Explanation: Animals often compete for mates by displaying physical attributes or behaviors that attract potential mates.

20. C) It determines the types of plants that can survive

Explanation: Temperature affects the types of plants that can survive in an ecosystem, as different plants have different temperature requirements.

21. C) Amount of sunlight

Explanation: Sunlight is essential for photosynthesis, the process by which plants make food, so it's crucial for plant survival.

22. D) By determining habitat suitability

Explanation: Abiotic components like temperature, water availability, and soil composition determine whether a habitat is suitable for certain organisms to live in.

23. A) Presence of salt water

Explanation: Marine habitats are distinguished by the presence of saltwater, unlike freshwater habitats which have low salinity.

24. B) It is primarily for food resources

Explanation: Competition among animals of the same species is often for resources like food, mates, and territory.

25. D) By competing for light, water, and nutrients

Explanation: Plants compete with each other for essential resources like light, water, and nutrients to ensure their survival and reproduction.

26. C) It influences the dispersal of seeds

Explanation: Wind can carry seeds over long distances, influencing the dispersal and distribution of plant species within an ecosystem.

27. A) Abiotic factors

Explanation: Soil drainage, influenced by factors like slope and soil texture, is an abiotic factor that affects the availability of water and nutrients for plants.

28. C) By regulating population sizes

Explanation: Predators control the population sizes of other organisms by preying on them, which can have cascading effects throughout the ecosystem.

29. D) To provide habitat for freshwater organisms

Explanation: Freshwater habitats support a diverse array of organisms adapted to living in freshwater environments.

30. A) Presence of water

Explanation: Terrestrial habitats are distinguished by the presence of land, unlike aquatic habitats which are in water.

31. B) Heterotrophs

Explanation: Heterotrophs rely on consuming other living organisms for energy, as opposed to autotrophs, which produce their own food.

32. B) Autotrophs

Explanation: Autotrophs, such as plants, produce their own food using sunlight through the process of photosynthesis.

33. B) Decomposers

Explanation: Decomposers break down dead organic matter into simpler substances, playing a vital role in nutrient cycling within ecosystems.



34. A) Those that eat plants

Explanation: Herbivores are organisms that primarily consume plants for energy.

35. D) Omnivores

Explanation: Omnivores have a diet that includes both plants and animals.

36. B) Sulfur-containing chemicals

Explanation: Chemotrophs obtain energy by oxidizing inorganic or organic molecules other than carbon dioxide, often including sulfur-containing chemicals.

37. D) Decomposers

Explanation: Decomposers break down the remains of dead organisms into simpler substances, returning nutrients to the soil.

38. B) Trophic levels

Explanation: Trophic levels represent the different positions occupied by organisms in a food chain or food web based on their feeding relationships.

39. A) Sunlight

Explanation: Sunlight is the primary source of energy for most ecosystems, as it fuels photosynthesis in autotrophs.

40. A) Biomass

Explanation: Biomass refers to the total mass of living organisms in a given area or volume.

41. A) Pyramid of numbers

Explanation: The pyramid of numbers represents the number of organisms at each trophic level in a food chain or food web.

42. B) Because only a portion of biomass is consumed

Explanation: Not all biomass produced at one trophic level is consumed by the next trophic level, leading to a decrease in biomass as energy is transferred up the food chain.

43. C) Broken down and excreted

Explanation: Excess protein consumed by animals is broken down into simpler compounds and excreted from the body.

44. C) Mammals

Explanation: Mammals are warm-blooded and require more food to maintain their body temperature compared to other animals.

45. C) Energy pyramid

Explanation: An energy pyramid represents the amount of energy in each trophic level and how much is passed on to the next level.

46. C) Reptiles

Explanation: Reptiles are ectothermic (cold-blooded), meaning they rely on external sources of heat to regulate their body temperature, thus needing to consume more food in cooler environments.

47. A) Phytoplankton

Explanation: Phytoplankton are microscopic organisms that produce food through photosynthesis and are a primary food source for zooplankton in aquatic food chains.

48. D) Complex ecosystem dynamics

Explanation: Interactions between different food chains in a food web demonstrate the complex dynamics of ecosystems, including predator-prey relationships and energy flow.

49. C) Producers

Explanation: Producers, primarily plants, convert solar energy into chemical energy through photosynthesis, forming the base of the food chain.

50. B) Consumers

Explanation: Consumers obtain energy by consuming other living organisms, unlike producers, which produce their own food.

51. A) Break down dead organisms

Explanation: Decomposers play a crucial role in ecosystems by breaking down dead organic matter and returning nutrients to the soil.

52. A) Those that eat plants

Explanation: Primary consumers are organisms that consume producers (plants) for energy.

53. C) Chemotrophs

Explanation: Chemotrophs obtain energy by oxidizing inorganic or organic molecules other than carbon dioxide, often including sulfur-containing chemicals.

54. B) Plants

Explanation: Herbivores primarily feed on plants for energy.

55. A) Food chain

Explanation: A food chain describes the transfer of energy from one organism to another in a linear sequence of feeding relationships.

56. A) Producers

Explanation: Producers convert energy from sunlight into their own biomass, forming the base of the food chain.

57. B) Sunlight

Explanation: Sunlight is the primary source of energy for all living organisms, driving processes like photosynthesis.

58. A) Biomass

Explanation: Biomass refers to the total mass of living material in an animal or plant.

59. B) Broken down and excreted

Explanation: Excess protein consumed by animals is broken down into simpler compounds and excreted from the body.

60. C) Mammals

Explanation: Mammals are warm-blooded and need to consume more food to maintain their body temperature compared to other animals.

61. **A) Breaking down waste products:** Decomposers play a crucial role in the environment by breaking down organic matter, including dead plants and animals, into simpler substances. This process releases nutrients back into the soil, making them available for other organisms and ensuring the continuation of the nutrient cycle.

62. **C) Decomposers:** Decomposers, such as bacteria and fungi, are responsible for breaking down dead plants and animals into simpler organic matter, which is then recycled back into the ecosystem as nutrients.

63. **C) Warm and moist conditions:** Decay occurs more rapidly in warm and moist conditions because these conditions provide an ideal environment for the activity of decomposers, such as bacteria and fungi, which break down organic matter.

64. **B) To break down sewage:** Sewage treatment plants utilize microorganisms, such as bacteria and fungi, to break down organic matter present in sewage into simpler, less harmful substances, making the water safe to release back into the environment.

65. **C) To produce organic fertilizer:** The primary purpose of a compost heap in gardening is to decompose organic waste, such as kitchen scraps and yard trimmings, using microorganisms. The resulting compost is rich in nutrients and serves as an organic fertilizer for plants.

66. **C) 80%:** Approximately 78% of the Earth's atmosphere is composed of nitrogen gas (N_2), making it the most abundant gas in the atmosphere. However, since most organisms cannot use atmospheric nitrogen directly, it must be converted into other forms, such as ammonia, by nitrogen-fixing bacteria before it can be utilized by plants.

67. **B) By fixing nitrogen in their roots:** Legumes, such as peas and beans, have a symbiotic relationship with nitrogen-fixing bacteria in their root nodules. These bacteria convert atmospheric nitrogen into a form that can be used by plants, thus contributing to the nitrogen cycle by enriching the soil with nitrogen.

68. **C) Denitrifying bacteria:** Denitrifying bacteria are responsible for reducing the amount of nitrates in the soil by converting them back into atmospheric nitrogen gas, thus completing the nitrogen cycle and preventing the accumulation of excess nitrates.

69. **B) Combustion of fossil fuels:** The combustion of fossil fuels, such as coal, oil, and natural gas, is a major source of carbon dioxide emissions into the atmosphere. This process releases carbon dioxide that was previously stored underground for millions of years, contributing to the increased levels of atmospheric carbon dioxide.
70. **B) By absorbing carbon dioxide:** Plants contribute to the carbon cycle by absorbing carbon dioxide from the atmosphere during photosynthesis and using it to produce organic compounds, such as sugars and carbohydrates. This process helps to reduce the amount of carbon dioxide in the atmosphere.
71. **C) They increase:** When trees are cut down, the stored carbon in their biomass is released into the atmosphere as carbon dioxide through processes like burning or decomposition. Therefore, cutting down trees increases the levels of carbon dioxide in the atmosphere.
72. **C) Release of carbon dioxide:** Deforestation disrupts the carbon cycle by releasing stored carbon into the atmosphere in the form of carbon dioxide. This contributes to the greenhouse effect and climate change.
73. **B) Paddy fields:** Paddy fields, which are flooded rice fields, are a major source of methane emissions due to the anaerobic (oxygen-limited) conditions in the waterlogged soil, which promote the activity of methane-producing microorganisms.
74. **B) By releasing methane during digestion:** Cows and other ruminant animals produce methane as a byproduct of digestion through a process called enteric fermentation. Microbes in their digestive systems break down plant fibers, producing methane as a waste product that is then released into the atmosphere.
75. **C) Increases temperature:** The increase in carbon dioxide levels in the atmosphere leads to enhanced greenhouse effect, trapping more heat and causing a rise in global temperatures, a phenomenon known as global warming.
76. **C) Blocking harmful UV rays:** The ozone layer, a region of the Earth's stratosphere containing a high concentration of ozone (O₃) molecules, plays a crucial role in protecting life on Earth by absorbing the majority of the Sun's ultraviolet (UV) radiation, thus shielding living organisms from its harmful effects.
77. **D) They create holes in it:** Chemicals used in refrigerants, such as chlorofluorocarbons (CFCs) and halons, can react with ozone molecules in the stratosphere, leading to the depletion of the ozone layer and the formation of ozone holes.
78. **D) Ozone hole:** The term "ozone hole" specifically refers to the thinning of the ozone layer over Antarctica, which occurs seasonally and is exacerbated by human-made ozone-depleting substances.
79. **B) Increased UV radiation exposure:** A thinner ozone layer allows more ultraviolet (UV) radiation from the Sun to reach the Earth's surface, resulting in increased UV radiation exposure for living organisms. This can lead to various health issues, including skin cancer, cataracts, and immune suppression.
80. **D) By damaging the ozone layer:** Human actions, such as the use of ozone-depleting substances like chlorofluorocarbons (CFCs) and halons, can unintentionally damage the

ozone layer, leading to its thinning and the formation of ozone holes, which in turn increases UV radiation exposure on Earth.

81. **B) Breaking down proteins:** Decomposers play a crucial role in the nitrogen cycle by breaking down complex organic compounds, such as proteins, into simpler forms, releasing nitrogen back into the soil in the process.
82. **C) Nitrates:** Plants primarily take up nitrogen from the soil in the form of nitrates (NO_3^-), which are produced through the process of nitrification by soil bacteria.
83. **B) By hosting nitrogen-fixing bacteria:** Legumes have specialized root nodules that contain symbiotic nitrogen-fixing bacteria, such as *Rhizobium* species. These bacteria have the ability to convert atmospheric nitrogen into a form that can be used by plants, thereby contributing to nitrogen fixation.
84. **A) Nitrifying bacteria:** Nitrifying bacteria are responsible for converting ammonium (NH_4^+) into nitrates (NO_3^-) through the process of nitrification, which makes nitrogen available for plant uptake in the form of nitrates.
85. **A) Combustion of fossil fuels:** The combustion of fossil fuels, such as coal, oil, and natural gas, releases large amounts of carbon dioxide (CO_2) into the atmosphere as a byproduct, contributing to the increased levels of atmospheric CO_2 .
86. **B) By absorbing carbon dioxide:** Plants contribute to the carbon cycle by absorbing carbon dioxide from the atmosphere during photosynthesis and using it to produce organic compounds, such as sugars and carbohydrates. This process helps to reduce the amount of carbon dioxide in the atmosphere.
87. **C) They increase:** When trees are cut down, the stored carbon in their biomass is released into the atmosphere as carbon dioxide through processes like burning or decomposition. Therefore, cutting down trees increases the levels of carbon dioxide in the atmosphere.
88. **A) Paddy fields:** Paddy fields, which are flooded rice fields, are a major source of methane emissions due to the anaerobic (oxygen-limited) conditions in the waterlogged soil, which promote the activity of methane-producing microorganisms.
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91. **D) Decreasing their physical activity:** In cold climates, Arctic animals reduce heat loss primarily by decreasing their physical activity, which helps conserve energy and maintain body temperature.

92. **B) Decrease their surface area:** Arctic mammals are relatively large to decrease their surface area-to-volume ratio, which reduces heat loss in cold environments by minimizing the amount of body surface exposed to the cold air.
93. **B) Blubber layer:** The blubber layer in Arctic mammals serves as insulation, helping to reduce heat loss through thin-skinned areas by providing a thick layer of fat that retains body heat.
94. **A) Provide insulation:** The primary function of blubber in Arctic animals is to provide insulation by trapping heat and preventing excessive heat loss in cold environments, helping animals maintain their body temperature.
95. **C) By changing their fur color:** Many Arctic animals, such as Arctic foxes and ptarmigans, change their fur color seasonally to match their surroundings, providing camouflage and protection from predators.
96. **B) Consuming succulent plants:** In dry climates, desert animals typically obtain water from succulent plants, which store water in their tissues and are a reliable water source during periods of drought.
97. **B) Balancing water loss and gain:** The main challenge for mammals in maintaining a constant body temperature in deserts is balancing water loss and gain. Desert environments have high temperatures and low humidity, leading to rapid water loss through evaporation and respiration.
98. **C) Nighttime:** Most desert animals are most active during nighttime when temperatures are cooler, reducing the risk of overheating and water loss. Nocturnal activity also helps avoid predators and conserve energy.
99. **B) By burrowing underground during the day:** Small desert animals regulate their body temperature more effectively by burrowing underground during the day, where temperatures are cooler and more stable, reducing exposure to extreme heat and conserving water.
100. **C) Large, thin ears:** Desert animals lose heat through their skin more efficiently due to the large surface area-to-volume ratio of their large, thin ears, which helps dissipate excess heat into the surrounding air.
101. **D) Reducing their leaf surface area:** One of the main ways plants in dry conditions reduce water loss is by reducing their leaf surface area, which reduces the surface area available for transpiration, the process by which water evaporates from the leaves.
102. **B) By collecting dew and funneling it to their roots:** Desert plants with broad leaves utilize dew for water acquisition by collecting dew on their leaves and funneling it to their roots, providing a supplemental water source in arid environments.
103. **A) Thick, waxy cuticle:** One adaptation that helps desert plants minimize water loss through evaporation is the presence of a thick, waxy cuticle on their leaves, which acts as a barrier to water loss by reducing transpiration.

104. **C) Water-storing tissues:** Cacti are successful in hot, dry climates primarily because of their ability to store water in specialized tissues, such as their stems, allowing them to survive extended periods of drought without access to external water sources.
105. **C) Store water:** The primary function of succulent plants like cacti in dry climates is to store water in their tissues, allowing them to survive in arid environments with limited water availability.
106. **C) By using animal dispersers:** Plants ensure successful seed dispersal to avoid competition with their own seedlings by utilizing animals as dispersers to carry seeds away from the parent plant, thus increasing the chances of colonization in new areas.
107. **D) Wind dispersal:** Wind dispersal involves using air currents to carry seeds away from the parent plant to new locations, increasing the chances of colonization and reducing competition among seedlings.
108. **C) To carry seeds away from the parent plant:** Fruits with special adaptations in seed dispersal, such as fleshy fruits with hooks or sticky coatings, aid in the dispersal of seeds by animals, which consume the fruit and then deposit the seeds away from the parent plant.
109. **D) Rolling along the ground:** Tumbleweeds scatter their seeds by rolling along the ground, dispersing seeds as they are carried by the wind, which aids in the colonization of new areas.
110. **C) By producing buoyant seeds:** Plants ensure seed dispersal through water by producing buoyant seeds that can float on water, allowing them to be carried away by currents to new locations.
111. **C) Fragrant flowers:** Plants offer fragrant flowers to animals to encourage seed dispersal by attracting animals, such as birds and insects, which may feed on the flowers and inadvertently disperse seeds to new locations.
112. **B) Edible fruit:** Large seed size and edible fruit increase the likelihood of seeds being dispersed by animals, as animals are attracted to the fruit and may consume it, transporting the seeds to new areas in their digestive tracts.
113. **C) Attract animals for seed dispersal:** The primary purpose of juicy fruits produced by plants is to attract animals for seed dispersal. Animals are attracted to the sweet taste of the fruit and may consume it, dispersing the seeds in their feces.
114. **A) By developing a hard seed coat:** Seeds dispersed by animals typically survive digestion by developing a hard seed coat that protects them from the harsh conditions of the digestive tract, allowing them to remain viable after passing through the animal's digestive system.
115. **C) They are transported to new locations:** Seeds that become attached to animals' fur or feathers are transported to new locations as the animals move, aiding in seed dispersal and colonization of new habitats.

116. **D) By detonating explosive seed pods:** Some plants use mini-explosions to spread their seeds by detonating explosive seed pods, which eject seeds at high velocities, increasing the distance of seed dispersal away from the parent plant.
117. **C) Animal dispersal:** Animal dispersal involves relying on animals to carry seeds away from the parent plant to new locations, either by consuming the fruit and then dispersing the seeds in their feces or by transporting seeds on their fur or feathers.
118. **C) To enhance seed dispersal by animals:** The primary purpose of sticky or hooked fruits produced by plants is to enhance seed dispersal by animals. The sticky or hooked structures attach to fur or feathers of animals, facilitating seed transport to new locations.
119. **D) By utilizing animal dispersers:** Plants ensure their seeds are dispersed over long distances by utilizing animal dispersers, such as birds, mammals, or insects, to carry seeds away from the parent plant, increasing the likelihood of colonization in new areas.
120. **D) Facilitate seed dispersal away from the parent plant:** The main goal of seed dispersal mechanisms in plants is to facilitate seed dispersal away from the parent plant, reducing competition among seedlings and increasing the chances of successful colonization in new habitats.
121. **A) Trees help reduce air pollution and global warming:** Trees play a crucial role in mitigating environmental issues by absorbing carbon dioxide, providing oxygen, stabilizing soil, providing habitat for wildlife, and reducing air pollution.
122. **C) 20%:** One hundred years ago, approximately 20% of Ethiopia was covered with forests.
123. **C) Agricultural expansion:** The main reason for deforestation in Ethiopia is agricultural expansion, as forests are cleared to make way for agricultural activities such as farming and grazing.
124. **A) 1.4 billion:** In 2008, Ethiopia launched a nationwide tree-planting campaign and planted approximately 1.4 billion trees as part of this initiative.
125. **B) To prevent soil erosion:** Planting two-year-old saplings of indigenous trees helps prevent soil erosion, as the established root systems of these saplings can stabilize soil and prevent it from being washed away by water.
126. **C) Digging a big hole:** Before planting a tree, it is important to dig a sufficiently large hole to accommodate the root ball of the sapling and provide space for root growth.
127. **B) Firmly pressed:** After planting a sapling, the soil should be firmly pressed around the base of the tree to eliminate air pockets and provide stability for the sapling.
128. **A) Extra water:** Young trees may need extra water during their first year after planting to help establish their root systems and ensure proper growth and development.
129. **C) Young people:** Young people are encouraged to participate in tree-planting projects to instill environmental awareness, promote conservation efforts, and engage the next generation in sustainable practices.

130. **C) Benefiting everyone across the world:** The ultimate benefit of restoring lost trees extends beyond individual countries or regions and has global implications, as trees play a vital role in mitigating climate change, maintaining biodiversity, and ensuring the health and stability of ecosystems worldwide.