

# Ecology Test

Student Names \_\_\_\_\_

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Team Name \_\_\_\_\_

Team Number \_\_\_\_\_

Please do not open until time begins. You have 50 minutes to complete this test.

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**Section 1 Matching (1 pt each):**

\_\_\_\_\_ 1. Biome

A. the equilibrium point of an ecosystem. This is the maximum plant and animal species that an ecosystem can support without environmental degradation.

\_\_\_\_\_ 2. Symbiosis

B. the relationship between two organisms that are in a close proximity with each other. The relationship may be positive, negative, or neutral

\_\_\_\_\_ 3. Survivorship

C. a large collection of ecosystems and habitats that generally span over a large region

\_\_\_\_\_ 4. K Selected Species

D. an ecosystem's ability to maintain diversity and fruitfulness

\_\_\_\_\_ 5. R Selected Species

E. bodies of water that become enriched with nutrients and typically causes algal blooms

\_\_\_\_\_ 6. Carrying Capacity

F. species that tend to be large and are born in small quantities. These offspring are nurtured throughout childhood and tend to live many years.

\_\_\_\_\_ 7. Sustainability

G. species that tend to be small and are born in large quantities. These offspring are generally not fostered after birth, and they live in unstable environments.

\_\_\_\_\_ 8. Eutrophication

H. the percentage of the remaining organisms of a population that can typically be displayed through a graph

\_\_\_\_\_ 9. Potential Niche

I. Condition in which ecosystem is irreparably damaged

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\_\_\_\_\_ 10. Commensalism

J. thick subsurface layer of soil that remains frozen throughout the year, occurring chiefly in polar regions

\_\_\_\_\_ 11. Realized Niche

K. Symbiotic relationship in which one is harmed and the other is unaffected

\_\_\_\_\_ 12. Amensalism

L. Position an organism could hold in its community without resource limitations

\_\_\_\_\_ 13. Mutualism

M. Symbiotic relationship in which one organism benefits and the other is neutral

\_\_\_\_\_ 14. Ecological Tipping Point

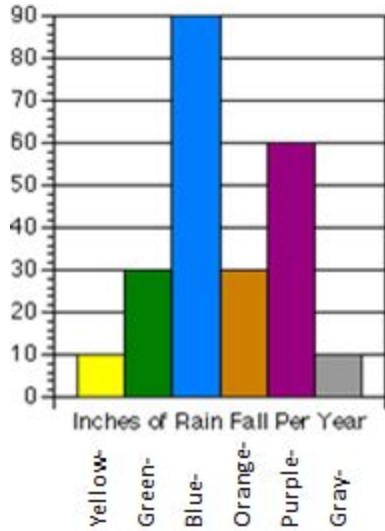
N. Process in which an organism absorbs toxic substances at a rate greater than that of substance lost

\_\_\_\_\_ 15. Bioaccumulation

O. Symbiotic relationship in which both organisms benefit

\_\_\_\_\_ 16. Permafrost

P. Part of fundamental niche that a species actually occupies



17. Yellow: \_\_\_\_\_

18. Green: \_\_\_\_\_

19. Blue: \_\_\_\_\_

20. Purple: \_\_\_\_\_

Q. Tropical Rain forest

R. Tundra

S. Temperate Deciduous Forest

T. Taiga

**Section 2 Multiple Choice (2 pts each):**

21. Which is not a cause of deforestation?

- A. Conversion of forests to agricultural land
- B. Unregulated commercial logging
- C. Unintentional forest fires
- D. Cutting down forests for recreational use

22. Which of the following contributes the least towards desertification?

- A. Overgrazing
- B. Cultivation of marginal lands
- C. Destruction of vegetation in arid regions
- D. Large increase in the amount of sand in arid regions

23. Which species is an example of an indicator species?

- A. Lichen
- B. Purple Loosestrife
- C. Shellfish

D. Coral

24. Which species plays a vital role in the success of an ecosystem?

- A. Pioneer Species
- B. Decomposers
- C. Keystone Species
- D. Indicator Species

25. The process of successful establishment of the species in a new area is called...

- A. Sere
- B. Climax
- C. Invasion
- D. Ecesis

26. The formation of a climax community from an abandoned farm land is an example of

- A. Autogenic Succession
- B. Allogenic Succession
- C. Primary Succession
- D. Secondary Succession

27. All the following statements are correct regarding ecological succession except...

- A. Species diversity increases as succession proceeds.
- B. The role of decomposers becomes more and more important.
- C. It is a random process.
- D. The food chain relationships become more complex.

28. The average temperature for Tropical Rainforests ranges from...

- A. 0-10° C
- B. 10-15° C
- C. 20-25° C
- D. 30-35° C

29. The average summer temperature for the Arctic Tundra ranges from...

- A. 3-12° C
- B. 15-20° C
- C. -10-0° C
- D. 20-25° C

30. Where are Boreal forests (taiga) usually found?

- A. 30-40 north latitudes
- B. 50-60 north latitudes
- C. 60-70 north latitudes
- D. 70-80 north latitudes

31. Which is not a further subdivision of Tropical Rainforests?

- A. Monsoon Rainforest

- B. Seasonal Rainforest
- C. Evergreen Rainforest
- D. Precipitate Rainforest

32. What is the definition of deciduous?

- A. Annual shedding of a tree's leaves
- B. Abundant precipitation
- C. Large tree population
- D. Cold temperatures

33. In which forest can fertile soil be found?

- A. Tropical Rainforests
- B. Taiga
- C. Temperate Forests
- D. Boreal Forests

34. In the following food chain, which organism is the secondary consumer? Grass -> Rabbit -> Snake -> Hawk

- A. Grass
- B. Rabbit
- C. Snake
- D. Hawk

35. The release of water vapor from the leaves of trees is called...

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

36. On what trophic level would you find organisms that make their own food using the sun's energy directly?

- A. Producer
- B. Primary Consumer
- C. Secondary Consumer
- D. Tertiary Consumer

37. Lichen is a symbiotic decomposer that attaches itself to trees and slowly breaks them down, obtaining nutrients from the tree and permitting lichen to survive and reproduce. What type of symbiotic relationship is this?

- A. Predator - Prey
- B. Mutualism
- C. Competition
- D. Parasitism

38. Which is not a characteristic of the tundra biome?

- A. Layer of permafrost
- B. Cold temperatures
- C. Low biodiversity
- D. Long growing seasons

39. Which is not an animal that would typically be found in the Arctic tundra?
- A. Wolves
  - B. Penguin
  - C. Polar Bear
  - D. Arctic Foxes
40. Which type of tundra is found around the north pole?
- A. Alpine Tundra
  - B. Arctic Tundra
  - C. Northern Tundra
  - D. Eastern Tundra
41. Which is not an indicator plant species in the tundra biome?
- A. Lichen
  - B. Willows
  - C. Sedges
  - D. Shrubs
42. Which is not an indicator animal species in the tundra biome?
- A. Caribou
  - B. Polar Bears
  - C. Reindeer
  - D. Snow Geese
43. All of the following are density-dependent factors except...
- A. Weather
  - B. Predation
  - C. Mortality
  - D. Food Competition
44. In the nitrogen cycle, the transformation of gaseous nitrogen into nitrogen-containing compounds is performed primarily by...
- A. Fungi
  - B. Bacteria
  - C. Herbivores
  - D. Carnivores

**Section 3 Free Response:**

45. Identify 2 ecological benefits of forest ecosystems (2 pts for each benefit)

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46. Interdependence in nature is illustrated by the transfer of energy through trophic levels. The diagram below depicts the transfer of energy in a food web of an Arctic lake located in Alaska.

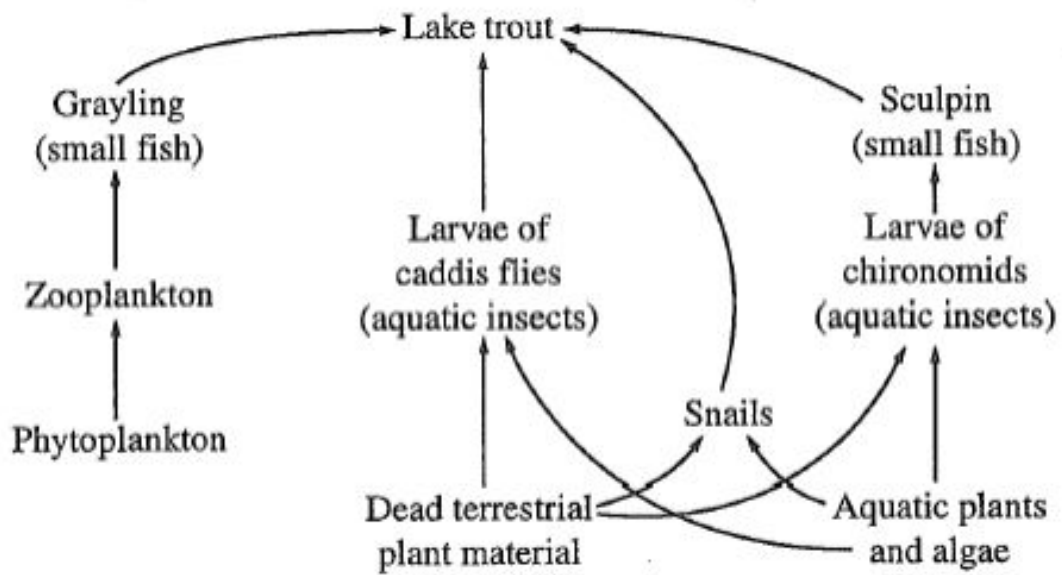
a) Identify the four trophic levels in the diagram below (2 pts each).

b) Identify one organism at each of the 4 trophic levels (1 pt each)

c) Explain how energy is obtained at each of the 4 levels (5 points for each level)



d) If the cells in the dead terrestrial plant material that washed into the lake contained a commercially produced toxin, what would be the likely effects of this toxin on this food web? Explain. (5 points)

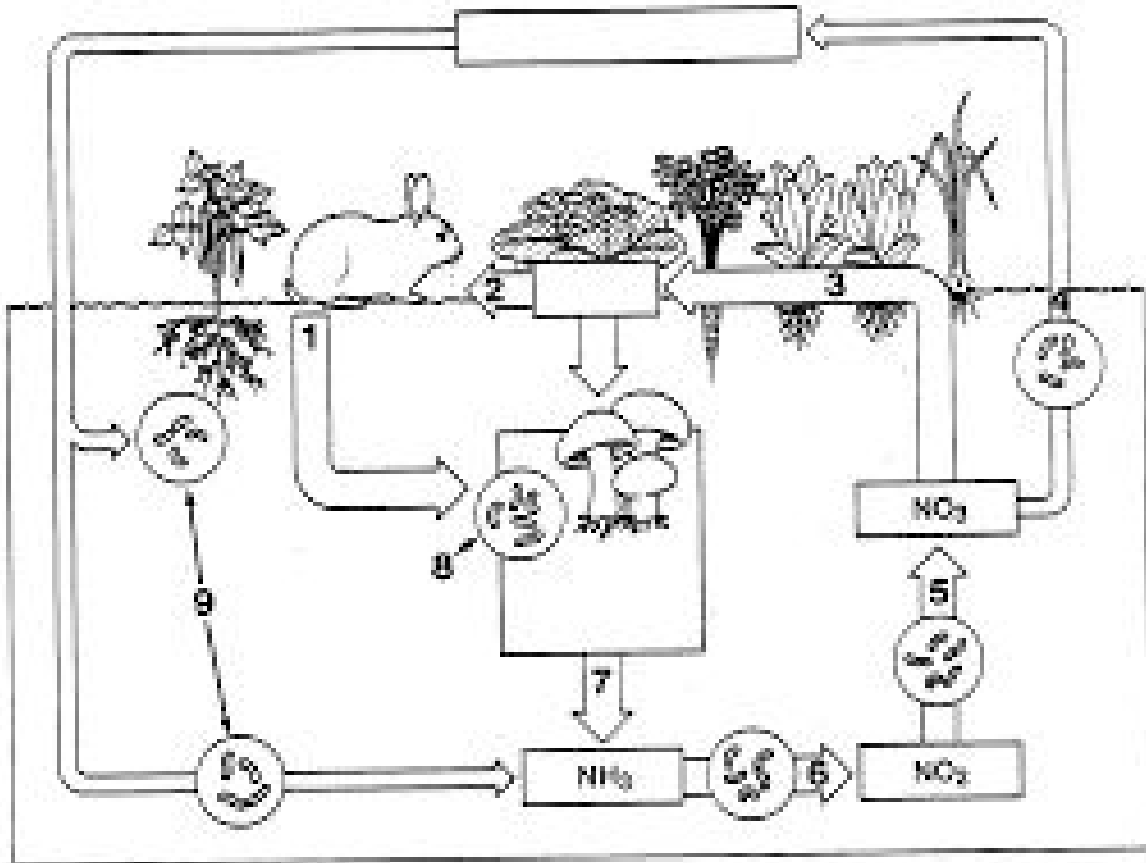


47-48. All work must be shown to receive full credit. (2 pts each; 1 pt for correct answer, 1 pt for correctly shown work)

47. As of 1995, the human population was expected to double within 50 years. Calculate  $r$  for the human population.

48. If the growth rate of a city was 1.6% each year in 2011, calculate the number of years it takes the population to double.

49. Fill in the numbered processes and components of the Nitrogen Cycle. (1 pt for each blank)



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