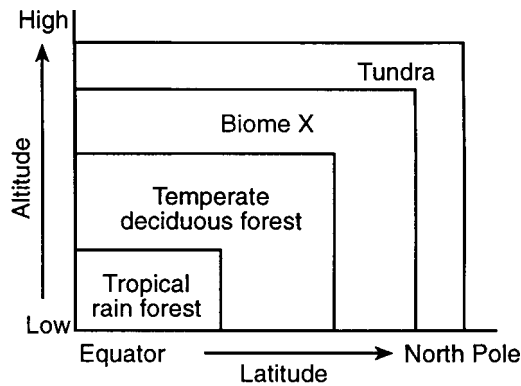


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1. Which pioneer organisms are most likely to occupy the bare rock habitat of a mountaintop?  
(1) **lichens**                      (2) grasses                      (3) legumes                      (4) hemlock trees
  2. Which two groups of organisms are most likely to be pioneer organisms?  
(1) songbirds and squirrels                      (3) deer and black bears  
(2) **lichens and algae**                      (4) oak and hickory trees
  3. Which organisms would most likely be the pioneer organisms on a newly formed volcanic island?  
(1) conifers                      (2) **lichens**                      (3) deciduous trees                      (4) tall grasses
  4. Which statement best describes the pioneer organisms involved in ecological succession?  
(1) They do not require sunlight.                      (3) **They modify the environment.**  
(2) They are the last organisms to appear.                      (4) They are restricted to desert biomes.
  5. A slab of bare rock is covered with lichens. In time, mosses cover the rock, followed by grasses, and finally by small shrubs and tree saplings. In this example, the lichens represent  
(1) a climax community    (2) a dominant species    (3) secondary consumers    (4) **pioneer organisms**
  6. The first living things to grow successfully on a newly formed sand dune are known as  
(1) saprophytes                      (2) **pioneer organisms**    (3) carnivorous plants    (4) heterotrophs
  7. Populations in equilibrium would be most characteristic of a natural community in which  
(1) pioneer organisms are increasing                      (3) immigration is occurring rapidly  
(2) the pyramid of energy has been reversed                      (4) **succession has reached a climax**
  8. In the process of ecological succession, one community replaces another until  
(1) all animal populations are replaced by plants                      (3) all the biotic factors are of one species  
(2) heterotrophs become the dominant organisms                      (4) **a climax community is established**
  9. The type of climax vegetation that grows in a certain geographical area is most directly influenced by the  
(1) **climatic limitations of the area**                      (3) number of consumers present  
(2) dominant biotic factors present                      (4) complexity of the food webs in the area
  10. A climax community is able to exist in a certain geographic region for a long period of time because it  
(1) provides a habitat for parasites                      (3) attracts many pioneer organisms  
(2) alters the climate of the geographic region                      (4) **remains in equilibrium with the environment**
  11. The stable stage that is established in an area as a result of the process of ecological succession is known as the  
(1) heterotroph community                      (3) biotic stage  
(2) pioneer stage                      (4) **climax community**
  12. Ecosystems tend to change with time until a stable system is formed. All stable ecosystems are characterized by the presence of  
(1) **a specific climax vegetation influenced by the climate of the area**  
(2) trees as the most abundant autotroph in the area  
(3) fewer primary consumers than secondary consumers in the area  
(4) a larger number of heterotrophs than autotrophs in the area

13. Which organisms are most likely to be climax flora of biome X in the diagram below?



- (1) lichens, mosses, and grasses  
(2) shrubs and succulent plants
- (3) grasses and broad-leafed trees  
(4) **spruce and fir trees**
14. A climax community is generally established most directly as a result of a  
(1) catastrophic climatic change  
(2) **series of successive ecological stages**  
(3) long period of evolutionary change  
(4) change in the dominant fauna
15. Which is a characteristic of a stable climax community?  
(1) The number of pioneer organisms is increasing.  
(2) Shrubs are replacing climax trees.  
(3) **Populations have reached equilibrium.**  
(4) Lichens are usually the dominant form of life.
16. The type of climax vegetation that becomes established in an area depends most upon the  
(1) rate of photosynthesis in autotrophs  
(2) number of carnivores present  
(3) **climatic conditions present**  
(4) concentration of nitrogen in the air
17. A pond ecosystem may be replaced by a terrestrial ecosystem over a period of time. The type of terrestrial ecosystem that will be established depends on the  
(1) **climatic limitations of the geographic area of the pond**  
(2) number of carnivores present within the geographic area of the pond  
(3) concentration of nitrogen dissolved in the pond water  
(4) rate of photosynthesis in autotrophs growing in the pond water
18. Which statement concerning the climax stage of an ecological succession is correct?  
(1) It changes rapidly.  
(2) **It persists until the environment changes.**  
(3) It is the first community to inhabit an area.  
(4) It consists entirely of plants.
19. Which animal species are part of the climax fauna throughout most of New York State?  
(1) caribou, crow, and snowy owl  
(2) elk, moose, and black bear  
(3) **gray squirrel, fox, and deer**  
(4) water snake, grizzly bear, and mayfly
20. What is a characteristic of a stable environment?  
(1) It usually contains only one type of producer.  
(2) **It usually contains a great diversity of species.**  
(3) It contains simple food chains that have more consumers than producers.  
(4) It contains complex food webs that have more heterotrophs than autotrophs.