

EOC Practice (ecologyA)

Name: \_\_\_\_\_

Date: \_\_\_\_\_

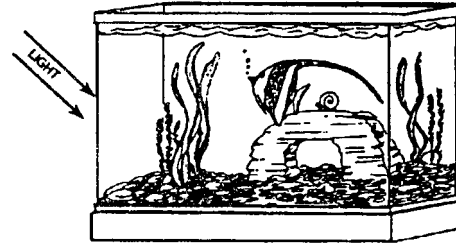
1. Which two factors are abiotic limiting factors that affect organisms in marine biomes?

- A. amount of algae and wide temperature variations
- B. amount of carbon dioxide and variety of producer organisms
- C. amount of moisture and variety of consumer organisms
- D. amount of oxygen and concentration of dissolved salts

2. In a natural community, all the living things that directly or indirectly affect the environment are known as

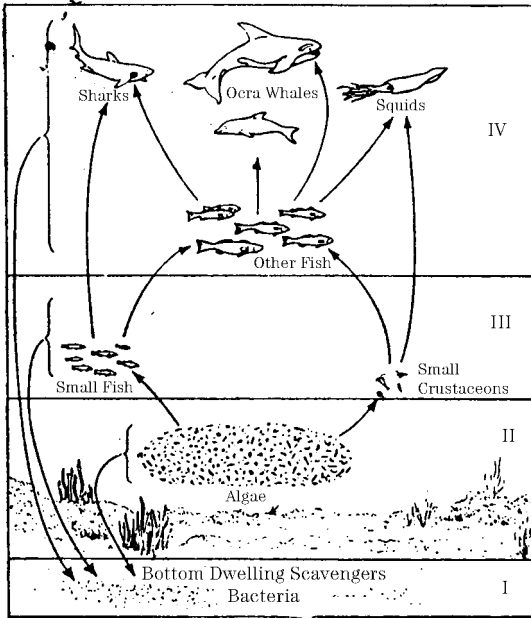
- A. pioneer organisms
- B. secondary consumers
- C. climatic limitations
- D. biotic factors

3. What are the abiotic factors represented in this illustration of an aquarium?



- A. snail, gravel, and water
- B. snail, fish, and plants
- C. water, light, and gravel
- D. plants, light, and water

4. The diagram shown represents a food web. The numerals I, II, III, and IV represent four nutritional levels within the community in which different species compete.



Which is an abiotic factor that is needed to make this marine community a self-sustaining ecosystem?

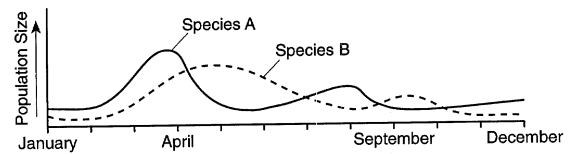
- A. sunlight                      B. producers  
C. primary consumers      D. decomposers

5. An island in a river in New York State has a population of mice. In 1 year, the population density changed from 12 mice per 25 square meters to 20 mice per 25 square meters.

Which factor most likely caused the change in the population density of mice on the island?

- A. a decrease in the amount of precipitation  
B. migration of snakes to the island  
C. competition among mice for food  
D. a decrease in the island's owl population

6. The graph shown represents the population growth curves of two different species of aquatic organisms, A and B. What is a valid prediction based on this graph?



- A. Species A will not be present in the water during the winter months.  
B. Species A will eliminate species B from the water after 1 year.  
C. Species B will attain maximum population size each autumn due to a decrease in water temperature.  
D. Species B will decrease in population size approximately 1 month after a decrease in the population size of species A.

7. The chart lists four groups of factors relating to an ecosystem.

<b>Group A</b>	<b>Group B</b>	<b>Group C</b>	<b>Group D</b>
Sunlight	Sunlight	Sunlight	Sunlight
Green plants	Climate	Green Plants	Rainfall
Rainfall	Rainfall	Rainfall	Consumers
Consumers	Minerals	Producers	Producers
Oxygen	Gases	Carbon Dioxide	Water

Which group contains only abiotic factors?

- A. *A*      B. *B*      C. *C*      D. *D*

8. Erosion resulting from loss of topsoil due to poor farming techniques may be prevented by

- A. overgrazing pasturelands
- B. removing trees, shrubs, and herbs
- C. overcropping farm fields
- D. overcropping plowed fields

Use this information to answer the following question(s).

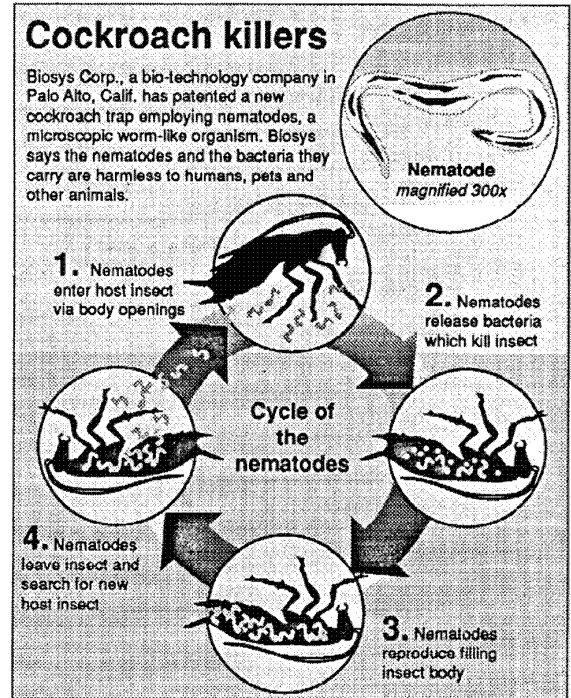
Acid rain is a serious environmental problem in large areas of Canada and the northeastern United States, including New York State. It is partly created as rain “washes out” sulfur and nitrogen pollutants from the air. Acid rain alters the fundamental chemistry of sensitive freshwater environments and results in the death of many freshwater species. The principal sources of this pollution have been identified as smokestack gases released by coal-burning facilities located mainly in the midwestern United States.

“Unpolluted” rain normally has a pH of 5.6. Acid rain, however, has been measured at pH values as low as 1.5, which is more than 10,000 times more acidic than normal. Commonly, acid rain has a pH range of 3 to 5, which changes the acidity level of the freshwater environment into which it falls. The effect of the acid rain depends upon the environment’s ability to neutralize it. Evidence is accumulating, however, that many environments are adversely affected by the acid rain. As a result, the living things within lakes and streams that cannot tolerate the increasing acidity gradually die off.

There are many environmental problems that result from acid rain. Most of these problems center around the food web upon which all living things, including humans, depend. If freshwater plants, animals, and protists are destroyed by the acid conditions, then terrestrial predators and scavengers dependent on these organisms for food are forced to migrate or starve. These changes in a food web can eventually affect the human level of food consumption.

9. Which food chain includes organisms that would most immediately be affected by acid rain?
- A. grass → rabbit → fox → decay bacteria
  - B. algae → aquatic insect → trout → otter
  - C. shrub → mouse → snake → hawk
  - D. tree → caterpillar → bird → lynx

11. The diagram below shows how an insect trap is used to kill cockroaches.

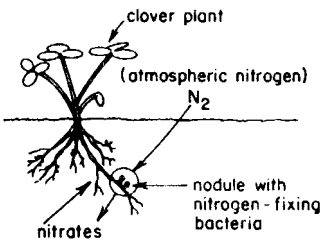


This insect trap is an example of

10. Which pollutant is produced by the burning of coal and oil and can result in the production of acid rain?
- A. phosphate
  - B. sulfur dioxide
  - C. lead
  - D. hydrogen chloride

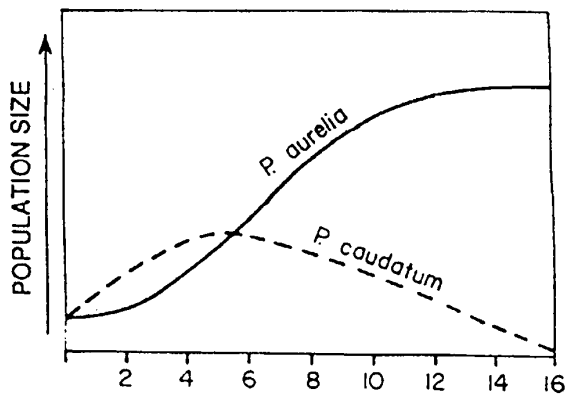
- A. exploitation of organisms
- B. biological control
- C. herbicide use
- D. competition between species

12. Which symbiotic relationship is illustrated by the diagram?



- A. parasitism                      B. commensalism  
C. mutualism                        D. saprophytism

13. The graph here shows the population growth curves of *Paramecium aurelia* and *Paramecium caudatum* cultures after they were mixed together. One influence that could correctly be drawn from the graph is that *Paramecium aurelia* and *Paramecium caudatum* cannot successfully

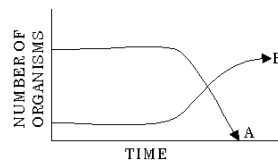


- A. utilize oxygen for anaerobic respiration  
B. utilize the same wavelengths of light  
C. live in marine environments  
D. occupy the same niche

14. The graph here shows the population growth curves of *Paramecium aurelia* and *Paramecium caudatum* cultures after they were mixed together. This graph can be used to illustrate the principle of

- A. mutualism                        B. competition  
C. assimilation                      D. saprophytism

15. The graph shows the changes in two populations of herbivores in a grassy field. A possible reason for these changes is that



- A. all of the plant populations in this habitat decreased  
B. population B competed more successfully for food than population A did  
C. population A produced more offspring than population B did  
D. population A consumed the members of population B

16. Base your answer(s) to the following question(s) on the key below and on your knowledge of biology.

**Key**

0 = organism is not affected  
 + = organism is benefited  
 - = organism is adversely affected

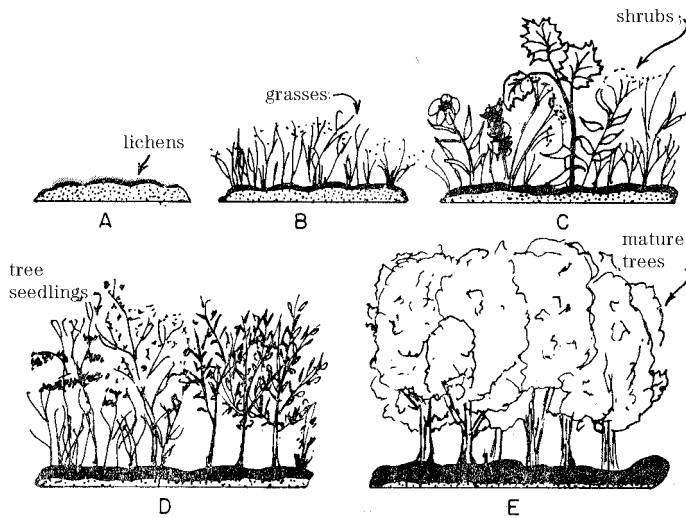
A small shrimp feeds on parasites on the skin of a marine fish. Which set of symbols represents the relationship between the fish and the other two organisms?

- A. + with shrimp; - with parasite
- B. - with shrimp; 0 with parasite
- C. 0 with shrimp; - with parasite
- D. + with shrimp; 0 with parasite

17. Which set of symbols indicates a relationship that is *least* likely to exist in nature?

- A. +, 0
- B. -, -
- C. +, +
- D. +, -

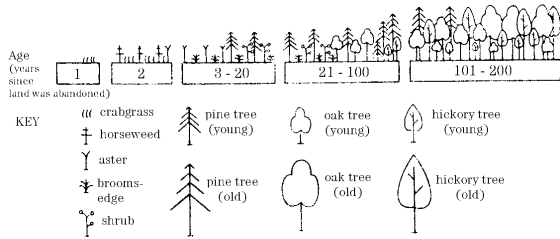
18. The sequence *A* through *E* represents stages of ecological succession in a given area.



Which diagram shows the greatest number of pioneer organisms?

- A. *A*
- B. *E*
- C. *C*
- D. *D*

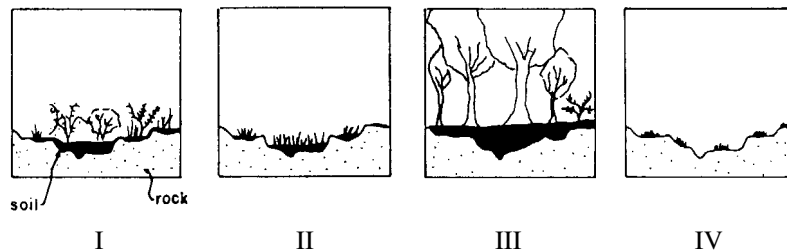
19. The diagram shows the types of plants which grew in a farm field in the 200 years after it was abandoned. Different types of plants appeared and disappeared during this time.



Which principle is illustrated by the diagrams?

- A. vegetative propagation
- B. ecological succession
- C. overcropping
- D. exploitation

20. The diagrams shown of four stages of succession and on your knowledge of biology. [The diagrams do not represent stages in their proper order.]



Which community would be predominantly pioneer organisms?

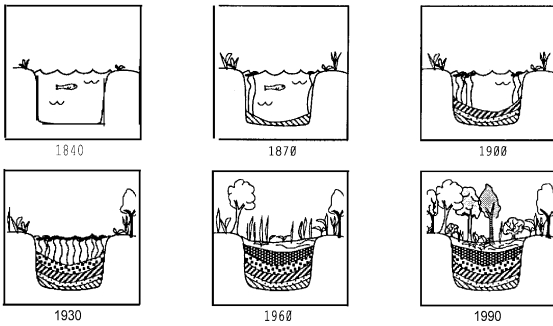
- A. I
- B. II
- C. III
- D. IV

21. Which represents a typical sequence of successional stages in New York State?

- A. II, I, IV, III
- B. II, III, IV, I
- C. IV, II, I, III
- D. IV, I, II, III



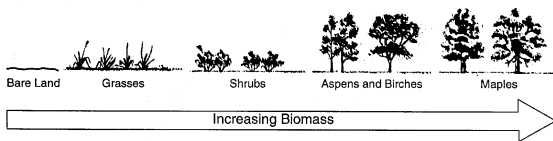
22. Answer the following question(s) based on the sequence of diagrams shown and on your knowledge of biology.



The natural increase in the amount of vegetation from 1840 to 1930 is related to the

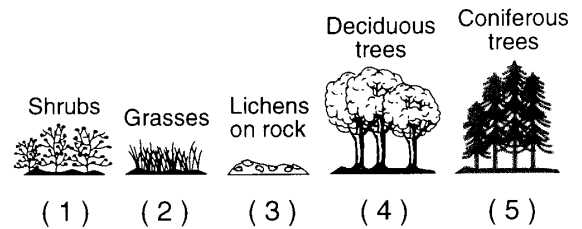
- A. decreasing water depth
- B. increasing amount of sunlight
- C. presence of bottom-feeding fish
- D. use of the pond for fishing

23. The diagram represents succession in a temperate deciduous biome. Which statement best describes what would happen if a fire destroyed all the organisms in the climax stage?



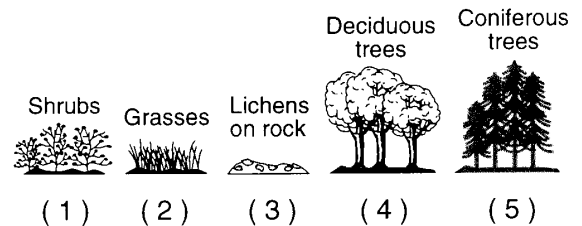
- A. Drought-resistant shrubs and succulent plants would replace the climax stage.
- B. The shrub stage would become extinct.
- C. Succession would begin again, leading to another climax stage.
- D. Grasses would become dominant plants in a new climax stage.

24. Which sequence represents a correct order of succession that would involve these stages?



- A. 2 → 3 → 1 → 4 → 5
- B. 2 → 1 → 3 → 5 → 4
- C. 3 → 1 → 2 → 4 → 5
- D. 3 → 2 → 1 → 5 → 4

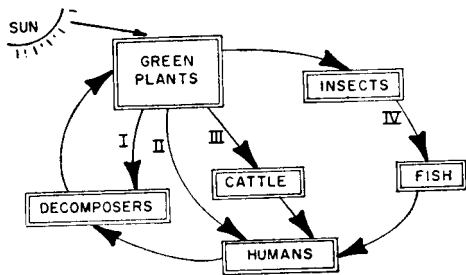
- 25.



In which stage would minerals be added during the formation of soil by a community composed primarily of pioneer organisms?

- A. 1
- B. 2
- C. 3
- D. 5

26. The diagram shown represents four possible pathways for the transfer of energy stored by green plants.

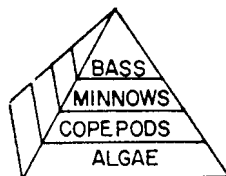


The cattle in the diagram represent

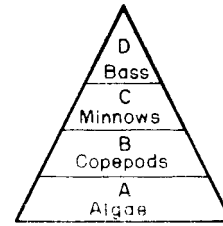
- A. primary consumers
- B. secondary consumers
- C. producers
- D. autotrophs

27. Which level of this food pyramid represents the largest biomass?

- A. bass
- B. minnows
- C. copepods
- D. algae



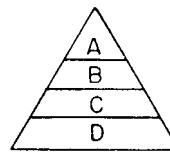
28. The diagram shown represents a food pyramid of organisms inhabiting a pond.



At which level of the food pyramid is the *smallest* percentage of total stored energy found?

- A. A
- B. B
- C. C
- D. D

29. Which statement best describes an ecological principle represented by the pyramid?

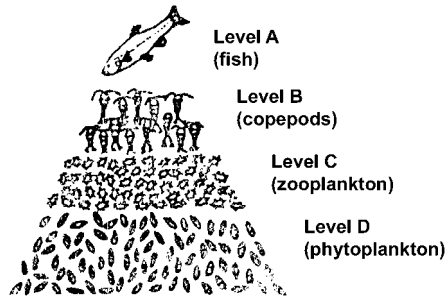


- A. The biomass of level *D* is less than the biomass of level *B*.
- B. Biomass is decreased with each successive feeding level from *D* to *A*.
- C. The biomass is identical in each level of the pyramid.
- D. Energy to sustain the pyramid enters level *A* first and level *D* last.

30. Which pyramid level contains the greatest amount of stored energy?

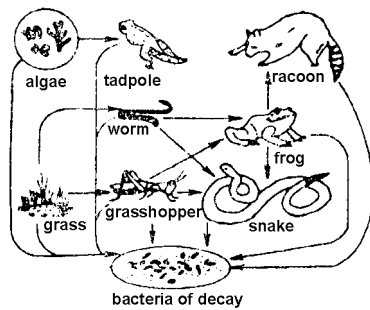
- A. A
- B. B
- C. C
- D. D

31. Primary consumers are found at level



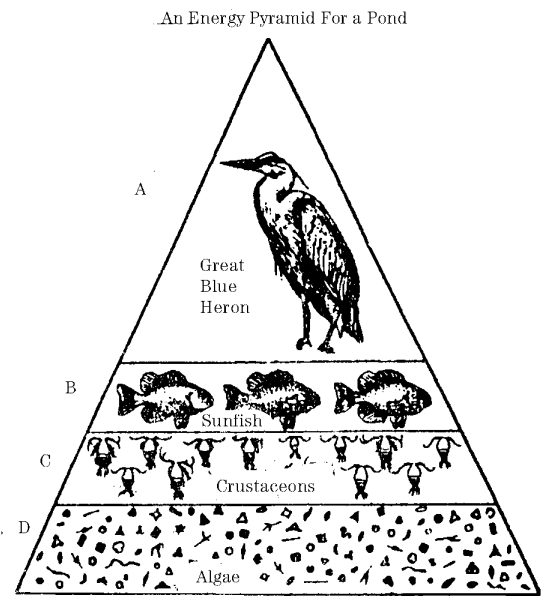
- A. A      B. B      C. C      D. D

32. Decomposers are represented by the



- A. algae                      B. tadpole  
C. bacteria of decay      D. snake

33. Which level of the pyramid contains autotrophic organisms?



- A. A      B. B      C. C      D. D

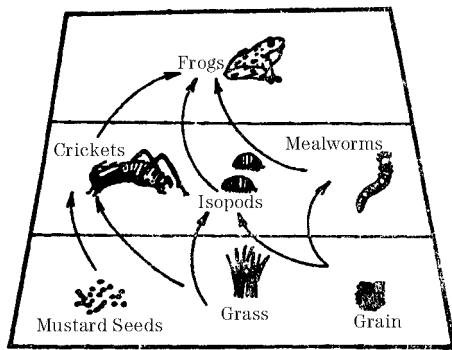
34. Which organism is a primary consumer?

- A. alga                      B. crustacean  
C. sunfish                  D. great blue heron

35. Which level of the pyramid contains the greatest biomass?

- A. A      B. B      C. C      D. D

36. Which sequence of organisms represents a food chain?



- A. mealworms → isopods → grass
- B. grain → frogs → mealworms
- C. crickets → isopods → frogs
- D. mustard seeds → crickets → frogs

37.

Animals in a Community	Food Consumed				
	Shrews	Grass-hoppers	Hawk	Snakes	Plants
Shrews		X			
Hawks	X			X	
Grass-hoppers					X
Spiders		X			
Snakes	X				

According to the information in the chart, shrews are

- A. producers
- B. carnivores
- C. herbivores
- D. omnivores

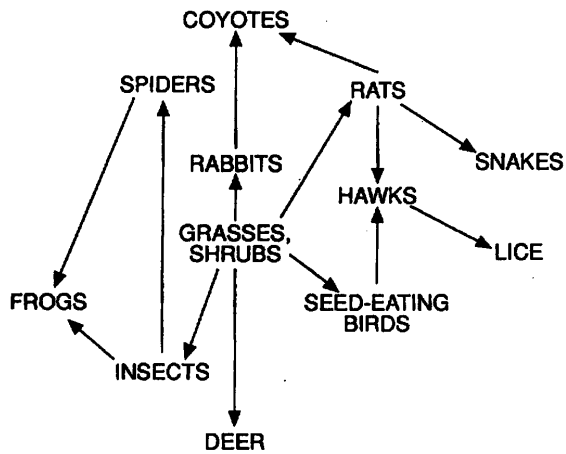
38. Which organisms would be considered primary consumers?

- A. snakes
- B. hawks
- C. spiders
- D. grasshoppers

39. Which organisms in this community compete for the same food supply?

- A. snakes and hawks
- B. spiders and snakes
- C. shrews and snakes
- D. grasshoppers and spiders

40. Which organisms would contain the greatest amount of available energy?



- A. rabbits and deer
- B. grasses and shrubs
- C. lice
- D. hawks

41.

<i>A</i>	Characteristics	Climax Flora	Climax Fauna
<i>B</i>	Long, severe winters	<i>D</i>	Moose, Black Bear
Tropical Rain Forest	Heavy Rainfall	Broadleaf plants	<i>E</i>
Desert	<i>C</i>	Succulent plants	Lizards

Which heading belongs in box *A* ?

- A. Land Biome                      B. Aquatic Ecosystem                      C. The Biosphere                      D. Succession Stage

42. Which characteristic belongs in box *C* ?

- A. extreme daily temperature fluctuations                      B. constant rainfall  
 C. seasonal animal migrations                      D. strong prevailing winds

43. Which organisms could function as pioneer organisms on bare rock?

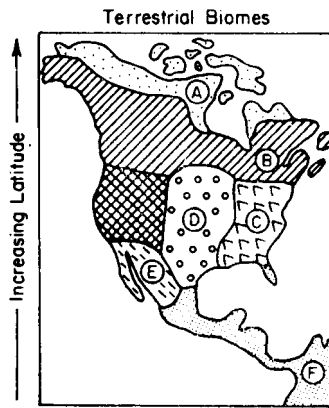
- A. scavengers                      B. parasites  
 C. lichens                      D. shrubs

44. Which biome is characterized by warm temperatures, an abundance of snakes, monkeys, and large cats, and over 80 inches of annual rain fall evenly distributed with no well-defined dry season?

- A. taiga  
 B. tundra  
 C. tropical rain forest  
 D. temperate deciduous forest

45. Which biome is characterized by extreme daily temperature fluctuations and sparse rainfall?

- A. *E*    B. *B*  
 C. *F*    D. *D*



46. Grazing animals such as the pronghorn antelope and bison are part of the climax fauna of the biome indicated by letter

- A. *A*    B. *E*    C. *F*    D. *D*

47. Which biome has trees that shed their leaves as part of its climax flora?

- A. *A*    B. *B*    C. *C*    D. *D*

48. Which biome is coniferous and is inhabited by moose and black bear?

- A. *A*    B. *B*    C. *F*    D. *D*

49. Which information should be included in box *B*?

Land Biome	Climatic Conditions	Climax Flora	Climax Fauna
<i>A</i>	Heavy rainfall; constant warmth	Broad-leafed trees	Snakes, monkeys
Desert	<i>B</i>	Succulent plants	Lizards, kangaroo rats
Taiga	Long, severe winters; thawing of subsoil in summer	<i>C</i>	Moose, black bear

- A. extreme daily temperature fluctuations; sparse rainfall
- B. constant rainfall; high temperatures
- C. strong prevailing winds, small variations in temperature
- D. permanently frozen subsoil; no precipitation

50. Which information should be included in box *C*?

- A. mosses
- B. grasses
- C. conifers
- D. deciduous trees

51. Letter *A* most likely represents

Large Climatic Areas	Column 1	Column 2
Desert	Cacti	Rats and snakes
<i>A</i>	Deciduous trees	Deer and foxes
Taiga	<i>B</i>	Moose and lynx
Tundra	Lichens	<i>C</i>

- A. a biosphere
- B. an ecosystem
- C. a biome
- D. a community

52. Select the biome, chosen from the list below, that best fits the presence of lichens and mosses and that the subsoil permanently is frozen.

- A. Tundra
- B. Grassland
- C. Desert
- D. Tropical forest

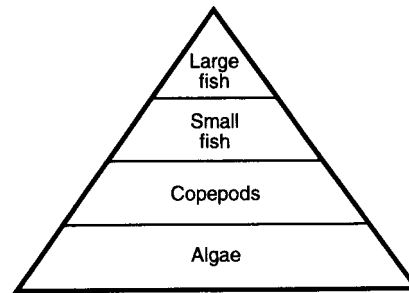


53. Letter *C* most likely represents

Large Climatic Areas	Column 1	Column 2
Desert	Cacti	Rats and snakes
A	Deciduous trees	Deer and foxes
Taiga	<i>B</i>	Moose and lynx
Tundra	Lichens	<i>C</i>

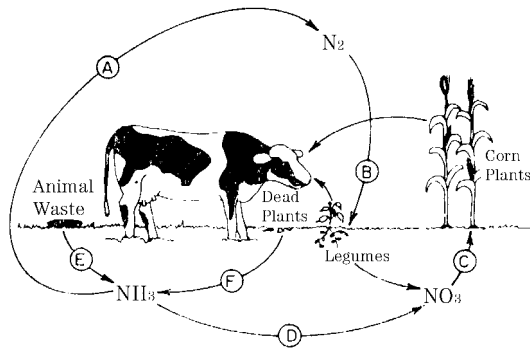
- A. squirrels and deer
- B. antelope and bison
- C. monkeys and leopards
- D. caribou and snowy owls

54. The diagram represents a pyramid of biomass in an aquatic environment. Which statement best explains why mass decreases from one level to the next in this pyramid?



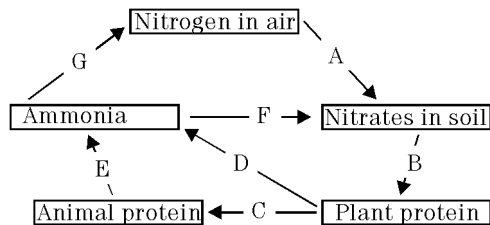
- A. More organisms die at higher levels than at lower levels, resulting in less mass at higher levels.
- B. When organisms die at higher levels, their remains sink to lower levels, increasing the mass at lower levels.
- C. Energy is lost to the environment at each level, so less mass can be supported at succeeding higher levels.
- D. Organisms decay at each level, and thus less mass can be supported at succeeding higher levels.

55. Pictured here is a nitrogen cycle. The action of decomposers is represented by arrows



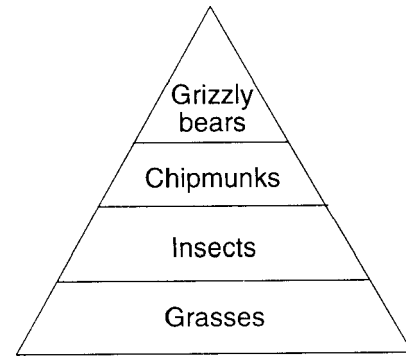
- A. A and B                      B. E and F  
C. C and D                      D. D and F

56. Arrows A through G represent processes carried out by various organisms. Which arrows represents the processes carried out by bacteria of decay?



- A. A and B                      B. B and C  
C. C and D                      D. D and E

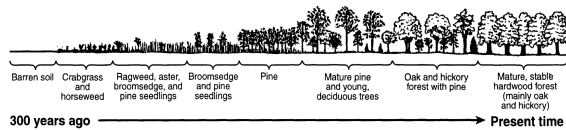
57. The accompanying pyramid illustrates some feeding relationships in alpine meadows of Yellowstone National Park.



Which statement is best supported by the information shown in the pyramid?

- A. Chipmunks and insects can occupy the same niche.  
B. As the number of bears in this community increases, the number of chipmunks will increase.  
C. Insects are classified as omnivores in alpine meadow communities.  
D. Biomass decreases as energy is transferred from one level to another.

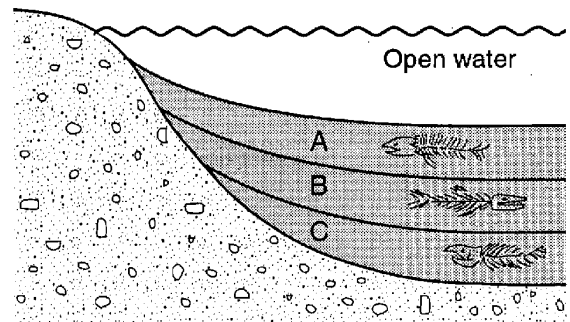
58. Base your answer(s) to the following question(s) on the diagram below, which shows the sequence of plant communities that have occupied land that was left barren 300 years ago, and on your knowledge of biology.



Dominant plant species in the climax community include

- A. pine trees                      B. hickory trees  
C. mosses                          D. lichens

59. The diagram shown illustrates the distribution of fossils in undisturbed layers of silt at the bottom of the ocean. Which inference can correctly be made from the diagram?



- A. The fossils in layer C are older than those in layer A.  
B. The fossils in layer B are older than those in layer C.  
C. The fossils in layer A are older than those in layer C.  
D. The fossils in layer A are older than those in layer B.
60. African elephant tusks consist of high-quality ivory. In recent years, the elephant population in certain African wildlife preserves has decreased. This decrease is most likely due to

- A. air pollution  
B. human exploitation  
C. biocide use  
D. importation of Japanese beetles

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- |         |   |         |   |
|---------|---|---------|---|
| 1.      |   | 21.     |   |
| Answer: | D | Answer: | C |
| 2.      |   | 22.     |   |
| Answer: | D | Answer: | A |
| 3.      |   | 23.     |   |
| Answer: | C | Answer: | C |
| 4.      |   | 24.     |   |
| Answer: | A | Answer: | D |
| 5.      |   | 25.     |   |
| Answer: | D | Answer: | C |
| 6.      |   | 26.     |   |
| Answer: | D | Answer: | A |
| 7.      |   | 27.     |   |
| Answer: | B | Answer: | D |
| 8.      |   | 28.     |   |
| Answer: | D | Answer: | D |
| 9.      |   | 29.     |   |
| Answer: | B | Answer: | B |
| 10.     |   | 30.     |   |
| Answer: | B | Answer: | D |
| 11.     |   | 31.     |   |
| Answer: | B | Answer: | C |
| 12.     |   | 32.     |   |
| Answer: | C | Answer: | C |
| 13.     |   | 33.     |   |
| Answer: | D | Answer: | D |
| 14.     |   | 34.     |   |
| Answer: | B | Answer: | B |
| 15.     |   | 35.     |   |
| Answer: | B | Answer: | D |
| 16.     |   | 36.     |   |
| Answer: | A | Answer: | D |
| 17.     |   | 37.     |   |
| Answer: | B | Answer: | B |
| 18.     |   | 38.     |   |
| Answer: | A | Answer: | D |
| 19.     |   | 39.     |   |
| Answer: | B | Answer: | A |
| 20.     |   | 40.     |   |
| Answer: | D | Answer: | B |

- 41.  
Answer: A
- 42.  
Answer: A
- 43.  
Answer: C
- 44.  
Answer: C
- 45.  
Answer: A
- 46.  
Answer: D
- 47.  
Answer: C
- 48.  
Answer: B
- 49.  
Answer: A
- 50.  
Answer: C
- 51.  
Answer: C
- 52.  
Answer: A
- 53.  
Answer: D
- 54.  
Answer: C
- 55.  
Answer: B
- 56.  
Answer: D
- 57.  
Answer: D
- 58.  
Answer: B
- 59.  
Answer: A
- 60.  
Answer: B