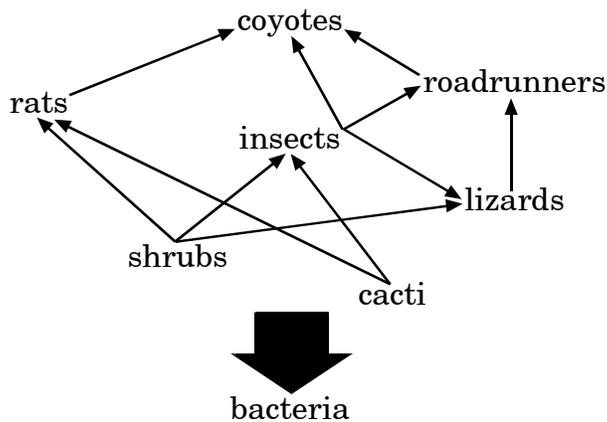


Use this diagram of a food web to answer questions 1 through 5.



- In which biome is this food web **most likely** to be found?
  - forest
  - desert
  - grassland
  - urban
- What is the function of bacteria in this food web?
  - decomposers
  - producers
  - primary consumers
  - secondary consumers
- If these organisms were arranged in a food pyramid, which organism would have the **least** amount of total energy available?
  - coyote
  - insect
  - lizard
  - shrub
- Which population would increase **most** if the insects were eliminated?
  - decomposers
  - producers
  - primary consumers
  - secondary consumers
- Which of the following populations begins the flow of energy through the food web?
  - coyotes
  - insects
  - lizards
  - shrubs

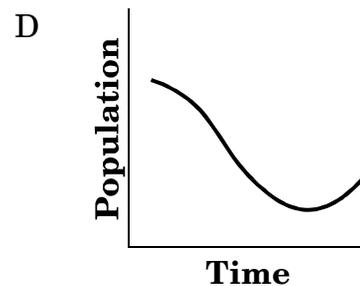
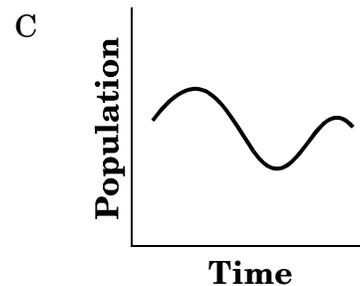
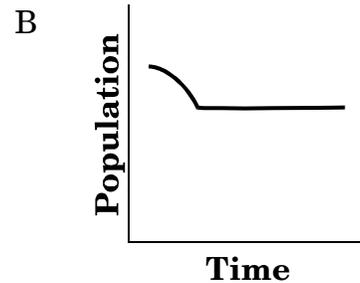
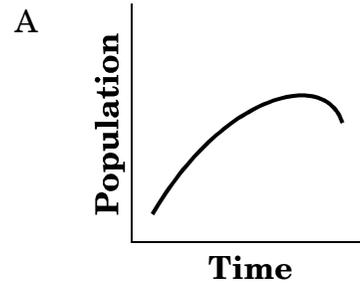
6. A community in which barn owls and snakes consume only mice is being observed. If the number of snakes increases, which of the following is **most likely** to happen first?

- A The barn owl population will increase.
- B The mouse population will decrease.
- C The barn owl population will decrease.
- D The mouse population will remain the same.

7. One bird species that feeds on large seeds nests in the same tree as a bird that feeds on small seeds. How are the birds able to coexist?

- A They occupy different ecosystems.
- B They occupy different niches.
- C They occupy different communities.
- D They occupy different habitats.

8. Harvested almost to extinction, a sea mammal received “endangered species” protection several years ago. Which graph **most accurately** represents its history and the desired outcome from protection?



9. Deer share the open plains with other grazing animals and predators. Which of the following would lead to a decrease in the deer population?
- A a reduction in the predator population
  - B an increase in the number of other grazing animals
  - C a reduction in the grazing animal population
  - D an increase in restrictions on the hunting of deer
10. What biome is known for its large herbivores, few trees, and fire-dependent ecology?
- A desert
  - B grasslands
  - C tropical rain forest
  - D tundra
11. Which of the following explains why producers are always found at the beginning of a food chain?
- A Consumers are eaten by a variety of producers.
  - B Producers convert light energy into chemical energy.
  - C Producers are larger than consumers.
  - D Producers are found in fewer numbers than consumers.
12. Which interaction **best** illustrates the concept of mutualism?
- A aphids feeding on rose leaves
  - B nitrogen-fixing bacteria in root nodules of legumes
  - C infectious bacteria living on the blood of a host
  - D wolves and arctic foxes feeding on snowshoe rabbits
13. In the carbon cycle, carbon is transferred from animals to plants by which of the following?
- A carbon dioxide
  - B oxygen
  - C sugars
  - D water
14. By what process is CO<sub>2</sub> removed from the atmosphere?
- A combustion
  - B decomposition
  - C respiration
  - D photosynthesis

15. Which of the following statements about the nitrogen cycle is true?
- A Although nitrogen is the most abundant atmospheric gas, plants cannot use it from the air.
  - B Adding man-made fertilizers to farm fields will take needed nitrogen from the cycle.
  - C The occurrence of lightning takes extra nitrogen molecules from the atmosphere and the cycle.
  - D Bacteria located in the soil trap excess atmospheric oxygen and help it enter plant roots.
16. Which of the following is a sequence found in the nitrogen cycle?
- A nitrogen in the soil→  
air→plants→animals
  - B nitrogen in the soil→  
animals→plants→fungi
  - C nitrogen in the air→  
plants→animals→bacteria
  - D nitrogen in the air→  
bacteria→plants→animals
17. When deforestation occurs in an area, what immediate effect does this have on the water cycle?
- A More precipitation is formed.
  - B There is less runoff water.
  - C More water is returned to the atmosphere.
  - D Less water is returned to the atmosphere.
18. If elements are to be recycled in nature, which organisms must be present?
- A decomposers
  - B predators
  - C herbivores
  - D parasites
19. Producers are single and multicellular organisms, such as algae and flowering plants, that make their own food. How do these organisms produce their own food?
- A They fix nitrogen from the atmosphere.
  - B They consume other producers.
  - C They exchange RNA with other organisms.
  - D They convert sunlight into chemical energy.

20. In general, which trophic level has the **most** energy available to it?
- A producer
  - B primary consumer
  - C secondary consumer
  - D tertiary consumer
21. Which of the following is an example of ecological succession?
- A spring followed by summer
  - B tadpole becoming a frog
  - C meadow replacing a pond
  - D predators eating prey
22. The correct order of stages in the primary succession of a dry land environment is illustrated by which of the following?
- A bare soil, shrubs, hardwoods, pines
  - B shrubs, mosses, pines, grasses
  - C rock, grasses, hardwoods, shrubs
  - D rock, lichen, mosses, grasses
23. What is the **main** suspected environmental problem associated with the burning of fossil fuels?
- A depletion of fresh water
  - B depletion of ozone
  - C global cooling
  - D global warming
24. Which of the following global concerns is indirectly responsible for all of the others?
- A waste disposal
  - B resource depletion
  - C overpopulation
  - D poor sanitation
25. Which statement describes why pesticides are said to “move up the food chain”?
- A Pesticides have a greater effect on larger animals than on insects.
  - B Top predators often accumulate the pesticides contained in the bodies of their prey.
  - C Birds and predatory mammals are not affected by pesticides.
  - D Pesticides kill insects and other target pests before they can absorb the poison.

26. Why is biological control of pests considered to be better than chemical control?
- A It is less expensive.
  - B It is more expensive.
  - C It will not kill beneficial organisms.
  - D It is easier to do.
27. An increase in pesticide use has resulted in a decrease in the local bat population. Which of the following is the **best** explanation for the decreased bat population?
- A Bat food supply decreased.
  - B Infection destroyed most of the bat population.
  - C Many bats moved into the area.
  - D Bat food supply increased.
28. The concentration of chemical food contaminants is higher in birds of prey than in many of the individual organisms that they eat. Which of the following statements **best** explains the reason for the higher concentration of food contaminants in birds of prey?
- A Birds of prey store more of the food they eat.
  - B Birds of prey catch animals with chemical contaminants more easily.
  - C Only birds of prey store chemical contaminants.
  - D Chemical contaminants are stored and magnified in organisms higher up the food chain.

### **End of Goal 4 Sample Items**

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## Answers to EOC Biology Sample Items

### Goal 4

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**1. Objective 4.01**

Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.

**Thinking Skill:** Evaluating

**Correct Answer:** B

**2. Objective 4.02**

Analyze the cycling of matter: water, carbon, and nitrogen in systems.

**Thinking Skill:** Applying

**Correct Answer:** A

**3. Objective 4.01**

Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.

**Thinking Skill:** Analyzing

**Correct Answer:** A

**4. Objective 4.01**

Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.

**Thinking Skill:** Evaluating

**Correct Answer:** B

**5. Objective 4.02**

Analyze the cycling of matter: water, carbon, and nitrogen in systems.

**Thinking Skill:** Applying

**Correct Answer:** D

**6. Objective 4.01**

Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.

**Thinking Skill:** Analyzing

**Correct Answer:** B

**7. Objective 4.01**

Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.

**Thinking Skill:** Analyzing

**Correct Answer:** B

**8. Objective 4.01**

Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.

**Thinking Skill:** Analyzing

**Correct Answer:** D

## Answers to EOC Biology Sample Items

### Goal 4

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- 9. Objective 4.01**  
Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.  
**Thinking Skill:** Applying                      **Correct Answer:** B
- 10. Objective 4.01**  
Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 11. Objective 4.01**  
Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 12. Objective 4.01**  
Identify the interrelationships among organisms, populations, communities, ecosystems, and biomes.  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 13. Objective 4.02**  
Analyze the cycling of matter: water, carbon, and nitrogen in systems.  
**Thinking Skill:** Knowledge                      **Correct Answer:** A
- 14. Objective 4.02**  
Analyze the cycling of matter: water, carbon, and nitrogen in systems.  
**Thinking Skill:** Applying                      **Correct Answer:** D
- 15. Objective 4.02**  
Analyze the cycling of matter: water, carbon, and nitrogen in systems.  
**Thinking Skill:** Knowledge                      **Correct Answer:** A
- 16. Objective 4.02**  
Analyze the cycling of matter: water, carbon, and nitrogen in systems.  
**Thinking Skill:** Organizing                      **Correct Answer:** D
- 17. Objective 4.02**  
Analyze the cycling of matter: water, carbon, and nitrogen in systems.  
**Thinking Skill:** Evaluating                      **Correct Answer:** D

## Answers to EOC Biology Sample Items

### Goal 4

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- 18. Objective 4.03**  
Explain the flow of energy through ecosystems.  
**Thinking Skill:** Applying                      **Correct Answer:** A
- 19. Objective 4.03**  
Explain the flow of energy through ecosystems.  
**Thinking Skill:** Analyzing                      **Correct Answer:** D
- 20. Objective 4.03**  
Explain the flow of energy through ecosystems.  
**Thinking Skill:** Organizing                      **Correct Answer:** A
- 21. Objective 4.04**  
Assess and describe successional changes in ecosystems.  
**Thinking Skill:** Evaluating                      **Correct Answer:** C
- 22. Objective 4.04**  
Assess and describe successional changes in ecosystems.  
**Thinking Skill:** Organizing                      **Correct Answer:** D
- 23. Objective 4.05**  
Assess and explain human activities that influence and modify the environment:  
Global warming. Human population growth. Pesticide use.  
**Thinking Skill:** Analyzing                      **Correct Answer:** D
- 24. Objective 4.05**  
Assess and explain human activities that influence and modify the environment:  
Global warming. Human population growth. Pesticide use.  
**Thinking Skill:** Analyzing                      **Correct Answer:** C
- 25. Objective 4.05**  
Assess and explain human activities that influence and modify the environment:  
Global warming. Human population growth. Pesticide use.  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 26. Objective 4.05**  
Assess and explain human activities that influence and modify the environment:  
Global warming. Human population growth. Pesticide use.  
**Thinking Skill:** Knowledge                      **Correct Answer:** C
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## Answers to EOC Biology Sample Items

### Goal 4

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**27. Objective 4.05**

Assess and explain human activities that influence and modify the environment:  
Global warming. Human population growth. Pesticide use.

**Thinking Skill:** Analyzing                      **Correct Answer:** A

**28. Objective 4.05**

Assess and explain human activities that influence and modify the environment:  
Global warming. Human population growth. Pesticide use.

**Thinking Skill:** Applying                      **Correct Answer:** D