

Practice Test

Part A

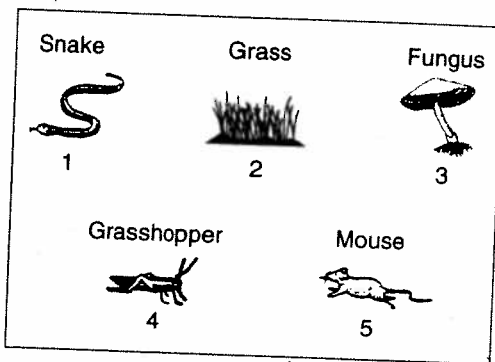
Answer all questions in this part. [7]

Directions (1–7): For each statement or question, circle the number of the word or expression that, of those given, best completes the statement or answers the question.

1 The size of a mouse population in a natural ecosystem tends to remain relatively constant due to

- (1) the carrying capacity of the environment
- (2) the lack of natural predators
- (3) cycling of energy
- (4) increased numbers of decomposers

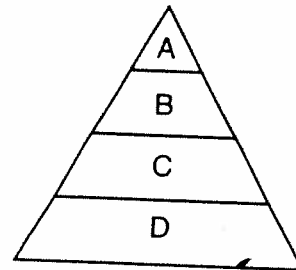
2 Organisms from a particular ecosystem are shown below.



Which statement concerning an organism in this ecosystem is correct?

- (1) Organism 2 is heterotrophic.
 - (2) Organism 3 helps recycle materials.
 - (3) Organism 4 obtains all of its nutrients from an abiotic source.
 - (4) Organism 5 must obtain its energy from Organism 1.
- 3 In a certain ecosystem, rattlesnakes are predators of prairie dogs. If the prairie dog population started to increase, how would the ecosystem most likely regain stability?
- (1) The rattlesnake population would start to decrease.
 - (2) The rattlesnake population would start to increase.
 - (3) The prairie dog population would increase rapidly.
 - (4) The prairie dog population would begin to prey on the rattlesnakes.

4 The diagram below represents a pyramid of energy in an ecosystem.



Which level in the pyramid would most likely contain members of the plant kingdom?

- (1) A
- (2) B
- (3) C
- (4) D

5 The rapid destruction of tropical rain forests may be harmful because

- (1) removing trees will prevent scientists from studying ecological succession.
- (2) genetic material that may be useful for future medical discoveries may be lost
- (3) energy cycling in the environment will stop
- (4) the removal of trees will limit the construction of factories that will pollute the environment

6 One biotic factor that limits the carrying capacity of any habitat is the

- (1) availability of water
- (2) level of atmospheric oxygen
- (3) activity of decomposers
- (4) amount of soil erosion

7 A greater stability of the biosphere would most likely result from

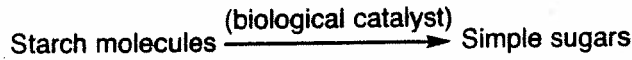
- (1) decreased finite resources
- (2) increased deforestation
- (3) increased biodiversity
- (4) decreased consumer populations

Part B

Answer all questions in this part. [9]

Directions (8–16): For multiple-choice questions, circle the number of the word or expression that, of those given, best completes the statement or answers the question. For short-answer questions, record your answers in the spaces provided.

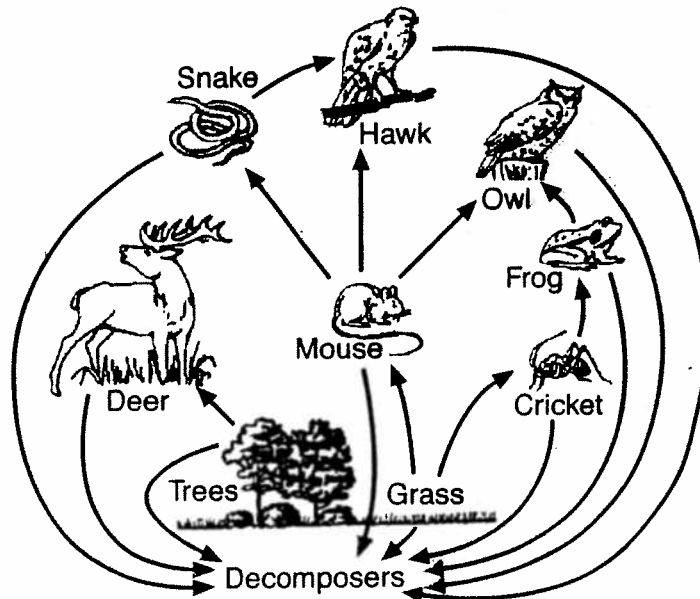
8 A word equation is shown below.



The reaction is most directly involved in the process of

- (1) reproduction
- (2) protein synthesis
- (3) replication
- (4) heterotrophic nutrition

The diagram below represents a food web.



9 Select and record the name of *one* species in the food web, and explain how its removal could affect *one* of the other species in the food web. [1]

Base your answers to questions 10 through 11 on the information and table below and your knowledge of biology.

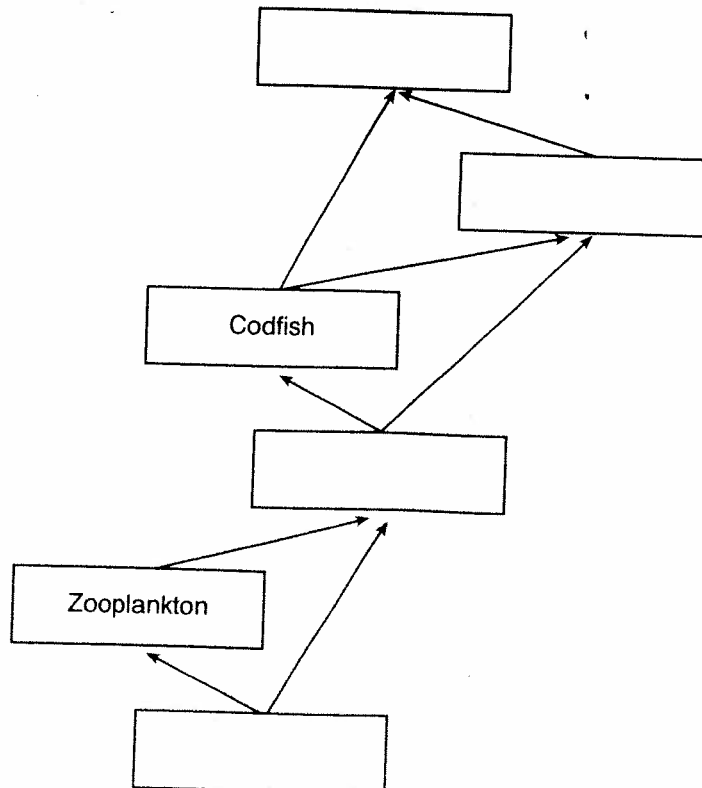
The variety of organisms known as plankton contributes to the unique nutritional relationships in ocean ecosystems. Phytoplankton include algae and other floating organisms that perform photosynthesis. Plankton that cannot produce food are known as zooplankton. Some nutritional relationships involving these organisms and several others are shown in the table below.

Nutritional Relationships in a North Atlantic Ocean Community

Animals in Community	Food Eaten by Animals in Community				
	Codfish	Phytoplankton	Small Fish	Squid	Zooplankton
codfish			X		
sharks	X			X	
small fish		X			X
squid	X		X		
zooplankton		X			

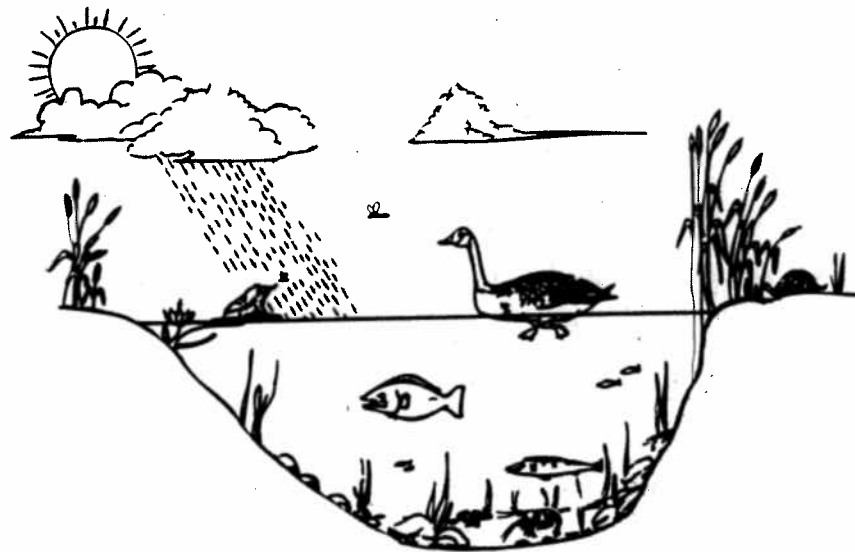
10 Humans are currently overfishing codfish in the North Atlantic. Explain why this could endanger *both* the shark population and the squid population in this community. [1]

11 Complete the food web below by placing the names of the organisms in the correct locations. [1]



- 12 A farmer has been growing only corn in his fields for several years. Each year the corn stalks were cut off near the ground and processed to be used as food for cattle. The farmer observed that with each passing year, corn production in his fields decreased. Explain why removing the dead corn stalks reduced corn production in these fields. [1]
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Base your answers to questions 13 through 16 on the lake ecosystem represented below and your knowledge of biology.



- 13 Identify one organism represented in the diagram that provides the vital link for the transfer of energy from the Sun to the other organisms in the ecosystem. [1]
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- 14 Identify one predator/prey relationship that may occur in this ecosystem. [1]

Predator: _____ Prey: _____

- 15 State one piece of evidence from the diagram that indicates that light penetrates to the bottom of the lake. [1]
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- 16 Identify one type of organism that is not visible in the diagram but *must* be present in this ecosystem to recycle the remains of dead organisms. [1]
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Part C

Answer all questions in this part. [3]

Directions (17–19): Record your answers in the spaces provided.

17 When living organisms obtain water and food from their environment, they may also take in toxic pesticides. Low concentrations of some pesticides may not kill animals, but they may damage reproductive organs and cause sterility. The data table below shows concentrations of a pesticide in tissues of organisms at different levels of a food chain.

Concentration of Pesticide in Tissues	
Organisms	Pesticide Concentration (parts per million)
producers	0.01–0.03
herbivores	0.25–1.50
carnivores	4.10–313.80

What does this information suggest to a person who is concerned about health and is deciding on whether to have a plant-rich or an animal-rich diet? Support your answer using the information provided. [1]

Base your answers to questions 18 and 19 on the information and on your knowledge of biology.

Our national parks are areas of spectacular beauty. Current laws usually prohibit activities such as hunting, fishing, logging, mining, and drilling for oil and natural gas in these areas. Congress is being asked to change these laws to permit such activities.

18 Choose *one* of the activities listed above. State *one* way that activity could harm the ecosystem. [1]

Activity: _____

Harm: _____

19 State *one* way allowing the activity you chose could benefit society. [1]
