Answer Key

Food Web, Food Chain, Energy Pyramid, Niche, Carrying Capacity Review Questions 2007-2017

1.	B	41.	<u> </u>	81.	C
2.	A	42.	D	82.	A
3.	<u> </u>	43.	D	83.	B
4.	<u> </u>	44.	A	84.	A
5.	D	45.	<u> </u>	85.	B
6.	A	46.	С	86.	B
7.	D	47.	D	87.	B
8.	D	48.	A	88.	A
9.	C	49.	<u> </u>	89.	C
10.	<u> </u>	50.	A	90.	D
11.	<u> </u>	51.	B	91.	A
12.	B	52.	В	92.	D
13.	B	53.	Α	93.	B
14.	<u>D</u>	54.	D	94.	С
15.	B	55.	С	95.	B
16.	D	56.	D	96.	С
17.	<u> </u>	57.	<u> </u>	97.	Α
18.	D	58.	В	98.	B
19.	B	59.	D	99.	D
20.	A	60.	С	100.	D
21.	<u> </u>	61.	С	101.	Α
22.	<u> </u>	62.	D	102.	D
23.	<u> </u>	63.	D	103.	B
24.	B	64.	D	104.	D
25.	<u>A</u>	65.	B	105.	D
26.	<u> </u>	66.	A	106.	С
27.	<u> </u>	67.	D	107.	C
28.	D	68.	B	108.	A
29.		69.	B	109.	B
30.	<u> </u>	70.	D	110.	A
31.	A	71.	A	111.	D
32.	A	72.	A	112.	A
33.	B	73.	B	113.	A
34.	B	74.	D	114.	A
35.	<u> </u>	75.	A	115.	C
36.	<u> </u>	76.	<u>D</u>		
37.	<u> </u>	77.	A		
38.	<u> </u>	78.	_ <u>A</u>		
39.	_ <u>A</u>	79.	<u> </u>		
40.	D	80.	<u> </u>		

 A scientist studied iguanas inhabiting a chain of small ocean islands. He discovered two species that live in different habitats and display different behaviors. His observations are listed in the table below.
 Observations of Two Species of Iguanas

Species A	Species B
spends most of its time in the ocean	spends most of its time on land
is rarely found more than 10 meters from shore	is found many meters inland from shore
eats algae	eats cactus and other land plants

Which statement best describes these two species of iguanas?

- A) Both species evolved through the process of ecological succession.
- B) Each species occupies a different niche.
- C) The two species can interbreed.
- D) Species A is a scavenger and species B is a carnivore.



11. Base your answer to the following question on the diagram below, which represents an ameba engulfing bacteria, and on your knowledge of biology.



17. The diagram below represents a food chain made up of organisms found in a field.



Which row in the chart correctly identifies characteristics that can be associated with the members of this food chain?

Row	Producer	Consumer	Autotroph	Heterotroph
(1)	corn	snake	mouse	owl
(2)	mouse	owl	snake	mouse
(3)	corn	owl	corn	snake
(4)	owl	corn	snake	corn
A) 1	B) 2	2	C) 3	D) 4

18. This food chain contains

 $Grass \rightarrow Cricket \rightarrow Frog \rightarrow Owl$

- A) 4 consumers and no producers
- B) 1 predator, 1 parasite, and 2 producers
- C) 2 carnivores and 2 herbivores
- D) 2 predators, 1 herbivore, and 1 producer
- 19. When brown tree snakes were accidentally introduced onto the island of Guam, they had no natural predators. These snakes sought out and ate many of the eggs of insect-eating birds. What probably occurred following the introduction of the brown tree snakes?
 - A) The bird population increased.
 - B) The insect population increased.
 - C) The bird population began to seek a new food source.
 - D) The insect population began to seek a new food source.
- 20. The diagram below represents a food web composed of producers, consumers, and decomposers.



Which group would represent the decomposer organisms?



21. The diagram below represents interactions that occur between some organisms in an ecosystem.



Which factor would most likely cause an increase in the number of frogs?

- A) an increase in the number of deer
- B) a decrease in the amount of grasses
- C) an increase in the number of snakes
- D) a decrease in the amount of trees
- 22. The greatest number of relationships between the organisms in an ecosystem is best shown in
 - A) a food chain
 - B) an energy pyramid
 - C) a food web
 - D) an ecological succession diagram

- 23. Which population would be most immediately affected by the removal of the lizard population?
 - A) sedges B) algae C) ants D) centipedes
- 24. Base your answer to the following question on the diagram below and on your knowledge of biology. The diagram represents part of a food web.



Which sequence of organisms represents a food chain within this food web?

- A) tadpoles \rightarrow algae \rightarrow daphnia \rightarrow back swimmers B) sedges \rightarrow ants \rightarrow frogs \rightarrow kookaburras
- $C) \ algae \rightarrow daphnia \rightarrow decayed \ material \rightarrow bacteria \qquad D) \ dragonflies \rightarrow sedges \rightarrow ants \rightarrow centipedes$
- 25. In the spring of 2010, there was a catastrophic explosion on an ocean oil drilling rig, causing millions of gallons of oil to be released into the Gulf of Mexico. Many organisms died due to the thick sludge in their habitat. However, in some organisms, such as shellfish, the oil stuck to tissues inside their shells. Which statement expresses a major concern of environmentalists about the accumulation of the oil in certain organisms in the Gulf of Mexico ecosystem?
 - A) Larger organisms eat the shellfish and more chemicals will build up in their tissues.
 - B) The shellfish will prevent other organisms from obtaining oil.
 - C) Smaller organisms will be unaffected by the chemicals.
 - D) Larger organisms will be less affected by the oil, because they can eat other organisms.

 26. One season, there was a shortage of producers in a food web. As a result, the number of deer and wolves decreased. What is the reason that both the deer and wolf populations declined? A) producers are not as important as consumers in a food web B) more consumers than producers are needed to support the food web C) organisms in this food web are interdependent D) populations tend to stay constant in a food web 	 27. The sequence that best illustrates the flow of energy through an ecosystem is A) sunlight → plant → wolf → rabbit B) plant → sunlight → rabbit → wolf C) sunlight → plant → rabbit → wolf D) wolf → rabbit → plant → sunlight
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28. Which organisms are carnivores?

- A) grass and trees
- C) deer and mountain lion

- B) mouse, rabbit, and cricket
- D) frog, snake, and hawk
- 29. The diagram below represents relationships in a community. After a pathogen reduced the population of grasshoppers, the number of mice increased, while the numbers of toads and rabbits decreased.



These changes in the community demonstrate that

- A) ecosystems are shaped by nonliving factors
- B) autotrophs convert solar energy into food
- C) grasshoppers are producers that are essential for ecosystem stability
- D) populations are linked with many others in the ecosystem
- 30. The diagram below represents a food web.



Which statement regarding organisms in this food web is correct?

- A) There would be more snakes than pocket gophers.
- B) There would be more coyotes than rabbits.
- C) There would be more insects than insect eating birds.
- D) There would be more hawks than seed eating birds.

- 31. Which sequence best represents the flow of energy through an ecosystem?
 - A) Sun \rightarrow green plants \rightarrow herbivores \rightarrow carnivores
 - B) Sun \rightarrow herbivores \rightarrow producers \rightarrow consumers
 - C) green plants \rightarrow carnivores \rightarrow consumers \rightarrow herbivores
 - $D) \ consumers \rightarrow carnivores \rightarrow herbivores \rightarrow producers$

Base your answers to questions **32** and **33** on the food web below and on your knowledge of biology.



- 32. A *decrease* in the grass population will most immediately *decrease* the available energy for the
 - A) mouse B) hawk C) snake D) frog
- 33. A manatee is a water-dwelling herbivore on the list of endangered species. If manatees were to become extinct, what would be the most likely result in the areas where they had lived?
 - A) The biodiversity of these areas would not be affected.
 - B) Certain producer organisms would become more abundant in these areas.
 - C) Other manatees would move into these areas and restore the population.
 - D) Predators in these areas would occupy higher levels on the energy pyramid.
- 34. Which process initially provides the link between an abiotic factor and the energy needs of an entire ecosystem?
 - A) respiration B) photosynthesis C) decomposition D) predation
 - C) decomposition D) predation

Base your answers to questions 35 and 36 on

the diagram below and on your knowledge of biology. The diagram represents various levels of interaction between organisms in a prairie ecosystem.



- 35. Which statement best describes a function of the molds, bacteria, and yeasts in this ecosystem?
 - A) They convert light energy into chemical energy.
 - B) They carry out a food-making process, using inorganic raw materials.
 - C) They break down dead organisms, releasing raw materials to the environment.
 - D) They act as catalysts to speed up the energy flow between organisms.
- 36. If the amount of carbon dioxide in the atmosphere were to decrease, which organism in the diagram would be one of the first affected by this change?
 - A) hawks B) wheat C) locusts D) molds

37. A food web is represented in the diagram below.



Which population in this food web would most likely be *negatively* affected by an increase in the mouse population?

A) snake B) rabbit C) wolf D) hawk

38. Some of the energy taken in by an organism is not available to other organisms in a food web. Energy that is *not* available to other organisms in a food web is energy that is

- A) stored in the remains of a dead animal
- B) lost to the environment as heat
- C) stored in eggs produced during sexual reproduction
- D) produced in muscle tissue during the growth of an organism
- 39. Which factor would have the greatest effect on the flow of energy into an ecosystem?
 - A) a large decrease in the amount of sunlight available
 - B) a large increase in the number of carnivores
 - C) a small increase in the number of decomposers
 - D) a small decrease in the amount of minerals available

40. A food web is represented below.



When water used to cool machinery is returned to a river, it raises the river water temperature.

This causes a sharp decline in small invertebrate populations. Based on the food web, a likely consequence of this change would be

- A) an increase in the number of clams
- C) an increase in the number of crabs
- B) a decrease in the number of water plants
- D) a decrease in the number of crayfish



D) *D*

45. The diagram below represents a food web.





46. The diagram below represents a food web.



Which organisms are correctly paired with their nutritional roles?

- A) hawk-decomposer; insect-eating bird-parasite B) mouse-autotroph; flower seed-heterotroph
- C) mountain lion—predator; bark beetle—herbivore D) grasshopper—carnivore; grass—autotroph

Review for Ecology Test #2





Which statement describes an interaction that helps maintain the dynamic equilibrium of this ecosystem?

- A) The frogs make energy available to this ecosystem through the process of photosynthesis.
- B) The algae directly provide food for both the rotifers and the catfish.
- C) The green-backed heron provides energy for the mosquito larvae.
- D) The catfish population helps control the populations of water boatman and water fleas.
- 48. Which level of the pyramid below is correctly paired with the type of organism that would most likely be found at that level in an ecosystem?



- A) Level A producers
- C) Level C herbivores
- B) Level *B* carnivoresD) Level *D* decomposers

49. The diagram below represents a food pyramid in an ecosystem.



The best explanation for the decrease in the amount of energy transferred to each succeeding level is that much of the energy is

- A) consumed by predators
- B) released as heat
- C) stored within inorganic materials
- D) used in photosynthesis
- 50. The flow of energy in an ecosystem is best described as energy moving in
 - A) one direction from the Sun to the producers and then to the consumers
 - B) one direction from a consumer to a producer and then to the Sun as heat and light
 - C) two directions between the producers that are present
 - D) two directions, back and forth, between the producers and the consumers
- 51. Base your answer on the energy pyramid below and on your knowledge of biology.



Letter A in the pyramid represents

- A) scavengersC) carnivores
 - B) producersD) herbivores

52. A food web is represented below.



Which organism would receive the *least* amount of transferred solar energy?

B) owls D) field mice A) grasses C) frogs 53. The diagram below represents different feeding levels in an 54. Four levels of an energy pyramid are represented below. energy pyramid 4 3 2 1 Which statement about this energy pyramid is correct? A) Organisms in level 4 receive their energy directly from the Sun. B) Organisms in level 2 are carnivores. C) Organisms in level 2 receive their energy from level 3. D) Organisms in level 1 are autotrophic 55. Which statement best describes the flow of energy and the movement of chemical compounds in an ecosystem? A) Energy flows into living organisms and remains there, The most likely explanation for showing fewer organisms at while chemical compounds are transferred from organism each feeding level going up the pyramid is that to organism. A) some energy is lost to the environment as heat B) Chemical compounds flow in one direction in a food chain B) the larger the organism, the less energy it requires and energy is produced. C) some energy is recycled within each level and remains C) Energy is transferred from organism to organism in a food there chain and chemical compounds are recycled. D) decomposers convert most of the energy into inorganic D) Energy flows out of living organisms and is lost, while compounds chemical compounds remain permanently inside organisms.

Base your answers to questions 56 and 57 on

the diagram below and on your knowledge of biology. The diagram represents a food web.



- 56. Which statement correctly describes interactions between organisms in this ecosystem?
 - A) Hawks are predators of insect-eating birds, but not of seed-eating birds.
 - B) Hawks and snakes prey on both rabbits and grasshoppers.
 - C) Rabbits and mice compete for both grasses and flower seeds.
 - D) Grasshoppers and mice compete for grasses, but not flower seeds.
- 57. What do the arrows in the diagram represent?
 - A) an increase in population
 - C) the flow of energy

- B) the evolution of organisms
- D) ecological succession

Base your answers to questions **58** through **60** on the diagram below and on your knowledge of biology, The diagram represents an energy pyramid for an ecosystem in the Australian outback.



- 58. Dingos are an introduced species in Australia that are outcompeting many native species. Which of the current environmental problems most likely resulted directly from the introduction of dingos to Australia?
 - A) vanishing of kangaroo grasses
 - C) forests overrun with koalas

- B) near extinction of wallabies
- D) increase in the kookaburra population
- 59. Which two organisms could have a predator-prey relationship?
 - A) kookaburras and gum trees
 - C) dingos and kangaroo grasses

- B) kangaroos and silky miceD) wedge-tailed eagles and wombats
- 60. Wombats are classified as herbivores because they can
 - A) get energy from the Sun
 - C) get nutrition from the grasses and sedges
- B) provide energy for the kookaburras
- D) provide nutrition for the kangaroos

61. What is the primary source of energy for all the organisms in the ecosystem represented below?



- A) photosynthesis in the producers
- B) respiration in the heterotrophs
- C) light energy from the Sun
- D) minerals from the rocks
- 62. The diagram below represents interactions between organisms in a stable ecosystem.



Which statement correctly describes organisms in this ecosystem?

- A) Organisms in level *B* obtain their energy directly from the Sun.
- B) Organisms in level *C* obtain their nutrients directly from organisms in level *D*.
- C) Organisms in level A are herbivores.
- D) Organisms in level D are heterotrophic.
- 63. The diagram below represents a typical energy pyramid.



Which level in the pyramid includes autotrophs?

A) A B) B C) C D) D



- A) energy flow B) biological evolution
- C) cellular communication D) ecological succession
- 65. A diagram frequently used in ecological studies is shown below.



This diagram can be used to represent the

- A) dependency of animal survival on physical conditions in an ecosystem
- B) loss of energy from various groups of organisms in an ecosystem
- C) competition among species in an ecosystem
- D) mechanisms that maintain homeostasis in the plants in an ecosystem
- 66. In an ecosystem, the growth and survival of organisms are dependent on the availability of the energy from the Sun. This energy is available to organisms in the ecosystem because
 - A) producers have the ability to store energy from light in organic molecules
 - B) consumers have the ability to transfer chemical energy stored in bonds to plants
 - C) all organisms in a food web have the ability to use light energy
 - D) all organisms in a food web feed on autotrophs

64. Which process is represented in the diagram below?

Base your answers to questions 67 and 68 on the diagram below, which represents a pond food web, and on your knowledge of biology.



67. Which statement best describes what will most likely happen if the amphipod population is removed from this food web?

- A) Population sizes of species at feeding levels both before and after amphipods will decrease.
- B) Population sizes of species at feeding levels both before and after amphipods will increase.
- C) Population sizes of species at feeding levels after amphipods will increase and before amphipods will decrease.
- D) Population sizes of species at feeding levels after amphipods will decrease and before amphipods will increase
- 68. Which energy pyramid most accurately shows the energy relationships between three organisms in this food web?



- 69. An ecosystem is self-sustaining as long as organisms have sufficient quantities of energy, oxygen, minerals, and water. When organisms die, some of these materials are recycled back to plants in the ecosystem primarily through the activity of
 - A) predators B) decomposers
 - C) pathogens D) parasites

Base your answers to questions **70** and **71** on the energy pyramid below and on your knowledge of biology.



70. Which level includes organisms that get their energy exclusively from a source other than the organisms in this ecosystem?

A) A B) B C) C D) D

- 71. Which level includes organisms that receive their energy from level *B*?
 - A) A B) B C) C D) D
- 72. The amounts of all the organisms present in four different aquariums are shown below. Which aquarium would be the most stable?
 - A)

Organism	Amount
aquatic plants	300 g
fish that eat plants	30 g
fish that eat fish	3 g
bacteria	.001 g

B)	Organism	Amount
	aquatic plants	.1 g
	fish that eat plants	3 g
	fish that eat fish	30 g
	bacteria	300 g

C)	Organism	Amount
	aquatic plants	.1 g
	fish that eat plants	3 g
	fish that eat fish	30 g

D)	Organism	Amount
	aquatic plants	300 g
	fish that eat plants	30 g
	fish that eat fish	3 g

73. An energy pyramid is represented below.



The energy for use by organisms in level *A* originally comes from

A)	producers	B)	the Sun
C)	level B	D)	level D

Base your answers to questions **74** and **75** on the diagram below that represents an energy pyramid in a meadow ecosystem and on your knowledge of biology.



74. Which two organisms are carnivores?

A) A and B	B) A and E
C) B and D	D) C and E

75. Which species would have the largest amount of available energy in this ecosystem?

A) A B) B C) C D) E

76. An energy pyramid is shown below.



Which graph best represents the relative energy content of the levels of this pyramid



77. A food chain is illustrated below.



The arrows represented as ~~> most likely indicate

- A) energy released into the environment as heat
- B) oxygen produced by respiration
- C) the absorption of energy that has been synthesized
- D) the transport of glucose away from the organism

- 78. Carbon dioxide makes up less than 1 percent of Earth's atmosphere, and oxygen makes up about 20 percent. These percentages are maintained most directly by
 - A) respiration and photosynthesis
 - B) the ozone shield
 - C) synthesis and digestion
 - D) energy recycling in ecosystems
- 79. Decomposers are necessary in a food chain because they
 - A) manufacture food by photosynthesis
 - B) return nutrients to the ecosystem
 - C) absorb energy from the Sun
 - D) produce organic nutrients
- 80. Which statement best describes the role of decomposers?
 - A) They convert carbon dioxide and water to glucose.
 - B) They break down organic compounds into products used by other organisms.
 - C) They release oxygen to the atmosphere.
 - D) They provide energy for the synthesis of proteins.

- 81. Many families now use compost to make the soil in their gardens more fertile. They collect vegetable scraps and yard trimmings, place them in a compost pile or special container, and let them decompose. The organisms primarily responsible for decomposing the vegetable scraps and yard trimmings are
 - A) plant parasites B) autotrophs
 - C) bacteria and fungi D) scavengers and viruses
- 82. The diagram below represents a pyramid of energy that includes both producers and consumers.



On which level is the greatest amount of available energy found?

- A) 1 B) 2 C) 3 D) 4
- 83. A food web is represented below.



Which statement best describes energy in this food web?

- A) The energy content of level *B* depends on the energy content of level *C*.
- B) The energy content of level *A* depends on energy provided from an abiotic source.
- C) The energy content of level *C* is greater than the energy content of level *A*.
- D) The energy content of level *B* is transferred to level *A*.
- 84. Which statement describes an activity of a decomposer?
 - A) A mushroom digests and absorbs nutrients from organic matter.
 - B) A sunflower uses nutrients from the soil to make proteins.
 - C) A snail scrapes algae off rocks in an aquarium.
 - D) A hawk eats and digests a mouse.

85. The diagram below represents an energy pyramid.



At each successive level from *A* to *D*, the amount of available energy

- A) increases, only
- B) decreases, only
- C) increases, then decreases
- D) remains the same
- 86. The graph below represents some changes in the number of individuals in a particular population in a stable ecosystem over a period of time.



Which statement best describes the trend shown in this graph?

- A) Ecosystem conditions will eventually cause a population to become extinct.
- B) In a stable ecosystem, the number of individuals in a population is usually maintained within a certain range.
- C) The interactions between a population and various factors in an environment are always predictable.
- D) In order for any ecosystem to maintain a balance, populations must be reduced to half their original number.
- 87. A scientist was studying a population of fish in a pond over a period of 10 years. He observed that the population increased each year for 3 years, and then remained nearly constant for the rest of the study. The best explanation for this observation is that the population had
 - A) stopped reproducing
 - B) reached carrying capacity
 - C) mutated into a different species
 - D) run out of food and migrated to a different pond

88. Base your answer to the following question on the information below and on your knowledge of biology. The graph below shows the growth of *Paramecium aurelia* in the same culture dish for 14 days.



Growth of Paramecium aurelia

In another experiment, a second species of paramecium was introduced into a culture dish with *Paramecium aurelia*. Which statement describes a possible result as the populations interact over the next 14 days?

- A) The population numbers of *Paramecium aurelia* would be lower than 250, since the new species is competing with it for resources.
- B) The population of *Paramecium aurelia* would increase above 250, since they would mate with the new species.
- C) The population of *Paramecium aurelia* would increase above 250, since the two species occupy the same niche.
- D) The population of *Paramecium aurelia* would remain at 250, since the species compete with each other for the same resources.
- 89. The Mississippi River Delta wetlands ecosystem is home to a large number of fish, birds, and other aquatic organisms. During the last century, this ecosystem has seen a decrease in wetland areas and species diversity due to land development, agriculture, and flooding. Conservation groups have been working to reconnect the Mississippi River with its flood plain and restore lost wetlands. One result of restoring wetland areas in this ecosystem would be
 - A) an increase in a biotic factors that would cause organisms to develop new adaptations
 - B) the development of an ecosystem that will prevent invasive species from settling there
 - C) an increase in the carrying capacity of the ecosystem for wetland organisms
 - D) to prevent the organisms that live in this ecosystem from competing for food and shelter
- 90. Decomposers are necessary in an ecosystem because they
 - A) produce food for plants by the process of photosynthesis
 - B) provide energy for plants by the process of decay
 - C) can rapidly reproduce and evolve
 - D) make inorganic materials available to plants

91. The graph below shows the changes in the size of a fish population over a period of time.



The dashed line on the graph represents the

- A) carrying capacity of the environment
- B) life span of the species
- C) level at which extinction is reached
- D) level of maximum biodiversity of the species

92. The graph below shows the size of a population of foxes over a period of years.



If the line did not stay around the carrying capacity, but continued to rise, which concept would this graph best illustrate?

A) environmental stability

B) genetic varietyD) overproduction

C) behavioral change93. A graph is shown below.



The graph contains information about

A)	finite resources	B) limiting factors	C) biotic factors		D) mineral availability		
94. Mi yea	llions of acres of tro ar. Which change w	opical rain forest are beir yould most likely occur o	ng destroyed each ver time if the	95.	Which type of organism ca the other organisms in an e	n obtain energy directly from cosystem?	n any of
bui	rning and clearing o	of these forests were stop	ped?		A) herbivore	B) decomposer	
A)	an increase in the a produced	amount of atmospheric p	ollution		C) producer	D) carnivore	
B)	a decrease in the se	ource of new medicines					
C)	an increase in the a atmosphere	amount of oxygen release	ed into the				
D)	a decrease in the n	number of species					

96. Base your answer to the following question on the graph below and on your knowledge of biology. The graph shows the growth of a population of rabbits in a specific ecosystem.





Over a period of time, the location of the dashed line would move from location B to location C on this graph if

- A) the birthrate of the rabbit population was equal to the death rate of the rabbit population
- B) there was a decrease in the number of rabbit predators and an increase in the availability of plants
- C) there was a decrease in the availability of minerals, water, and shelter
- D) the entire rabbit population rnigrated to a new ecosystem containing more autotrophs
- 97. Changes in a deer population are shown in the graph below.



Changes in a Deer Population

Which statement best explains section *X*?

- A) The population has reached the carrying capacity of its environment.
- B) Energy is used for interbreeding between members of different species.
- C) A predator recycles the remains of dead organisms.
- D) Competition does not occur between members of different species in the same habitat

98. The graph below shows the growth of a field mouse population in an ecosystem over time.



The dashed line indicating the carrying capacity for the mouse population is correctly shown on which graph?



99. The growth of a population is shown in the graph below.



Which letter indicates the carrying capacity of the environment for this population?



- 100A five-year study was carried out on a population of algae in a lake. The study found that the algae population was steadily decreasing in size. Over the five-year period this decrease most likely led to
 - A) a decrease in the amount of nitrogen released into the atmosphere
 - B) an increase in the amount of oxygen present in the lake
 - C) an increase in the amount of water vapor present in the atmosphere
 - D) a decrease in the amount of oxygen released into the lake
- 101 Researchers have discovered a chemical that sterilizes soil by killing all of the bacteria that are normally present. If this chemical were released in a forest ecosystem, the most likely result would be that
 - A) the food web would be disrupted because there would be little recycling of nutrients
 - B) fewer animals would suffer from disease such as cancer
 - C) there would be more energy available for insects and worms that live in the soil
 - D) the diversity of plants and animals present would increase

102. Which graph represents a population that grew and is maintained at the carrying capacity of its ecosystem?





105 Students conducting a study on an insect population placed 25 insects of the same size in a box. The amount of food, water, and shelter available to the insects was kept constant. Each month, students removed and counted the number of insects present, recorded the total, and returned the insects to the box. The graph below shows the number of insects in the box over a 12-month period.



What inference can be made regarding this insect population?

- A) All the insects in the box are the same age.
- B) The insects hibernated from January to April.
- C) The population has carnivorous members.
- D) The population reached carrying capacity by January.

106.The diagram below represents a cycle that occurs in nature.



Which phrase describes a human activity that could have a *negative* effect on this cycle?

- A) a decrease in the amount of sulfates given off by motor vehicles
- B) an increase in recycling programs for plastics and metals
- C) the continued deforestation and removal of forest resources
- D) development of programs to conserve wildlife

107.The diagram below represents a cycling of materials.



Which row in the chart below shows the substances represented by X and Y?

Row	Х	Y	
(1)	oxygen	carbon dioxide	
(2)	glucose	oxygen	
(3)	carbon dioxide	oxygen	
(4)	amino acids	carbon dioxide	

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

108. The process illustrated in the sequence below occurs constantly in the biosphere.



Which type of organism is most likely represented by X?

- A) decomposer B) producer
- C) herbivore
- D) carnivore

Base your answers to questions 109 through 111 on "the passage below which describes an ecosystem in New York State and on your knowledge of biology.

The Pine Bush ecosystem near Albany, New York, is one of the last known habitats of the nearly extinct Karner Blue butterfly. The butterfly's larvae feed on the wild green plant, lupine. The larvae are in turn consumed by predatory wasps. The four groups below represent other organisms living in this ecosystem.

	Group A	Group B	Group C	Group D
	algae mosses ferns pine trees oak trees	rabbits tent caterpillars moths	hawks moles hognosed snakes toads	soil bacteria molds mushrooms
109.	The Karner Blue larvae	belong in which group?		
110.	A) <i>A</i> Which food chain best r	B) <i>B</i> epresents information in	C) C I the passage?	D) D
	A) lupine \rightarrow Karner Blue larvae \rightarrow waspsB) wasps \rightarrow Karner Blue larvae \rightarrow lupineC) Karner Blue larvae \rightarrow lupine \rightarrow waspsD) lupine \rightarrow wasps \rightarrow Karner Blue larvae			
111.	Which group contains de	ecomposers?		
	A) <i>A</i>	B) <i>B</i>	C) C	D) <i>D</i>
112.	The diagram below represents some energy transfers in an ecosystem.			
	A) decomposer	B) autotroph	C) producer I	D) herbivore
113.	Decomposers are impor	tant in the environment b	because they	
	 A) convert large molecules into simpler molecules that can then be recycled B) release heat from large molecules so that the heat can be recycled through the ecosystem C) can take in carbon dioxide and convert it into oxygen 			

D) convert molecules of dead organisms into permanent biotic parts of an ecosystem Base your answers to questions **114** and **115** on the diagram of the nitrogen cycle below and on your the key below.



- 114. Which substance, acted on by *A* in the cycle, would most likely be included in the area labeled "Wastes"?
 - A) ureaB) sulfurC) carbon dioxideD) mineral salt
- 115. What is the role of NO₃ in the cycle?
 - A) It is converted to atmospheric nitrogen.
 - B) It is used by animals for carbohydrate synthesis.
 - C) It is used by plants for protein synthesis.
 - D) It is used by bacteria to synthesize ammonia.