Populations, Communities and Ecosystems test review

1. With which living organism is primary productivity associated?

A) A bee B) A tree C) A cow D) An earthworm

2. Large number of yellow flowers are scattered unpredictably all over a field. What pattern in involved in this case?

A) Clumped B) Random C) Dense D) Uniform

3. The table below gives a list of disturbances. Some are natural, and others are the result of human activity. Table I -Different Possible Disturbances

Disturbances	
1.	Volcanic eruption
2.	Acid rain
3.	Snowstorm
4.	Tree cutting
5.	Forest fire

Which of these disturbances result from natural causes only?

A) 1, 2 and 3 B) 1 and 3 C) 1, 3, 4 and 5 D) 2 and 5

4. Four characteristics of certain living things are listed below.

1 – They are autotrophs.
2 – They are heterotrophs.
3 – They rely on the sun for photosynthesis to occur
4 – They decompose organic matter into inorganic matter

Which of the above characteristics can be associated with producers?

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

5. What impact will the spreading of poison have on the energy flow and chemical recycling in the wheat field ecosystem?

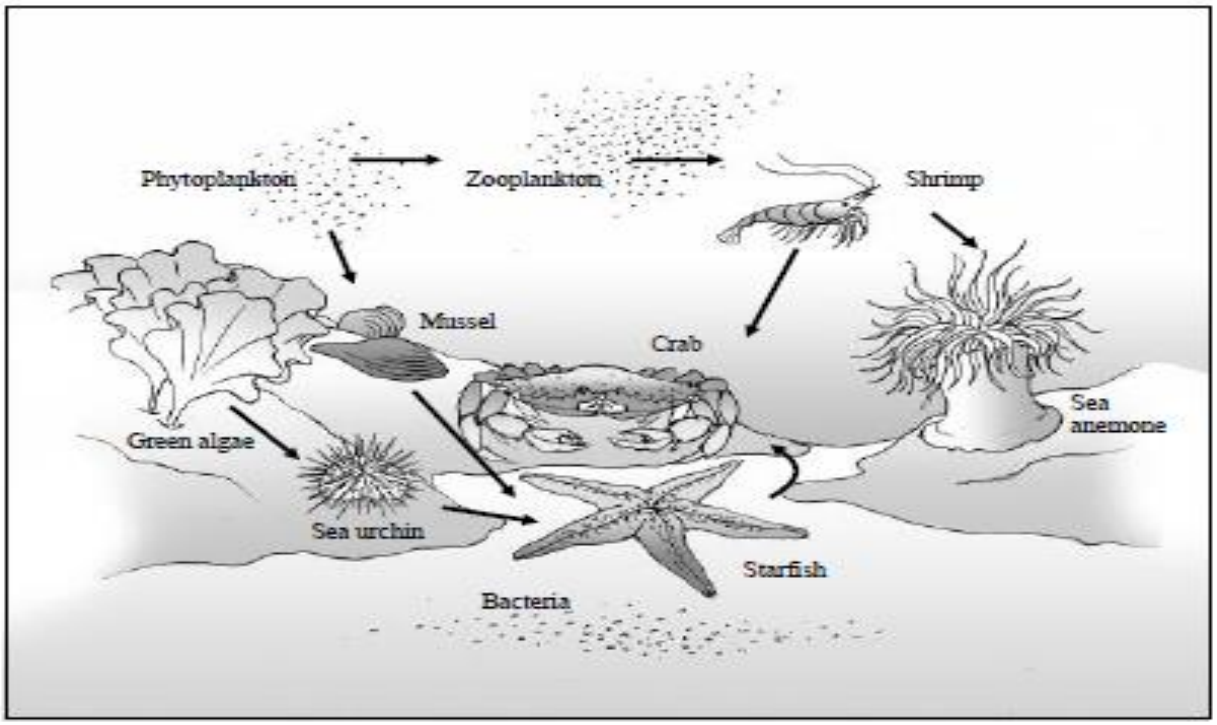
A) The flow of energy will remain the same and chemical recycling will be increased
B) The flow of energy will be reduced and chemical recycling will be reduced
C) The flow of energy will remain the same and chemical recycling will be reduced
D) The flow of energy will be increased and chemical recycling will be increased

6. Match the term with the appropriate example

1- Commensalism	A- A bee spreading plant pollen
2- Mutualism	B- An owl killing a rabbit for food
3- Parasitism	C- A bird using an old abandoned nest for her newborns
4- Predation	D- Two bears fighting over territory
5- Competition	E- Worms living in your intestines

A) 1B, 2C, 3A, 4E, 5D C) 1A, 2C, 3E, 4B, 5D
B) 1C, 2A, 3E, 4B, 5D D) 1C, 2A, 3E, 4D, 5B

7. The following diagram shows the food web for the coastal species living off Grand Island.



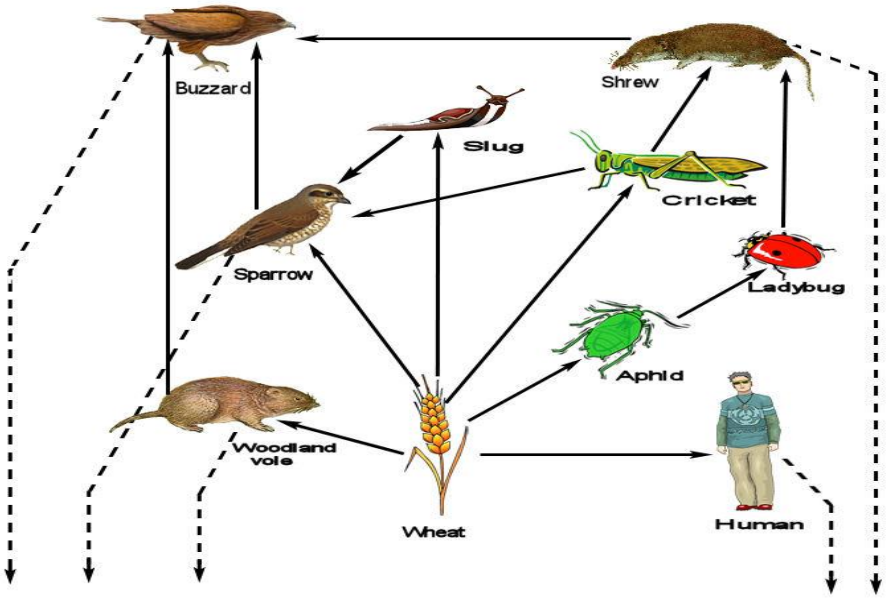
State in which trophic level each organism belongs to.

	Producers	Consumers	Decomposers
A	Green algae, phytoplankton and zooplankton	Shrimp, anemone, urchin, muscle and crab	Bacteria and starfish
B	Green algae, phytoplankton and zooplankton	Shrimp, anemone, urchin, muscle, starfish and crab	Bacteria
C	Green algae and phytoplankton	Zooplankton, shrimp, anemone, urchin, muscle and crab	Bacteria and starfish
D	Green algae and phytoplankton	Zooplankton, shrimp, anemone, urchin, muscle, crab and starfish	Bacteria

8. Using the same food web as number 7, biologists have noticed a rapid decline in the sea anemone population of the estuary near Grand Island. At first, they thought this was caused by abiotic factors, but they discovered that the direct cause of this rapid decline is a new type of fungus affecting sea anemones only. In the short term, what impact is this disturbance likely to have on the zooplankton population?

9. In recent years, wheat farmers have noticed a sharp increase in the woodland vole population. Wheat, an important food source for humans, is also an important part of the diet of woodland voles. Woodland voles are often labelled as pests since they can carry bacteria and viruses. The farmers are worried about their harvest and are considering the possibility of spreading a rodent poison that will eliminate the voles.

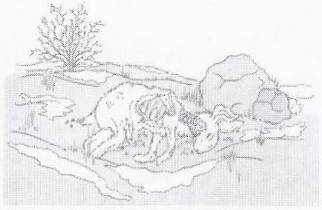
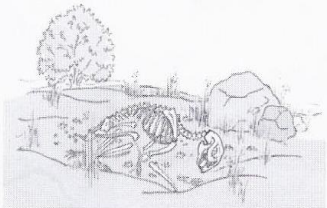
Food web for a wheat field: Wheat is a food source for many living things: the stalk for aphids, the leaves for crickets and slugs, and the kernels for voles, sparrows, and humans.



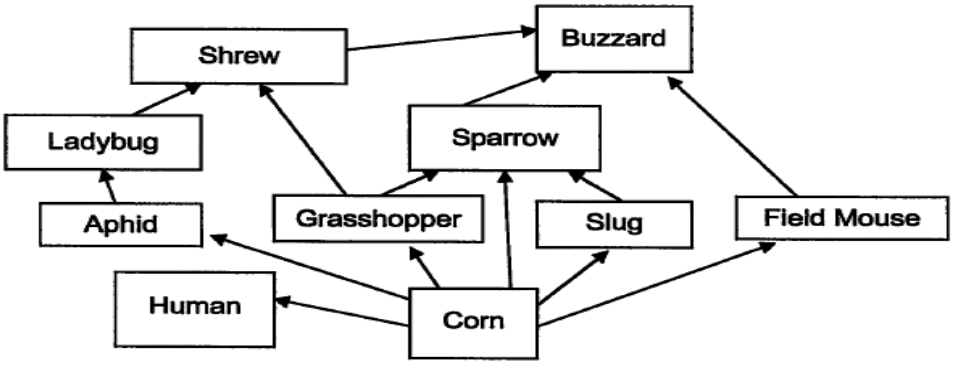
a- Give three consequences to the food web if the vole population continues to increase.

b- Give an explanation to why the increase in the vole population may have occurred.

10. A hare died in a field in December. Explain the steps in the chemical recycling process by describing what happens in each of the months indicated.

January	March	May
		

Using the food web below, answer questions 11 and 12.



11. If a poison were to be spread affecting the mouse population, which answer will **not** likely occur in the ecosystem.
A) There would be more buzzards born the following year.
B) The slug, ladybug and populations would consequently increase
C) The only corn consumers left would be the slugs and the grasshopper
D) Buzzards would attack less sparrows and shrews

12. Which would have the greater impact on the food web of the corn field: the extinction of ladybugs or the extinction of slugs?
A) Ladybugs because the aphid population would rise dramatically and affect all the other consumers of corn.
B) Ladybugs because the shrew would run out of food and die.
C) Slugs because the sparrow would run out of food and die
D) Slugs because there will be too much corn being grown.

13. Organisms living in the same ecosystem interact; some of these interactions are called ''trophic relationships."
nut mushroom squirrel fox
a- Give the trophic level for the organisms above

b- Using arrows, connect the living organisms to form a food chain.

14. At the beginning of winter there were 15 polar bears in a small area of the arctic. 4 polar bears died because of the lack of food, 3 polar bears left the area to look for food, 2 bears were shot by hunters and 3 bears came to the area to look for food. Was there a population increase or decrease? By how much?

15. You counted 150 dandelions in a 6 m^2 area. What is the population density of the dandelions?

16. A population of 33 snowshoe hares lives on an island with an area of 25 000 m^2. What is the population density of the hares?

17. Draw an example for the following terms on species distribution.

Clumped	Uniform	Random

18. Apple cultivators must consider all aspects of the Orchard's ecosystem in order to ensure the highest possible crop yield. The trees in the orchard obtain their energy through the process of photosynthesis.

Using the following information, identify an autotroph, a decomposer, a first-level consumer and a third-level consumer from the orchard's food web. (put answers on the diagram)

An Apple Orchard's Food Web

Legend:

Aphid: 

Apple tree shoots: 

Frog: 

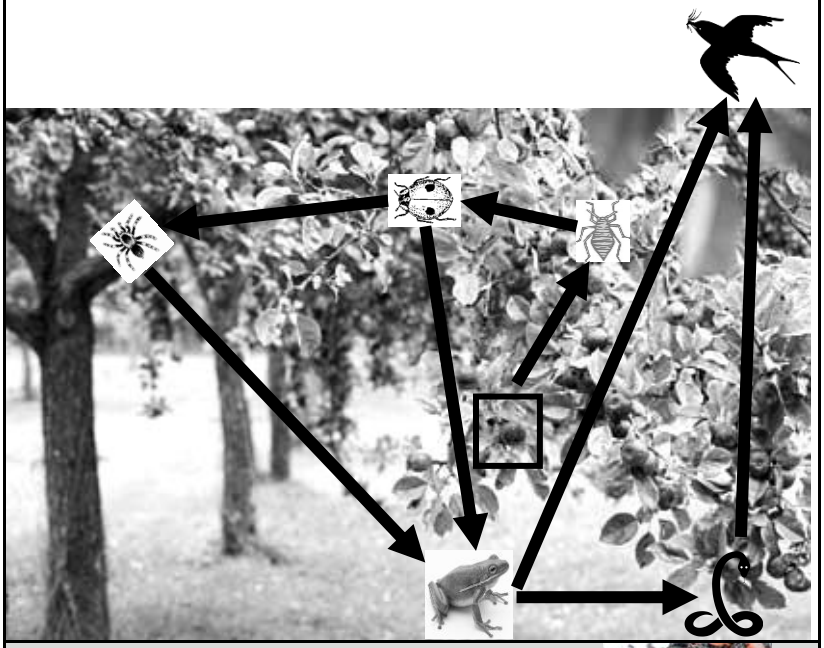
Kite: 

Ladybug: 

Snake: 

Spider: 

Worms: 



SOIL

19. Define the following words.

Abiotic	
Biotic	
Community	
Ecosystem	
Mutualisn	
Predation	
Parasitiem	
Commensalism	
Competition	

20. What causes the population rates to increase and decrease during the hare and lynx biological cycle?

21. The table below lists the contents of two aquariums, A and B, both with a capacity of 50 L. Find the relative abundance of each species.

Aquarium A	**Aquarium B**
15 goldfish	27 goldfish
12 striped fish	20 striped fish
10 snails	0 snails
17 green algae	0 green algae
15 fern	80 ferns

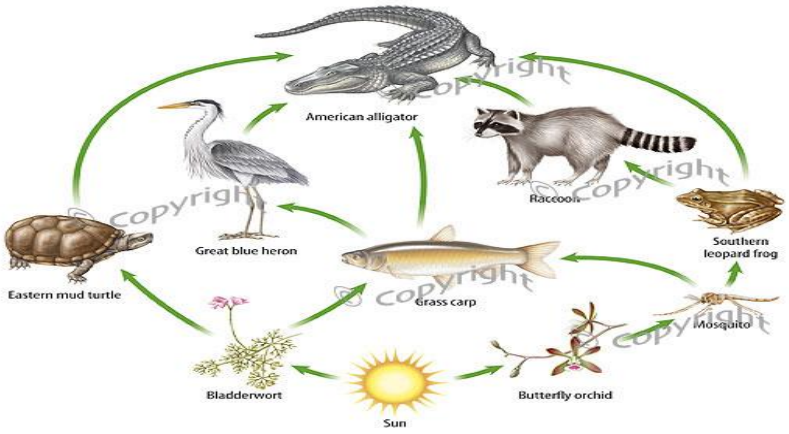
Which aquarium has the greater biodiversity? Why

22. Fill in the table

	Producer	Consumer	Decomposer
Other name			

23. What is the difference between a primary and a secondary consumer?

Use the diagram to answer the questions 24-26



24. Name an animal that could be a second, third or fourth order consumer. Give the food chain for each example.

25. Which trophic level is missing from the food web?

26. Explain where the organism would be placed from that trophic level.

27. Explain if a predator gains all the energy from a prey that is killed.

28. Define the following terms.

Chemical recycling	
Biomass	
Primary productivity	

29. What is the difference between a natural and a human disturbance? Give an example of each.

30. Explain what ecological succession is.