Biology Keystone (PA Core) Quiz

Ecology - (BIO.B.4.2.2) Biotic Interactions, (BIO.B.4.2.3) Recycle Matter, (BIO.B.4.2.5) Limiting Factors

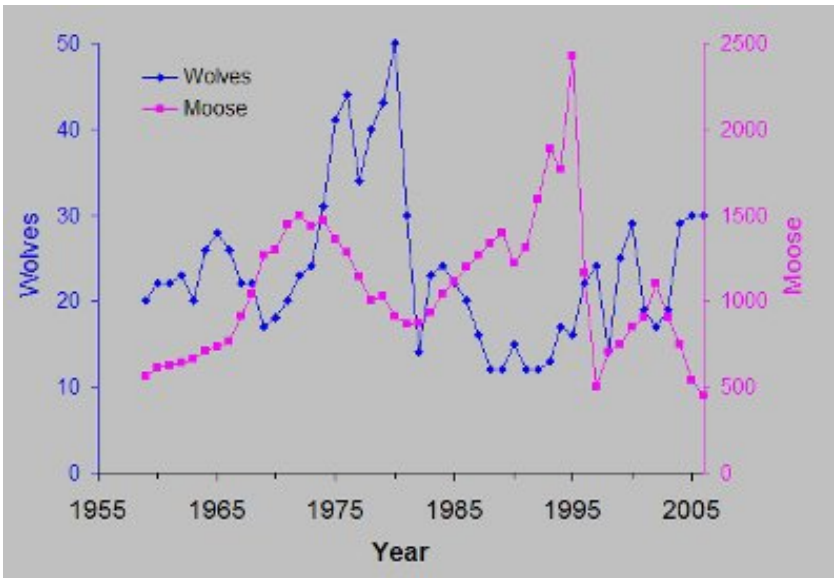
Student Name: _____ Date: _____

Teacher Name: Jared George Score: _____

1) Bears and coyotes both consume large plant-eating mammals such as deer. When the deer are in short supply, bears and coyotes may fight over the prey. This type of biological interaction is called

A) commensalism.
C) mutualism.
B) competition.
D) rumination.

2)



The graph shown above is from one of the most well-known and on-going ecological studies ever performed. Isle Royal National Park, an island on Lake Superior, keeps data of populations of wolves and moose living there. The moose are a major food source for the wolves.

Based on the graph, how does the moose population affect the population of wolves?

A) As moose populations increase, wolf populations immediately increase.
C) Moose populations don't really show any relationship to wolf carrying capacity.
B) As wolf population falls, moose populations fall with a delayed effect.
D) The wolf carrying-capacity rises as moose populations increase, but with a delayed effect.

3)

Humans and bacteria live in a close relationship with one another. For example, the bacteria that dwell in the human large intestine helps to complete the digestive process. The organism gains nutrients and protection in our intestine.

The relationship between humans and their digestive bacteria can be described as

A) commensalism.
C) mutualism.
B) competition.
D) predation.

4) Which statement BEST explains why large predators, such as lions and leopards, are common in savanna grasslands, but are mostly absent from desert ecosystems?

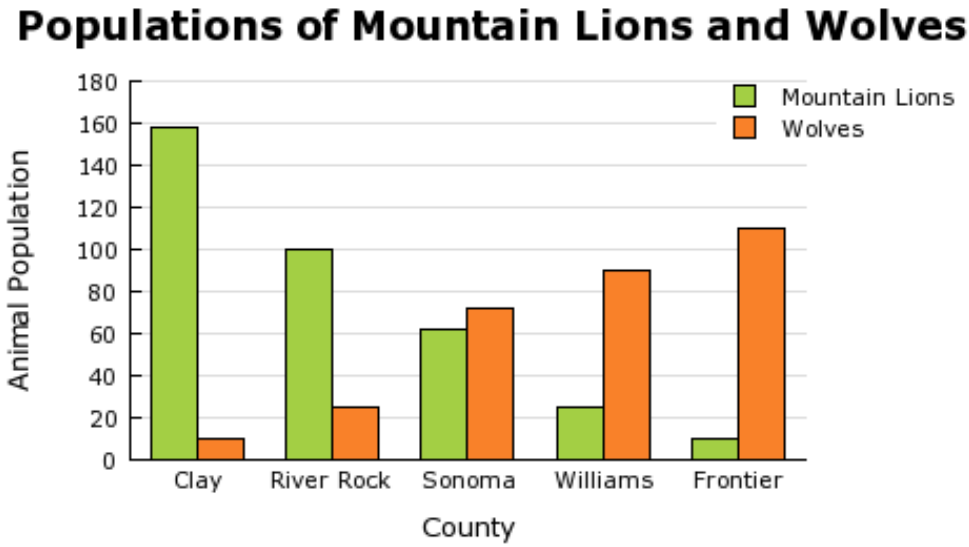
A) There is not enough biomass at lower levels of the food chain in deserts for large predators to be supported.

B) Biomass is passed through the food chain at a much higher rate of efficiency in grasslands, allowing large predators to exist.

C) There are no scavengers in deserts, but many in savannas, and this allows materials to cycle fast enough to support predators.

D) The 10% rule states that predators must make up 10% of the animals in ecosystems with a lot of biomass, like savanna ecosystems.

5)



The graph shows the populations of wolves and mountain lions in five different counties in Montana. Wolves and mountain lions compete for the same kinds of food resources. In Clay county,

A) mountain lions depend on wolves to survive.

B) mountain lions probably outcompete wolves for food.

C) mountain lions and wolves have a mutualistic relationship.

D) mountain lions and wolves survive independent of each other.

6) What is one **biotic** factor that affects the size of a population in an ecosystem?

A) local geography
B) number of predators present
C) average yearly temperature
D) average yearly precipitation

7) In natural ecosystems, the presence of predators lessens the effects of _____ among the prey.

A) competition
B) infestation
C) parasitism
D) symbiosis

8)

Lichens, represented by this symbiotic relationship, are responsible for _____ or the establishment of a new site for plant growth.

A) primary succession
B) secondary succession
C) trophic metamorphosis
D) ecological infiltration

9)

The zebra mussel is a shellfish native to Europe. During the early 1900's, it was accidentally brought to the United States in the ballast of a ship traveling to the Great Lakes. It has no predators in the Great Lakes.

What impact are zebra mussels likely to have on food chains in the Great lakes?

A) They will have no real effects on the food chain, since they are from Europe.
B) They will compete with native shellfish and clams and hurt their populations.
C) They will allow fish populations to expand, because they will be used as food.
D) They will cause the entire food chain to crash, since they do not fit into the original food chain.

10)

Viruses are not considered to be living things, but they depend upon living cells for energy, reproduction, and protection at the expense of the cells that they invade.

The type of relationship described could best be classified as one of

A) commensalism.
B) mutualism.
C) parasitism.
D) resignation.

11) The two main processes by which plant cells absorb, release, and use energy are

A) fermentation and respiration.
B) digestion and photosynthesis.
C) photosynthesis and respiration.
D) aerobic and anaerobic respiration.

12) The process of cellular respiration

A) occurs only in animals.
B) breaks down food molecules to release stored energy.
C) must occur before plants are able to carry out photosynthesis.
D) is performed only by organisms that are incapable of photosynthesis.

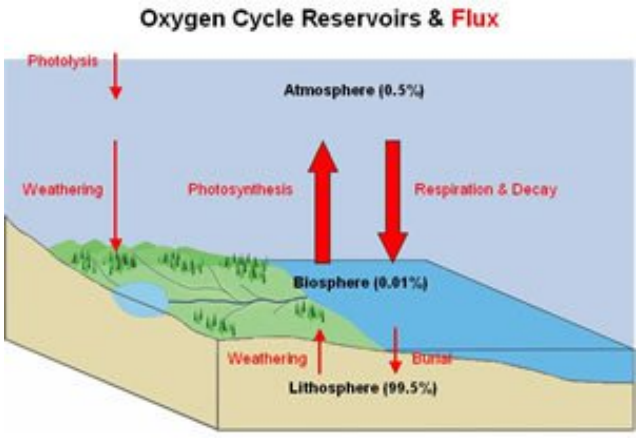
13) All organic molecules have what element in common?

A) carbon
B) nitrogen
C) phosphorus
D) sulfur

14) What are the products of photosynthesis?

A) glucose and oxygen
B) carbon dioxide and water
C) carbon dioxide and oxygen
D) glucose and carbon dioxide

15)



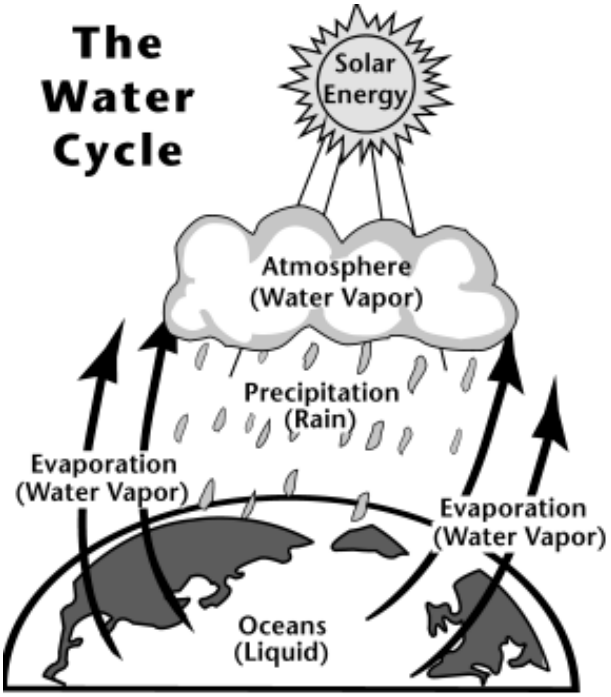
The process of respiration is essential in the oxygen/carbon dioxide cycle. Respiration removes _____ from the atmosphere and produces and releases _____ to the atmosphere.

A) glucose, oxygen
B) oxygen, glucose
C) carbon dioxide, oxygen
D) oxygen, carbon dioxide

16) The by-products of cellular respiration include

A) energy and oxygen.
B) glucose and oxygen.
C) carbon dioxide and water.
D) glucose and carbon dioxide.

17)



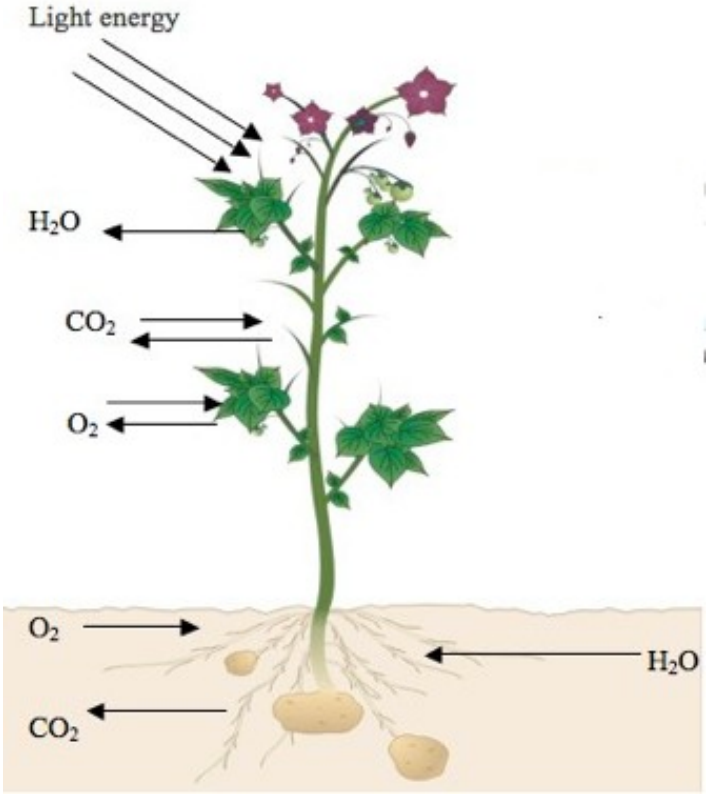
According to the diagram of the water cycle, what happens to the water in the oceans before it becomes water in the atmosphere?

A) It evaporates.
B) It becomes a liquid.
C) It is sent to the sun.
D) It turns into precipitation.

18) _____ are cellular macromolecules containing hydrogen, oxygen, nitrogen, carbon and phosphorous.

A) Fatty acids
B) Nucleic acids
C) Simple sugars
D) Complex carbohydrates

19)



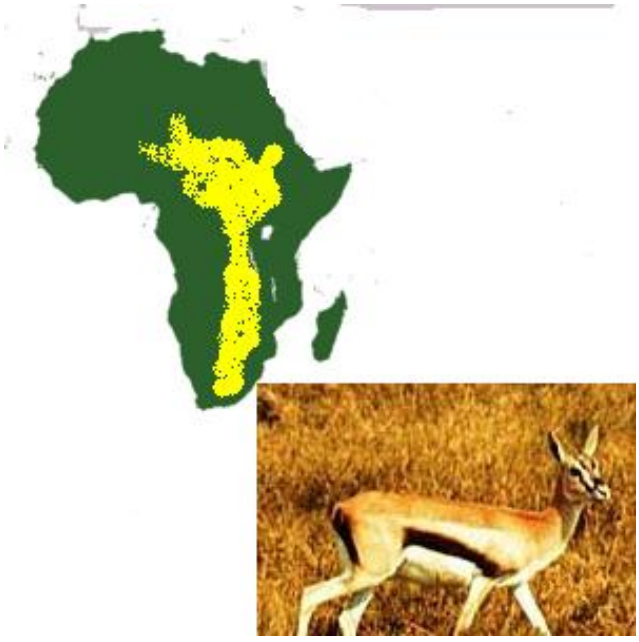
Producers, like this plant, take in oxygen and release carbon dioxide during _____ , just like animals and other living things.

A) decomposition.
B) photosynthesis.
C) transformation.
D) cellular respiration.

20) Which biological molecule contains a large amount of the element nitrogen?

A) carbohydrates
B) lipids
C) proteins
D) starches

21)



Impala share the African plains with other grazing animals and predators. Which change would lead to a DECREASE in the impala population?

A) a reduction in the lion population

B) an increase in the number of other grazing antelope

C) an increase in restrictions on the hunting of impala

D) a reduction in the populations of other impala predators

22) A population of mice occupies a tree stump in a forest. During the last decade, there has been little change in the number of mice in the population. Which of the following would likely cause the number of mice to decrease quickly?

A) a decrease in disease

B) an increase in predation

C) a decrease in competition

D) an increase in length of mating season

23)

A species of rabbit lives in a meadow where grass plants are readily available during summer months. The rabbits do not stray far from the meadow because the plants supply food and protection from predators. One summer, a fire destroys the plants in the meadow.

As a result of the absence of vegetation, the rabbit population will probably

A) decrease in size.

B) increase and flourish.

C) increase reproduction.

D) switch to a different type of food.

24) The size of a food web is limited by the number of

A) detritivores.

B) primary consumers.

C) primary producers.

D) top level predators.

25) An isolated African canyon community in which cheetahs and leopards consume only impala antelopes is being observed. If the number of leopards increases, which change is MOST LIKELY to be the first to occur after the leopard population increase?

A) The impala population will decrease.

B) The cheetah population will increase.

C) The cheetah population will decrease.

D) The impala population will remain the same.

26) Any abiotic or biotic factor in an ecosystem that causes a population's size to slow or decrease is a _____ factor.

A) growth
B) limiting
C) carrying
D) density dependent

27) The carrying capacity of any population will stay the same

A) as long as predators do not increase.
B) unless environmental conditions change.
C) regardless of emigration and immigration.
D) even though the birth rate exceeds the death rate.

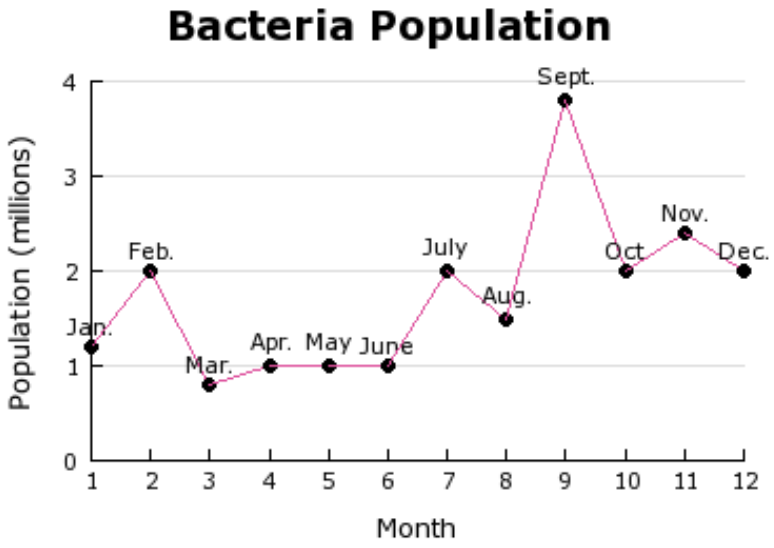
28) In an ecosystem, which is NOT a density-dependent limiting factor?

A) predation
B) parasitism
C) competition
D) natural disaster

29) Which factor is a density-dependent limiting factor on the population of a species?

A) predation
B) unusual weather
C) natural disasters
D) seasonal variation

30)



As resources, such as food and space, become depleted, the bacterial population density will decrease. From the choices offered, during which month would resources be the most limited?

A) March
B) May
C) July
D) September