

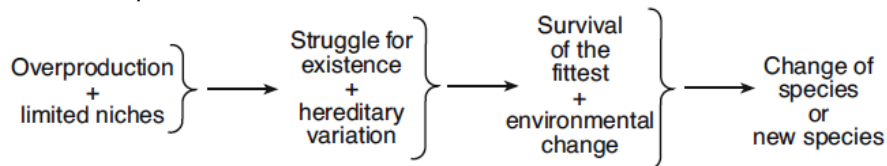
**Part A Questions**

- \_\_\_\_\_ 1. Two primary agents of cellular communication are
- (1) chemicals made by blood cells and simple sugars
  - (2) hormones and carbohydrates
  - (3) enzymes and starches
  - (4) hormones and chemicals made by nerve cells

\_\_\_\_\_ 2. In order to produce the first white marigold flower, growers began with the lightest yellow flowered marigold plants. After crossing them, these plants produced seeds, which were planted, and only the offspring with very light yellow flowers were used to produce the next generation. Repeating this process over many years, growers finally produced a marigold flower that is considered the first white variety of its species. This procedure is known as

- (1) differentiation
- (2) cloning
- (3) gene insertion
- (4) selective breeding

- \_\_\_\_\_ 3. Which concept is best illustrated in the flowchart below?



- (1) natural selection
- (2) genetic manipulation
- (3) dynamic equilibrium
- (4) material cycles

\_\_\_\_\_ 4. The sweet taste of freshly picked corn is due to the high sugar content in the kernels. Enzyme action converts about 50% of the sugar to starch within one day after picking. To preserve its sweetness, the freshly picked corn is immersed in boiling water for a few minutes, and then cooled. Which statement most likely explains why the boiled corn kernels remain sweet?

- (1) Boiling destroys sugar molecules so they cannot be converted to starch.
- (2) Boiling kills a fungus on the corn that is needed to convert sugar to starch.
- (3) Boiling activates the enzyme that converts amino acids to sugar.
- (4) Boiling deactivates the enzyme responsible for converting sugar to starch.

- \_\_\_\_\_ 5. One biotic factor that affects consumers in an ocean ecosystem is

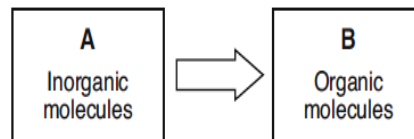
- (1) number of autotrophs
- (2) temperature variation
- (3) salt content
- (4) pH of water

- \_\_\_\_\_ 6. Which component of a stable ecosystem can *not* be recycled?

- (1) oxygen
- (2) water
- (3) energy
- (4) nitrogen

- \_\_\_\_\_ 7. The diagram below represents a biological process. Which set of molecules is best represented by letters A and B?

- (1) A: oxygen and water B: glucose
- (2) A: glucose B: carbon dioxide and water
- (3) A: carbon dioxide and water B: glucose
- (4) A: glucose B: oxygen and water



\_\_\_\_\_ 8. Years after the lava from an erupting volcano destroyed an area, grasses started to grow in that area. The grasses were gradually replaced by shrubs, evergreen trees, and finally, by a forest that remained for several hundred years. This entire process is an example of

- (1) feedback
- (2) ecological succession
- (3) plant preservation
- (4) deforestation

**Part B-1 Questions**

A biologist used the Internet to contact scientists around the world to obtain information about declining amphibian populations. He was able to gather data on 936 populations of amphibians, consisting of 157 species from 37 countries. Results showed that the overall numbers of amphibians dropped 15% a year from 1960 to 1966 and continued to decline about 2% a year through 1997.

- \_\_\_\_\_ 9. What is the importance of collecting an extensive amount of data such as this?
- (1) Researchers will now be certain that the decline in the amphibian populations is due to pesticides.
  - (2) The data collected will prove that all animal populations around the world are threatened.
  - (3) Results from all parts of the world will be found to be identical.
  - (4) The quantity of data will lead to a better understanding of the extent of the problem.

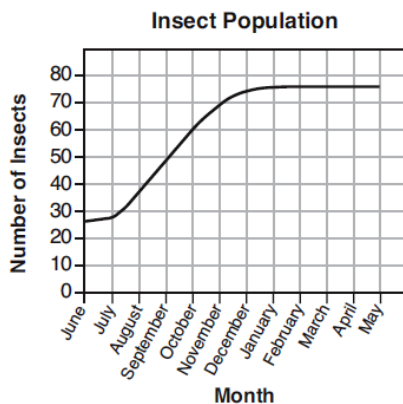
Species *A*, *B*, *C*, and *D* are all different heterotrophs involved in the same food chain in an ecosystem. The chart below shows the population of each species at the same time on a summer day.

- \_\_\_\_\_ 10. Which statement best describes one of these species of heterotrophs?

Species	Population
A	847
B	116
C	85
D	6

- (1) Species *A* is the most numerous because it can make its own food.
- (2) Species *B* probably feeds on species *D*.
- (3) Species *C* and *B* interbred to produce species *A*.
- (4) Species *D* is most likely the top predator in the food chain.

- \_\_\_\_\_ 11. 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?

- (1) All the insects in the box are the same age.
- (2) The insects hibernated from January to April.
- (3) The population has carnivorous members.
- (4) The population reached carrying capacity by January.

Name \_\_\_\_\_

Date Due \_\_\_\_\_

Regents Review Assignment #10-JA08

Living Environment: Comet 2010-2011

### Part B-2 Questions

Base your answers to questions 12 through 15 on the passage below and on your knowledge of biology.

“When humans perspire, water, urea, and salts containing sodium are removed from the blood. Drinking water during extended periods of physical exercise replenishes the water but not the sodium. This increase in water dilutes the blood and may result in the concentration of sodium dropping low enough to cause a condition known as hyponatremia. Symptoms of hyponatremia include headache, nausea, and lack of coordination. Left untreated, it can lead to coma and even death. The body has a variety of feedback mechanisms that assist in regulating water and sodium concentrations in the blood. The kidneys play a major role in these mechanisms, as they filter the blood and produce urine.”

- \_\_\_\_\_ 12. The best way to reduce the symptoms of hyponatremia would be to
- (1) drink more water
  - (2) eat chocolate
  - (3) eat salty foods
  - (4) drink cranberry juice

13. Many runners pour water on their bodies during a race. Explain how this action helps to maintain homeostasis. [1]

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14. How would running in a marathon on a warm day most likely affect urine production? Support your answer. [1]

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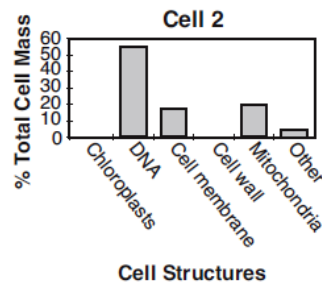
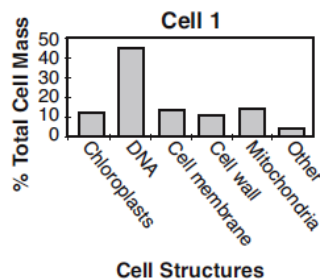
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15. Many people today drink sport drinks containing large amounts of sodium. Describe *one* possible effect this might have on a person who is *not* very active. [1]

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16. Data from two different cells are shown in the graphs below. Which cell is most likely a plant cell? Support your answer. [1]



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**Part D Questions**

19. Researchers discovered four different species of finches on one of the Galapagos Islands. DNA analysis showed that these four species, shown in the illustration below, are closely related even though they vary in beak shape and size. It is thought that they share a common ancestor.



Which factor most likely influenced these differences in beak size and shape?

- (1) Birds with poorly adapted beaks changed their beaks to get food.
- (2) Birds with yellow beaks were able to hide from predators.
- (3) Birds with successful beak adaptations obtained food and survived to have offspring.
- (4) Birds with large, sharp beaks become dominant.

\_\_\_\_ 20. Relationships between plant species may most accurately be determined by comparing the

- (1) habitats in which they live
- (2) structure of guard cells
- (3) base sequences of DNA
- (4) shape of their leaves

21. The data table below compares blood flow in various human body structures, both at rest and during strenuous exercise.

Structure	Blood Flow at Rest (mL/min)	Blood Flow During Strenuous Exercise (mL/min)
heart	250	750
skeletal muscle	1200	12,500
digestive organs	1400	600

Select *one* structure from the data table and write its name in the space below. Explain *one* way that the change in the rate of blood flow in this structure helps maintain homeostasis during exercise. [1]

Structure: \_\_\_\_\_

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\_\_\_\_ 22. Electrophoresis is a method of

- (1) separating DNA fragments
- (2) changing the genetic code of an organism
- (3) indicating the presence of starch
- (4) separating colored compounds on a strip of paper