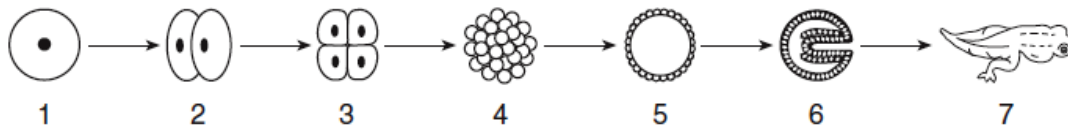


Part A Questions

_____1. Which system is correctly paired with its function?

- (1) immune system—intake and distribution of oxygen to cells of the body
- (2) excretory system—remove potentially dangerous materials from the body
- (3) digestive system—transport energy-rich molecules to cells
- (4) circulatory system—produce building blocks of complex compounds

_____2. Some stages in the development of an organism are represented in the diagram below.



Which levels of biological organization do stages 2 and 7 have in common?

- (1) cells and organs
- (2) cells and tissues
- (3) tissues and organelles
- (4) organelles and cells

_____3. A chemical known as 5-bromouracil causes a mutation that results in the mismatching of molecular bases in DNA. The offspring of organisms exposed to 5-bromouracil can have mismatched DNA if the mutation occurs in

- (1) the skin cells of the mother
- (2) the gametes of either parent
- (3) all the body cells of both parents
- (4) only the nerve cells of the father

_____4. Which statement is best supported by the theory of evolution?

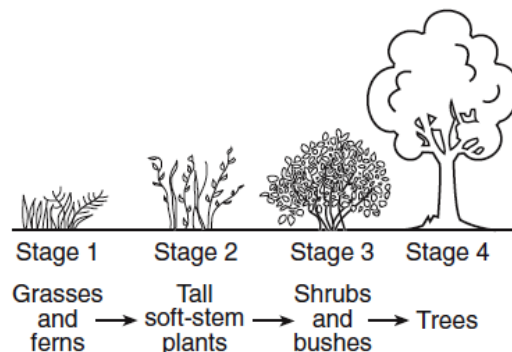
- (1) Genetic alterations occur every time cell reproduction occurs.
- (2) The fossil record provides samples of every organism that ever lived.
- (3) Populations that have advantageous characteristics will increase in number.
- (4) Few organisms survive when the environment remains the same.

_____5. Rabbits introduced into Australia over one hundred years ago have become a serious pest. Rabbit populations have increased so much that they have displaced many native species of herbivores. Which statement best explains the reason for their increased numbers?

- (1) Rabbits have a high metabolic rate.
- (2) There are few native predators of rabbits.
- (3) Additional rabbit species have been introduced.
- (4) There is an increase in rabbit competitors.

_____6. Changes in an ecosystem over a long period of time are shown in the diagram shown. These changes will most likely lead to a

- (1) stable ecosystem that can last for many years
- (2) loss of heterotrophs that cannot be recovered
- (3) long-term rise in environmental temperatures
- (4) forest consisting of only producers and decomposers



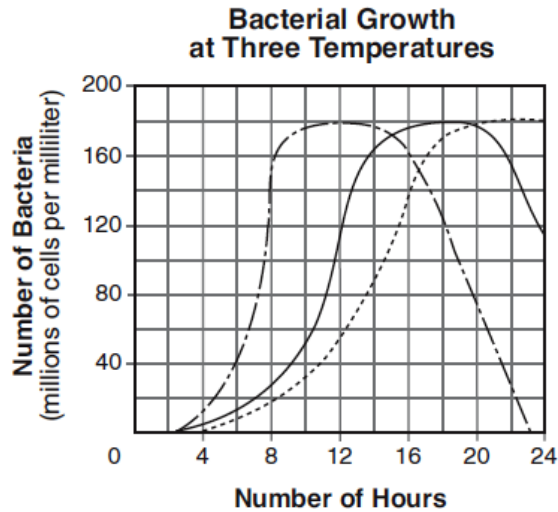
_____7. A stable ecosystem is characterized by having

- (1) predators that outnumber their prey
- (2) a continual input of energy
- (3) limited autotrophic nutrition
- (4) no competition between species

Part B-1 Questions

_____ 8. The graph below represents the growth of bacteria cultured at three different temperatures over a period of 24 hours. Which statement concerning the rate of cell division in the bacteria culture is correct?

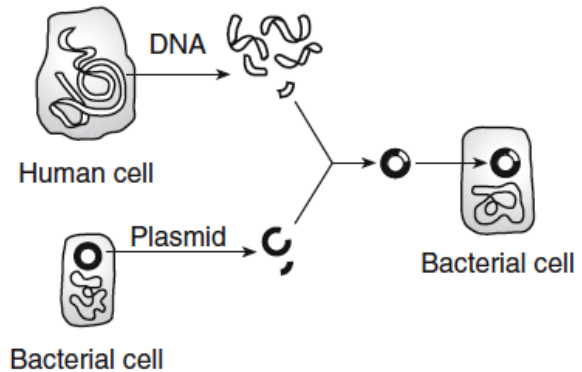
- (1) Cell division is most rapid at 37°C between 6 and 8 hours after it began.
- (2) Cell division is most rapid at 25°C between 20 and 24 hours after it began.
- (3) Cell division is most rapid at 18°C between 4 and 8 hours after it began.
- (4) Cell division occurs at the same rate no matter what the temperature.



Key	
-----	Growth rate at 37°C
—————	Growth rate at 25°C
.....	Growth rate at 18°C

_____ 9. Which set of terms correctly identifies the procedure shown in the diagram below and a substance produced by this procedure?

- (1) selective breeding—growth hormone
- (2) cloning—antibiotics
- (3) genetic engineering—insulin
- (4) replicating—glucose



_____ 10. Two interactions between organisms are shown in the table below. X and Y do *not* represent the same organisms in the two interactions. Which statement best describes the relationship between organism X and organism Y in each interaction?

	Organism X	Organism Y
Interaction 1	predator	prey
Interaction 2	parasite	host

- (1) Organism X is positively affected by the relationship and organism Y is negatively affected.
- (2) Organism X is negatively affected by the relationship and organism Y is positively affected.
- (3) Both organisms are positively affected by the relationship.
- (4) Both organisms are negatively affected by the relationship.

Name _____

Date Due _____

Regents Review Assignment #2-A10

Living Environment: Comet 2010-2011

Part B-2 Questions

Base your answers to questions 11 through 14 on the passage below and on your knowledge of biology.

Sudden Death from a Marine Predator

Members of the Conidae family (cone snails) have been collected for centuries for their beautiful and elaborately detailed shells. Cone snails are marine mollusks found in reef environments throughout the world. Cone snails feed on organisms such as fish, worms, and other mollusks. They are very slow moving but capture their prey by paralyzing them using venom. The venom contains some of the most deadly neurotoxins known. The neurotoxins work by attaching to receptor molecules on nerves, blocking the transmission of nerve impulses. The neurotoxins are injected into the prey by way of a hollow, spear-like tooth and the effects are usually immediate. One species, a fish-eating cone snail, can paralyze the prey in about two seconds. The venom produced by each species is prey specific. It may contain two or more different types of neurotoxins, each composed of long chains of amino acids.

11. Explain how a neurotoxin present in the venom can paralyze one type of prey but not another. [1]

12. State *one* way the neurotoxin protein in the venom of cone snails can be different. [1]

13. Explain why paralyzing its prey in only two seconds is an advantage to fish-eating cone snails. [1]

14. Cone snails of the same species often exhibit variations in the patterns of their shells. State *one* possible cause for these variations appearing in the shell pattern within the population of the cone snails. [1]

Base your answers to questions 15 and 16 on the information below and on your knowledge of biology.

“Due to the negative effects on the environment of burning coal and oil, society is looking for alternate energy resources that are renewable.”

15. Identify *one* renewable resource that can be used to generate energy. [1]

16. State *one* benefit, other than the fact that it is renewable, of using this resource. [1]

Name _____

Date Due _____

Regents Review Assignment #2-A10

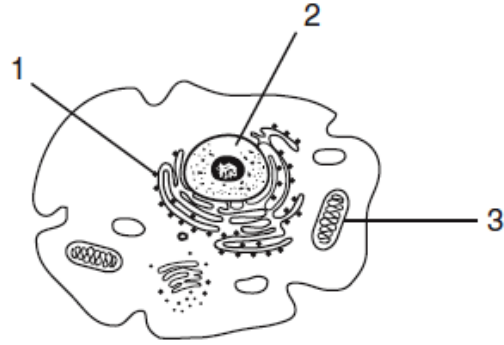
Living Environment: Comet 2010-2011

Part C Questions

Base your answer to question 17 on the diagram below and on your knowledge of biology.

In a cell, a variety of structures perform specific functions and interact to maintain homeostasis. The diagram below represents a typical cell with three cell structures labeled 1, 2, and 3.

17. Select *one* cell structure labeled in the diagram and write its number in the space below. Explain how the cell structure you selected helps maintain homeostasis in a cell. In your answer, be sure to:



- identify the cell structure you selected [1]
- state *one* function of this cell structure [1]
- identify *one* substance that is often associated with the cell structure you selected and state how that substance is associated with the cell structure [1]
- identify *one* other cell structure and explain how it interacts with the cell structure you selected to maintain homeostasis in the cell [1]

Cell structure number: _____

18. Consuming large volumes of soft drinks containing sugar during the day can disrupt homeostasis. Describe how the human body responds to restore sugar balance. In your answer, be sure to:

- identify the hormone responsible for restoring homeostasis [1]
- identify the organ that releases this hormone [1]

Part D Questions

_____19. A student conducted an experiment to determine if listening to different types of music would affect pulse rate. She thought that pulse rate would change with different types of music. Each person participating in her experiment listened to seven different selections of music for 30 seconds each. The pulse rates were taken after each 30-second interval of music. Based on her experiment, the student concluded that a person’s pulse rate changed when listening to different types of music. The component missing from this experiment is a

- (1) prediction
- (2) hypothesis
- (3) control group
- (4) research plan

_____20. An experiment was carried out to determine whether drinking caffeinated soda increases pulse rate. The pulse rates of two groups of people at rest were measured. Group A was then given caffeinated soda and group B was given caffeine-free soda. One hour after drinking the soda, the pulse rates were measured. The participants in the experiment were all the same age, and they were all given the same amount of soda. The dependent variable in this experiment is the

- (1) type of soda given to each group
- (2) amount of soda given to each group
- (3) pulse rate of each group
- (4) age of participants in each group

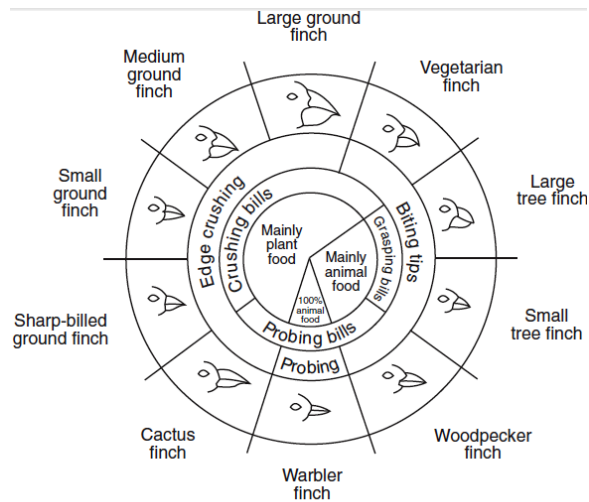
Base your answer to question 21 on the information below and on your knowledge of biology.

“A student states that exercise will affect the number of times a person can squeeze a clothespin in a certain amount of time. An experiment is carried out to test this hypothesis. One group of ten students sits quietly before squeezing a clothespin as many times as possible during a one-minute interval. A second group of ten students does 25 jumping jacks before squeezing a clothespin as many times as possible during a one-minute interval.”

21. State *one* way the experiment could be improved in order to increase the validity of the results. [1]

Base your answer to questions 22 on the information in the diagram below and on your knowledge of biology.

22. Small ground finches and medium ground finches live on an island with abundant plant and animal food. Predict how the small ground finch and the medium ground finch would be affected if warbler finches migrated to the island where these finches live. Support your answer. [1]



—From Galapagos: A Natural History Guide