

Name _____

Date Due _____

Regents Review Assignment #3-J10

Living Environment: Comet 2010-2011

Part A Questions

_____ 1. Why is a mushroom considered a heterotroph?

- (1) It manufactures its own food.
- (2) It divides by mitosis.
- (3) It transforms light energy into chemical energy.
- (4) It obtains nutrients from its environment.

_____ 2. Three days after an organism eats some meat, many of the organic molecules originally contained in the meat would be found in newly formed molecules of

- (1) glucose
- (2) protein
- (3) starch
- (4) oxygen

_____ 3. If 15% of a DNA sample is made up of thymine, T, what percentage of the sample is made up of cytosine, C?

- (1) 15%
- (2) 35%
- (3) 70%
- (4) 85%

_____ 4. A characteristic that an organism exhibits during its lifetime will only affect the evolution of its species if the characteristic

- (1) results from isolation of the organism from the rest of the population
- (2) is due to a genetic code that is present in the gametes of the organism
- (3) decreases the number of genes in the body cells of the organism
- (4) causes a change in the environment surrounding the organism

_____ 5. A species of bird known as Bird of Paradise has been observed in the jungles of New Guinea. The males shake their bodies and sometimes hang upside down to show off their bright colors and long feathers to attract females. Females usually mate with the “flashiest” males.

These observations can be used to support the concept that

- (1) unusual courtship behaviors lead to extinction
- (2) some organisms are better adapted for asexual reproduction
- (3) homeostasis in an organism is influenced by physical characteristics
- (4) behaviors that lead to reproductive success have evolved

_____ 6. One way that humans could have a positive impact on local environments is to

- (1) generate waste products as a result of technological advances
- (2) use resources that are renewable
- (3) increase planting large areas of one crop
- (4) increase the use of pesticides

_____ 7. The diagram below represents a process that occurs during human reproduction. The process represented by the arrow will ensure that the



(Not drawn to scale)

- (1) zygote contains a complete set of genetic information
- (2) gametes contain a complete set of genetic information
- (3) zygote contains half of the genetic information
- (4) gametes contain half of the genetic information

Name _____

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Regents Review Assignment #3-J10

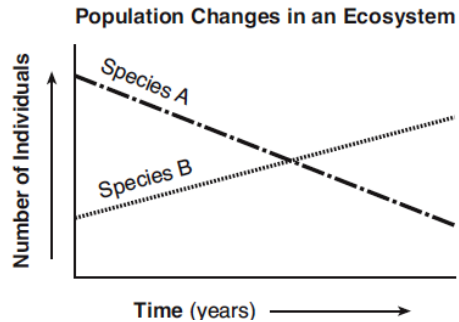
Living Environment: Comet 2010-2011

Part B-1 Questions

_____ 8. The graph below represents the populations of two different species in an ecosystem over a period of several years.

Which statement is a possible explanation for the changes shown?

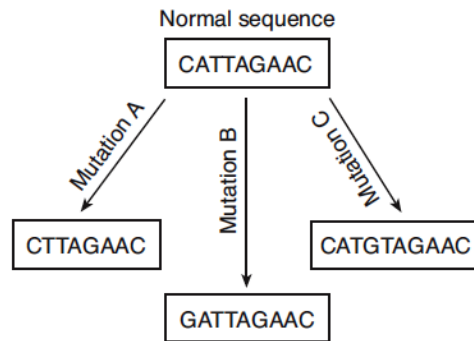
- (1) Species A is better adapted to this environment.
- (2) Species A is a predator of species B.
- (3) Species B is better adapted to this environment.
- (4) Species B is a parasite that has benefited species A.



_____ 9. The diagram shows a normal gene sequence and three mutated sequences of a segment of DNA.

Which row in the chart below correctly identifies the cause of each type of mutation?

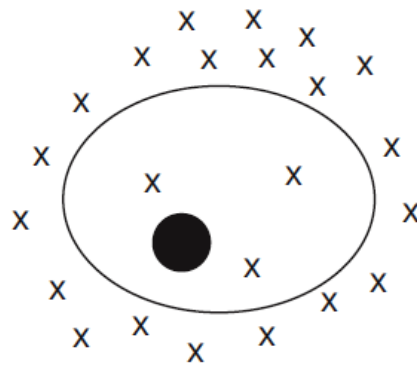
Row	Mutation A	Mutation B	Mutation C
(1)	deletion	substitution	insertion
(2)	insertion	substitution	deletion
(3)	insertion	deletion	substitution
(4)	deletion	insertion	substitution



_____ 10. The diagram to the right shows molecules represented by X both outside and inside of a cell.

A process that would result in the movement of these molecules out of the cell requires the use of

- (1) DNA
- (2) ATP
- (3) antigens
- (4) antibodies



_____ 11. The chart below compares the size of three structures: a gene, a nucleus, and a chromosome. Based on this information, structure A would most likely be a

- (1) chromosome that is part of structure C
- (2) chromosome that contains structures B and C
- (3) nucleus that contains both structure B and structure A
- (4) gene that is part of structure B

Size	Structure
smallest in size	A
↓	B
greatest in size	C

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Date Due _____

Regents Review Assignment #3-J10

Living Environment: Comet 2010-2011

Part B-2 Questions

Base your answers to questions 12 through 14 on the information and data table below and on your knowledge of biology.

“Birds colliding with aircraft either on the ground or in the air create problems for the Air Force. An organization known as BASH (Bird Aircraft Strike Hazard) studied the impact of birds colliding with aircraft. In 2001, there were 3854 bird collisions reported at a total cost to the Air Force of over 31 million dollars in damage—approximately eight thousand dollars per collision. August, September, and October were the busiest months with 1442 collisions. Nearly 50% of all these collisions occurred in the airfield environment, an environment that can most easily be controlled. The top five species of birds involved in these collisions are listed in the data table below.”

Top Five Bird Species Involved in Collisions in 2001

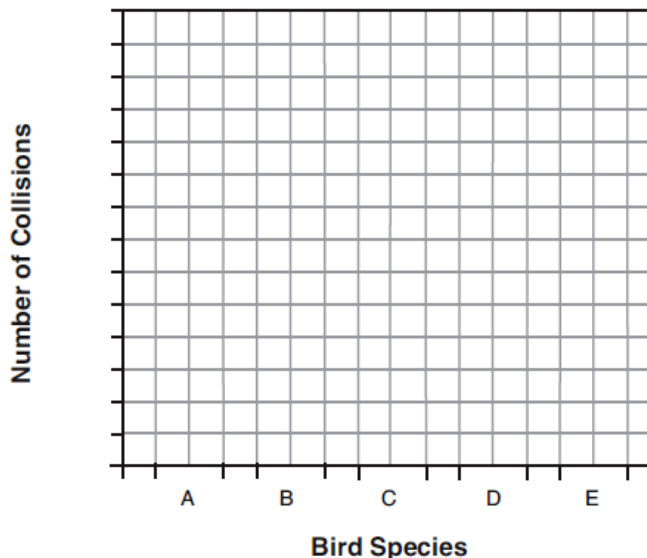
Type of Bird	Number of Collisions
American mourning dove (species A)	123
horned lark (species B)	100
barn swallow (species C)	83
American cliff swallow (species D)	55
American robin (species E)	55

Source of data: Bird Aircraft Strike Hazard by Matt Granger, <http://www.find.articles.com>

Directions (12 & 13): Using the information in the data table, construct a bar graph on the grid, following the directions below.

12. Mark an appropriate scale on the axis labeled “Number of Collisions.” [1]
13. Construct vertical bars to represent the data. Shade in each bar. [1]

Top Five Bird Species Involved in Collisions in 2001



14. State *one* possible reason that the greatest number of bird collisions occurs during August, September, and October. [1]

Name _____

Date Due _____

Regents Review Assignment #3-J10

Living Environment: Comet 2010-2011

Part C Questions

Base your answers to questions 15 through 17 on the information below and on your knowledge of biology.

“Rabbits eat plants and in turn are eaten by predators such as foxes and wolves. A population of rabbits is found in which a few have a genetic trait that gives them much better than average leg strength.”

15. Predict how the frequency of the trait for above average leg strength would be expected to change in the population over time. Explain your prediction. [1]

16. State what is likely to happen to the rabbits in the population that do *not* have the trait for above average leg strength. [1]

17. It was later discovered that the rabbits born with the trait for above average leg strength also inherited the trait for poor eyesight. Taking into account this new information, explain how your predictions would change. Support your answer. [1]

Base your answer to question 18 on the information below and on your knowledge of biology.

“Bacterial resistance to antibiotic treatment is becoming an increasing problem for the medical community. It is estimated that 70% of bacteria that cause infections in hospitals are resistant to at least one of the drugs used for treatment. Dangerous strains of tuberculosis (TB) have emerged that are resistant to several major antibiotic drugs. While drug-resistant TB is generally treatable, it requires much longer treatments with several antibiotics that are very expensive.”

18. Explain the loss of effectiveness of antibiotic drugs. In your explanation, be sure to:

- identify the genetic event that resulted in the original antibiotic resistance in some strains of bacteria [1]
- explain how the overuse of antibiotics can increase bacterial resistance [1]

Name _____

Date Due _____

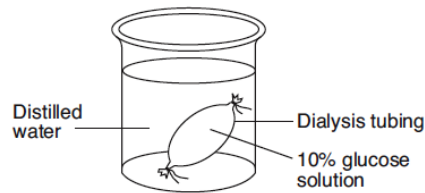
Regents Review Assignment #3-J10

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Part D Questions

_____19. A student carried out a lab activity where she was asked to squeeze a clothespin as many times as she could in one minute and record that number. She immediately tried the same activity again, thinking she could do better the second time, but the number was lower. She immediately tried again, but the number was lower still. State *one* reason why she continued to get lower numbers, even though she tried to increase the number of squeezes several times. [1]

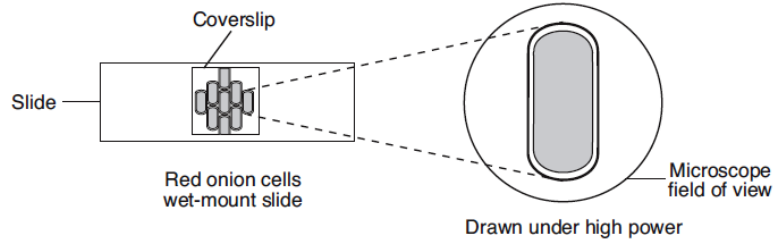
20. A laboratory setup using an artificial cell made from dialysis tubing is shown in the diagram below.



Identify the process that would most likely be responsible for the movement of glucose from inside the artificial cell to the solution outside of the cell. [1]

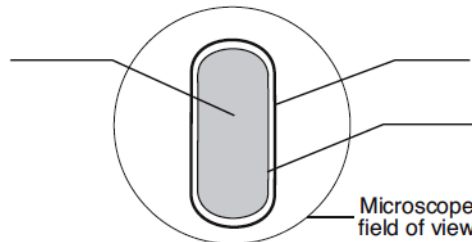
Base your answers to questions 21 through 22 on the information below and on your knowledge of biology.

A wet-mount slide of red onion cells is studied using a compound light microscope. A drawing of one of the cells as seen under high power is shown to the right.



21. On the diagram below, label the location of each of the cell structures listed. [1]

- cell wall
- cytoplasm
- cell membrane



22. Describe the proper way to add a saltwater solution to the cells without removing the coverslip. [1]
