

Name _____

Date Due _____

Regents Review Assignment #12-J07

Living Environment: Comet 2010-2011

Part A Questions

_____ 1. A protein on the surface of HIV can attach to proteins on the surface of healthy human cells. These attachment sites on the surface of the cells are known as

- (1) receptor molecules
- (2) genetic codes
- (3) molecular bases
- (4) inorganic catalysts

_____ 2. Contractile vacuoles maintain water balance by pumping excess water out of some single-celled pond organisms. In humans, the kidney is chiefly involved in maintaining water balance. These facts best illustrate that

- (1) tissues, organs, and organ systems work together to maintain homeostasis in all living things
- (2) interference with nerve signals disrupts cellular communication and homeostasis within organisms
- (3) a disruption in a body system may disrupt the homeostasis of a single-celled organism
- (4) structures found in single-celled organisms can act in a manner similar to tissues and organs in multicellular organisms

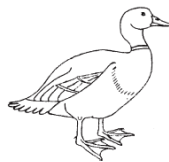
_____ 3. A change in the base subunit sequence during DNA replication can result in

- (1) variation within an organism
- (2) rapid evolution of an organism
- (3) synthesis of antigens to protect the cell
- (4) recombination of genes within the cell

_____ 4. A single pair of goldfish in an aquarium produced a large number of offspring. These offspring showed variations in body shape and coloration. The most likely explanation for these variations is that the

- (1) offspring were adapting to different environments
- (2) offspring were produced from different combinations of genes
- (3) parent fish had not been exposed to mutagenic agents
- (4) parent fish had not reproduced sexually

_____ 5. The diagram represents four different species of wild birds. Each species has feet with different structural adaptations.



Mallard duck



Redheaded woodpecker



Northern cardinal

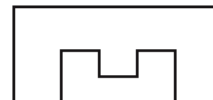


Common snipe

The development of these adaptations can best be explained by the concept of

- (1) inheritance of resistance to diseases that affect all these species
- (2) inheritance of characteristics acquired after the birds hatched from the egg
- (3) natural selection
- (4) selective breeding

_____ 6. The diagram below represents two molecules that can interact with each other to cause a biochemical process to occur in a cell.



Molecule A



Molecule B

Molecules A and B most likely represent

- (1) a protein and a chromosome
- (2) a receptor and a hormone
- (3) a carbohydrate and an amino acid
- (4) an antibody and a hormone

Part B-1 Questions

____ 7. Information concerning the diet of crocodiles of different sizes is contained in the table.

Which statement is *not* a valid conclusion based on the data?

- (1) Overharvesting of fish could have a negative impact on group C.
- (2) The smaller the crocodile is, the larger the prey.
- (3) Group B has no preference between reptiles and birds.
- (4) Spraying insecticides would have the most direct impact on group A.

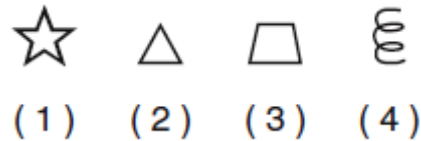
Food Source	Group A 0.3–0.5 Meter	Group B 2.5–3.9 Meters	Group C 4.5–5.0 Meters
mammals	0	18	65
reptiles	0	17	48
fish	0	62	38
birds	0	17	0
snails	0	25	0
shellfish	0	5	0
spiders	20	0	0
frogs	35	0	0
insects	100	2	0

____ 8. A classification system is shown in the table below.

Classification	Examples
Kingdom — animal	△, ○, □, ☆, □, ◇, ⋈, ▽
Phylum — chordata	△, □, ⋈, ☆, □
Genus — <i>Felis</i>	□, ⋈
Species — <i>domestica</i>	□

This classification scheme indicates that

is most closely related to



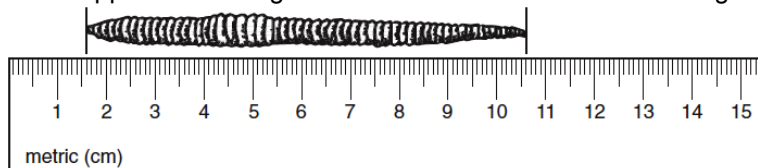
____ 9. Two food chains are represented below. Decomposers are important for supplying energy for

Food chain A: aquatic plant → insect → frog → hawk

Food chain B: grass → rabbit → hawk

- (1) food chain A, only
- (2) food chain B, only
- (3) both food chain A and food chain B
- (4) neither food chain A nor food chain B

____ 10. What is the approximate length of the earthworm shown in the diagram below?



- (1) 9 mm (3) 10.6 cm
- (2) 90 mm (4) 106 cm

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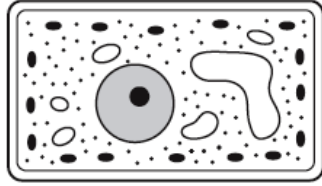
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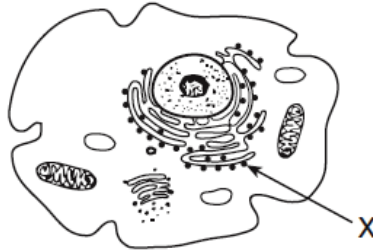
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B-2 Questions

Base your answers to questions 11 through 13 on the diagrams below and on your knowledge of biology. The diagrams represent two different cells and some of their parts. The diagrams are not drawn to scale.



Cell A



Cell B

11. Identify an organelle in cell A that is the site of autotrophic nutrition. [1]

12. Identify the organelle labeled X in cell B. [1]

_____ 13. Which statement best describes these cells?

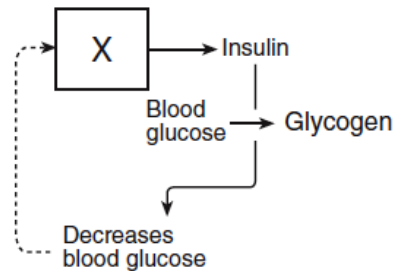
- (1) Cell B lacks vacuoles while cell A has them.
- (2) DNA would not be found in either cell A or cell B.
- (3) Both cell A and cell B use energy released from ATP.
- (4) Both cell A and cell B produce antibiotics.

Base your answers to questions 14 and 15 on the diagram and on your knowledge of biology.

14. Identify the organ labeled X. [1]

_____ 15. The dashed line in the diagram represents

- (1) a digestive process
- (2) a feedback mechanism
- (3) cellular differentiation
- (4) recycling of organic chemicals



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Part C Questions

16. An experiment was carried out to determine how competition for living space affects plant height. Different numbers of plants were grown in three pots, A, B, and C. All three pots were the same size. The data collected are shown in the table below.

Average Daily Plant Height (mm)							
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Pot A—5 plants	2	4	6	8	10	14	16
Pot B—10 plants	2	4	6	8	10	12	12
Pot C—20 plants	2	2	2	6	6	8	8

Analyze the experiment that produced the data shown in the table. In your answer be sure to:

- state a hypothesis for the experiment [1]
- identify *one* factor, other than pot size, that should have been kept the same in each experimental group [1]
- identify the dependent variable [1]
- state whether the data supports or fails to support your hypothesis and justify your answer [1]

Part D Questions

_____ 17. Students were asked to determine if they could squeeze a clothespin more times in a minute after resting than after exercising. An experiment that accurately tests this question should include all of the following *except*

- (1) a hypothesis on which to base the design of the experiment
- (2) a large number of students
- (3) two sets of clothespins, one that is easy to open and one that is more difficult to open
- (4) a control group and an experimental group with equal numbers of students of approximately the same age

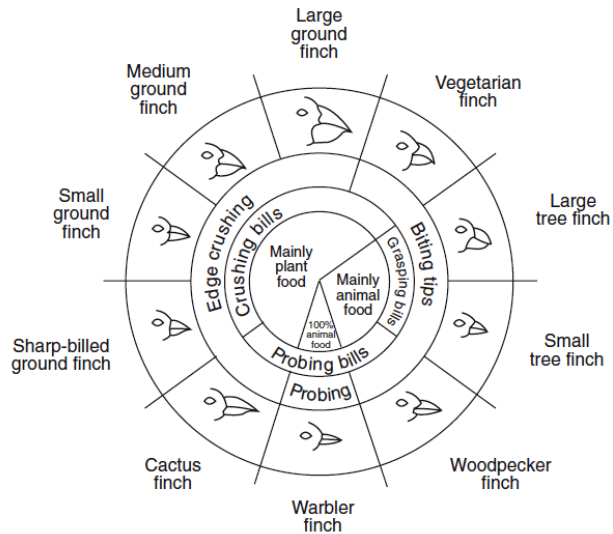
_____ 18. Which statement best describes a controlled experiment?

- (1) It eliminates the need for dependent variables.
- (2) It shows the effect of a dependent variable on an independent variable.
- (3) It avoids the use of variables.
- (4) It tests the effect of a single independent variable.

_____ 19. Which statement best describes a change that usually takes place in the human body when the heart rate increases as a result of exercise?

- (1) More oxygen is delivered to muscle cells.
- (2) Blood cells are excreted at a faster rate.
- (3) The rate of digestion increases.
- (4) No hormones are produced.

20. The cactus finch, warbler finch, and woodpecker finch all live on one island. Based on the information in the diagram, which one of these finches is *least* likely to compete with the other two for food? Support your answer with an explanation. [1]



From: Galapagos: A Natural History Guide

Variations in Beaks of Galapagos Islands Finches