

Name _____

Date Due _____

Regents Review Assignment #1-JA11

Living Environment: Comet 2010-2011

Part A Questions

_____1. The greatest number of relationships between the organisms in an ecosystem is best shown in

- (1) a food chain
- (2) an energy pyramid
- (3) a food web
- (4) an ecological succession diagram

_____2. Coded instructions that are passed from one generation to the next can be most directly changed by the processes of

- (1) passive transport, natural selection, and synthesis
- (2) selective breeding, replication, and absorption
- (3) recombination, mutation, and genetic engineering
- (4) evolution, reproduction, and digestion

_____3. When *S. marcescens*, a bacterium, is grown in a refrigerator, it produces red-colored colonies.

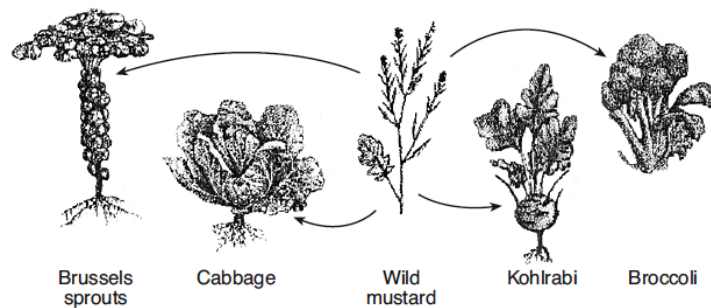
However, if the bacterium is grown at room temperature, the colonies are white. The best explanation for this situation is that

- (1) refrigeration changes the structure of genes
- (2) room temperature stimulates the synthesis of a red pigment
- (3) temperature has an effect on the expression of genes
- (4) only temperature is responsible for the expression of a trait

_____4. Researchers have reported that the number of different species of fish found in certain areas of the ocean has been greatly reduced over the past 50 years. This situation is an example of

- (1) a loss of biodiversity
- (2) an increase in ecological succession
- (3) a lack of differentiation
- (4) an increased carrying capacity

_____5. The arrows in the diagram below indicate the development of four different varieties of vegetable plants from wild mustard.

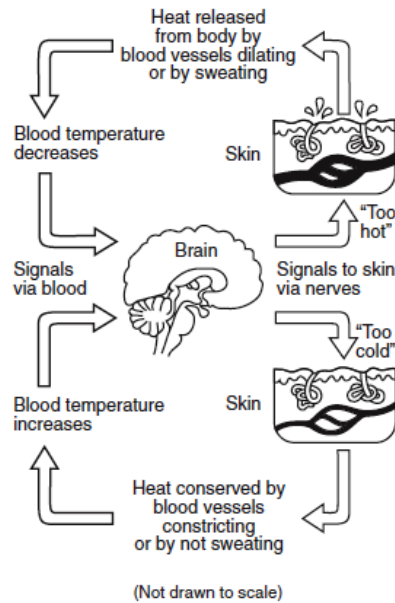


Each of these varieties was most likely produced as a result of

- (1) asexual reproduction in the wild for many years
- (2) changes in light availability
- (3) competition between plants
- (4) selective breeding over many generations

Part B-1 Questions

Activities in the human body are represented in the diagram below.



Source: Campbell and Reece,
Biology, 6th edition (adapted)

- _____ 6. Which title would be appropriate for the diagram?
- (1) Rate of Excretion Varies in Response to Amount of Water Taken In
 - (2) Feedback Mechanisms Help to Maintain Homeostasis
 - (3) Respiratory Rate Responds to an Increase in Muscle Activity
 - (4) The Nervous System Responds to Changes in Blood Sugar Levels

Part of a molecule found in cells is represented below.

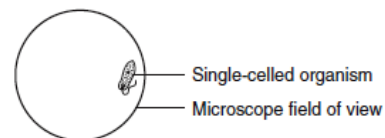


- _____ 7. Which process is most directly affected by the arrangement of components 1 through 4?
- (1) diffusion through cell membranes
 - (2) fertilization of a sex cell
 - (3) sequencing of amino acids in cells
 - (4) increasing the number of cells in an organism

_____ 8. A student used the low-power objective of a compound light microscope and observed a single-celled organism as shown in the diagram to the right. When he switched to high power, the organism was no longer visible.

This most likely happened because switching to high power made the

- (1) field too bright to see the organism
- (2) image too small to be seen
- (3) area of the slide being viewed smaller
- (4) fine-adjustment knob no longer functional



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Part B-2 Questions

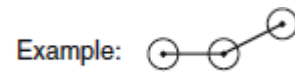
Base your answers to questions 9 through 13 on the data table below and on your knowledge of biology. The data table shows the concentrations of oxygen in parts per million (ppm) present in freshwater and seawater at various temperatures.

Concentration of Oxygen in Water

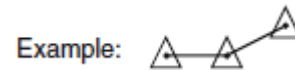
Temperature (°C)	Oxygen Concentration in Freshwater (ppm)	Oxygen Concentration in Seawater (ppm)
1	14.0	11.0
10	11.5	9.0
15	10.0	8.0
20	9.0	7.5
25	8.0	7.0
30	7.5	6.0

9. Mark an appropriate scale on each labeled axis. [1]

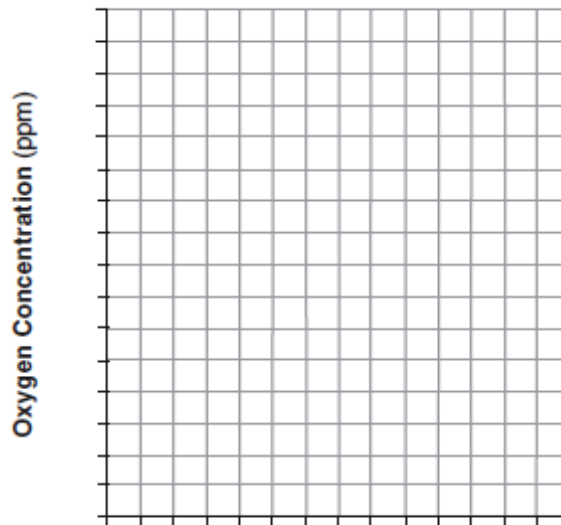
10. Plot the data for freshwater oxygen concentration on the grid. Surround each point with a small circle and connect the points. [1]



11. Plot the data for seawater oxygen concentration on the grid. Surround each point with a small triangle and connect the points. [1]



Concentration of Oxygen in Water



Key	
	Oxygen in freshwater
	Oxygen in seawater

12. Predict the oxygen concentration in freshwater at 35°C. [1] _____ ppm

13. State *one* relationship between temperature and dissolved oxygen concentration in water. [1]

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Part C Questions

14. *Staphylococcus aureus* is a type of bacterium that lives on the skin and in the nostrils of most people. Generally, it is controlled by the immune system of the body. Occasionally, the antibiotic penicillin is needed to control the bacterium. However, some strains of *S. aureus* have a resistance to penicillin, which makes them hard to kill and infections difficult to cure. Explain how the resistance to penicillin affects the *S. aureus* population. In your answer, be sure to include an explanation of:

- how the exposure to penicillin affects the survival of some bacteria in the population [1]
- why the frequency of penicillin-resistant bacteria can change over time within the population [1]
- how it is still possible to cure patients who are infected with penicillin-resistant bacteria [1]

Base your answers to questions 15 through 18 on the information below and on your knowledge of biology.

“An ecology class is trying to help reduce the problem of global warming by asking their school district to change all of their old lightbulbs to compact fluorescent lightbulbs that use less electricity.”

15. Identify *one* specific gas that contributes to the problem of global warming. [1]

16. State *one* activity of humans that increases the concentration of this gas. [1]

17. Describe *one negative* effect of global warming on humans or ecosystems. [1]

18. Explain why switching to more efficient lightbulbs will help reduce the school's contribution to global warming. [1]

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Part D Questions

Base your answers to questions 19 through 21 on the information below and on your knowledge of biology.

A student prepared four different red blood cell suspensions, as shown in the chart below.

Suspension	Contents
A	red blood cells in normal blood serum (0.7% salt solution)
B	red blood cells in 10% salt solution
C	red blood cells in distilled water
D	red blood cells in tap water

____ 19. Which suspension would contain red blood cells that would appear wrinkled and reduced in volume?

- (1) A (2) B (3) C (4) D

____ 20. The change in red blood cell volume is principally due to the movement of

- (1) serum (2) oxygen (3) water (4) salt





____ 21. Which process is most likely involved in the change in red blood cell volume?

- (1) active transport (2) evaporation (3) replication (4) diffusion

Base your answers to questions 22 through 25 on the information below and on your knowledge of biology.

The characteristics of four finches that inhabit the same island are represented in the chart below.

Characteristics Chart

<p>Large Ground Finch</p>  <p>Beak: crushing</p> <p>Food: mainly plant</p>	<p>Warbler Finch</p>  <p>Beak: probing</p> <p>Food: 100% animal</p>
<p>Small Ground Finch</p>  <p>Beak: crushing</p> <p>Food: mainly plant</p>	<p>Large Tree Finch</p>  <p>Beak: grasping</p> <p>Food: mainly animal</p>

22-25. Complete the table below using information in the characteristics chart and your knowledge of biology. [2]

Competes With the Large Tree Finch	Type of Finch	State <i>one</i> reason why it competes <i>or</i> does <i>not</i> compete with the large tree finch.
no		
yes		