Name_____ Date: _____ Pd. ____

Regents Review Assignment #6 Living Environment 2

Part A Questions

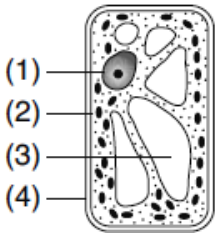
_____1. The human liver contains many specialized cells that secrete bile. Only these cells produce bile because

(1) different cells use different parts of the genetic information they contain
(2) cells can eliminate the genetic codes that they do not need
(3) all other cells in the body lack the genes needed for the production of bile
(4) these cells mutated during embryonic development

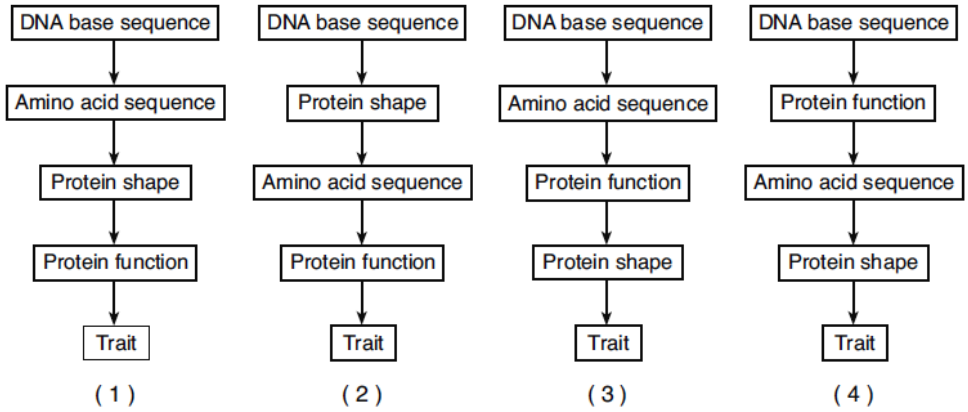
_____2. Although identical twins inherit exact copies of the same genes, the twins may look and act differently from each other because

(1) a mutation took place in the gametes that produced the twins
(2) the expression of genes may be modified by environmental factors
(3) the expression of genes may be different in males and females
(4) a mutation took place in the zygote that produced the twins

_____3. Which cell structure contains information needed for protein synthesis?



_____4. Which sequence best represents the relationship between DNA and the traits of an organism?



_____5. Carbon dioxide makes up less than 1 percent of Earth's atmosphere, and oxygen makes up about 20 percent. These percentages are maintained most directly by

(1) respiration and photosynthesis
(2) the ozone shield
(3) synthesis and digestion
(4) energy recycling in ecosystems

_____6. In the leaf of a plant, guard cells help to

(1) destroy atmospheric pollutants when they enter the plant
(2) regulate oxygen and carbon dioxide levels
(3) transport excess glucose to the roots
(4) block harmful ultraviolet rays that can disrupt chlorophyll production

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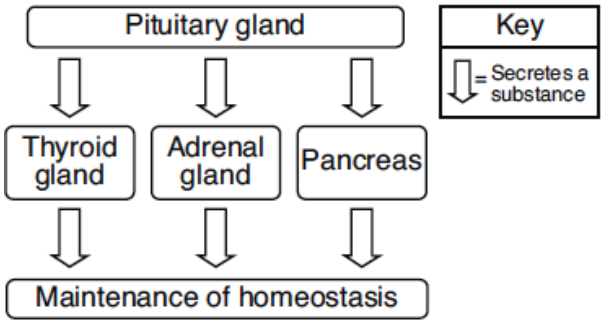
Regents Review Assignment #6-J09 Living Environment: Comet 2010-2011

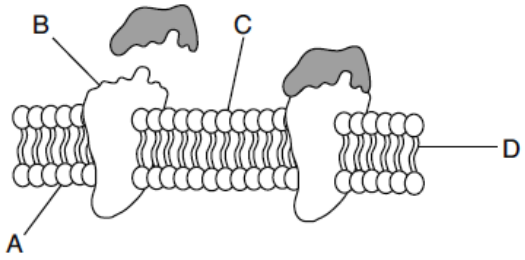
Part B-1 Questions

The diagram below illustrates some functions of the pituitary gland. The pituitary gland secretes substances that, in turn, cause other glands to secrete different substances.



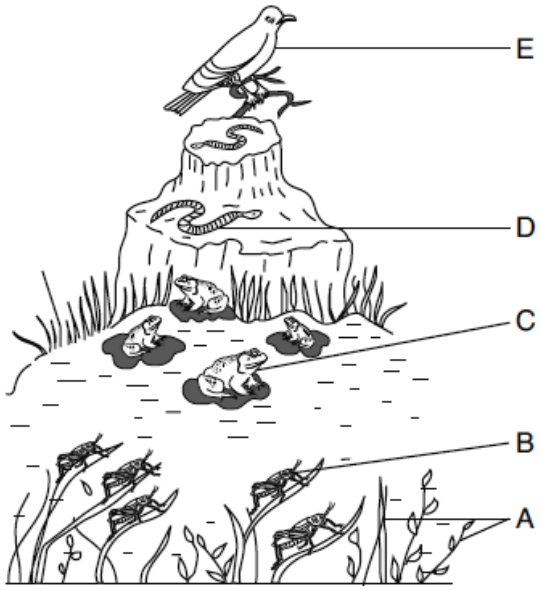
_____7. Which statement best describes events shown in the diagram?
(1) Secretions provide the energy needed for metabolism.
(2) The raw materials for the synthesis of secretions come from nitrogen.
(3) The secretions of all glands speed blood circulation in the body.
(4) Secretions help the body to respond to changes from the normal state

The diagram represents a portion of a cell membrane.



_____8. Which structure may function in the recognition of chemical signals?
(1) *A* (3) *C*
(2) *B* (4) *D*

Base your answers to questions 9 and 10 on the diagram that represents an energy pyramid in a meadow ecosystem and on your knowledge of biology.



_____9. Which species would have the largest amount of available energy in this ecosystem?
(1) *A* (3) *C*
(2) *B* (4) *E*

_____10. Which two organisms are carnivores?
(1) *A* and *B* (3) *B* and *D*
(2) *A* and *E* (4) *C* and *E*

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Part B-2 Questions

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

Yeast cells carry out the process of cellular respiration as shown in this equation.

$$C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$$

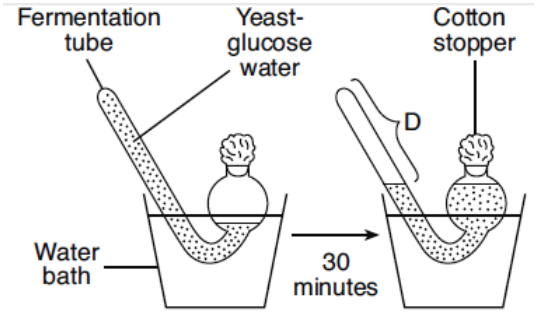
glucose — ethyl alcohol — carbon dioxide

An investigation was carried out to determine the effect of temperature on the rate of cellular respiration in yeast. Five experimental groups, each containing five fermentation tubes, were set up. The fermentation tubes all contained the same amounts of water, glucose, and yeast. Each group of five tubes was placed in a water bath at a different temperature. After 30 minutes, the amount of gas produced (*D*) in each fermentation tube was measured in milliliters.

The average for each group was calculated. A sample setup and the data collected are shown below.

Average Amount of Gas Produced (D) After 30 Minutes at Various Temperatures

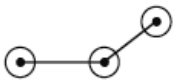
Group	Temperature (°C)	D (mL)
1	5	0
2	20	5
3	40	12
4	60	6
5	80	3



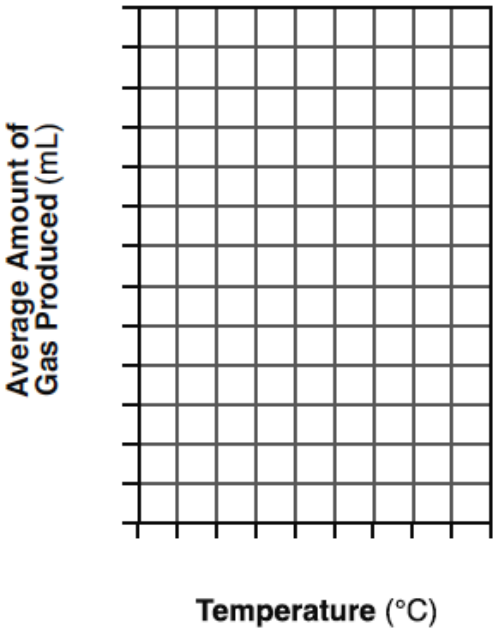
Directions (11 and 12): Using the information in the data table, construct a line graph on the grid below, following the directions below.

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

12. Plot the data from the data table. Surround each point with a small circle, and connect the points. [1]

Example: 

Average Amount of Gas Produced at Various Temperatures



_____13. The maximum rate of cellular respiration in yeast occurred at which temperature?

(1) 5°C (2) 20°C
(3) 40°C (4) 60°C

_____14. Compared to the other tubes at the end of 30 minutes, the tubes in group 3 contained the

(1) smallest amount of CO2
(2) smallest amount of glucose
(3) smallest amount of ethyl alcohol
(4) same amounts of glucose, ethyl alcohol, and CO2

Name_____ Date Due_____

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Part C Questions

15. Humans have many interactions with the environment. Briefly describe how human activities can affect the environment of organisms living 50 years from now. In your answer, be sure to:
• identify *one* human activity that could release chemicals harmful to the environment [1]
• identify the chemical released by the activity [1]
• state *one* effect the release of this chemical would most likely have on future ecosystems [1]
• state *one* way in which humans can reduce the production of this chemical to lessen its effect on future ecosystems [1]

_____

_____

_____

_____

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_____

_____

Base your answer to question 16 on the article below and on your knowledge of biology.

Power plan calls for windmills off beach
The Associated Press

"Several dozen windmills taller than the Statue of Liberty will crop up off Long Island — the first source of off-shore wind power outside of Europe, officials said. The Long Island Power Authority [LIPA] expects to choose a company to build and operate between 35 and 40 windmills in the Atlantic Ocean off Jones Beach, The New York Times reported Sunday [May 2, 2004]. Cost and completion date are unknown. Energy generated by the windmills would constitute about 2 percent of LIPA's total power use. They are expected to produce 100 to 140 megawatts, enough to power 30,000 homes.... But some Long Island residents oppose the windmills, which they fear will create noise, interfere with fishing, and mar ocean views...."

-Source: "Democrat and Chronicle", Rochester, NY 5/3/04

16. State *two* ways that the use of windmills to produce energy would be beneficial to the environment. [2]

(1) _____

(2) _____

Name_____ Date Due_____

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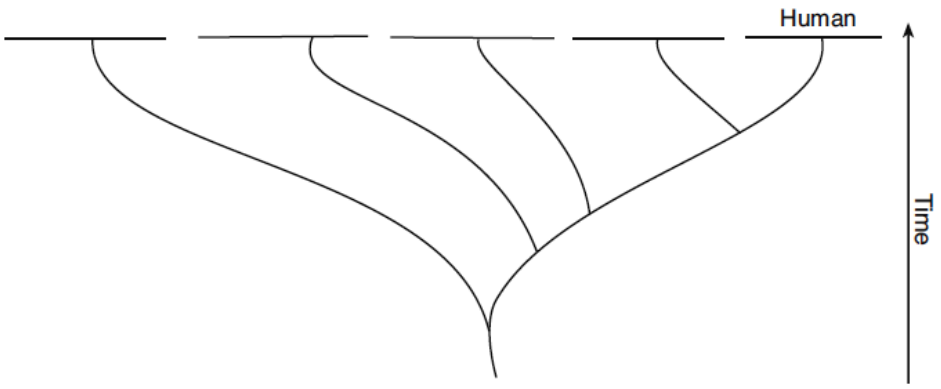
Part D Questions

17. The data table shows the number of amino acid differences in the hemoglobin molecules of several species compared with amino acids in the hemoglobin of humans.

Based on the information in the data table, write the names of the organisms from the table in their correct positions on the evolutionary tree below. [1]

Amino Acid Differences

Species	Number of Amino Acid Differences
human	0
frog	67
pig	10
gorilla	1
horse	26



18. Explain why comparing the vein patterns of several leaves is a less reliable means of determining the evolutionary relationship between two plants than using gel electrophoresis. [1]

_____

_____

Base your answers to questions 19 through 20 on the information and data table below and on your knowledge of biology.

During a laboratory activity, a group of students obtained the data shown at the right.

19. Which procedure would increase the validity of the conclusions drawn from the results of this experiment?
(1) increasing the number of times the activity is repeated
(2) changing the temperature in the room
(3) decreasing the number of students participating in the activity
(4) eliminating the rest period before the resting pulse rate is taken

Pulse Rate Before and After Exercise

Student Tested	Pulse Rate at Rest (beats/min)	Pulse Rate After Exercise (beats/min)
A	70	97
B	74	106
C	83	120
D	60	91
E	78	122
Group Average		107

20. Calculate the group average for the resting pulse rate. Place your final answer in the space below. [1]

_____beats/min