Florida EOC Assessments

Biology 1
End-of-Course Assessment
Sample Questions
Regular Print Paper-Based Accommodation

The intent of these sample test materials is to orient teachers and students to the types of questions on the Biology 1 EOC Assessment. By using these materials, students who will use the regular print paper-based accommodation will become familiar with the types of items and response formats they will see on the paper-based form of the test. The sample questions and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test. Additional information about test items can be found in the *Biology 1 EOC Assessment Test Item Specifications* at http://www.fldoe.org/accountability/assessments/k-12-student-assessment/end-of-course-eoc-assessments/test-item-specifications.stml.

The Biology 1 EOC Assessment and sample questions and answers are based on the 2007 Next Generation Sunshine State Standards.

The regular print paper-based accommodation sample questions and the sample answers are only available online at http://www.fldoe.org/accountability/assessments/k-12-student-assessment/end-of-course-eoc-assessments.

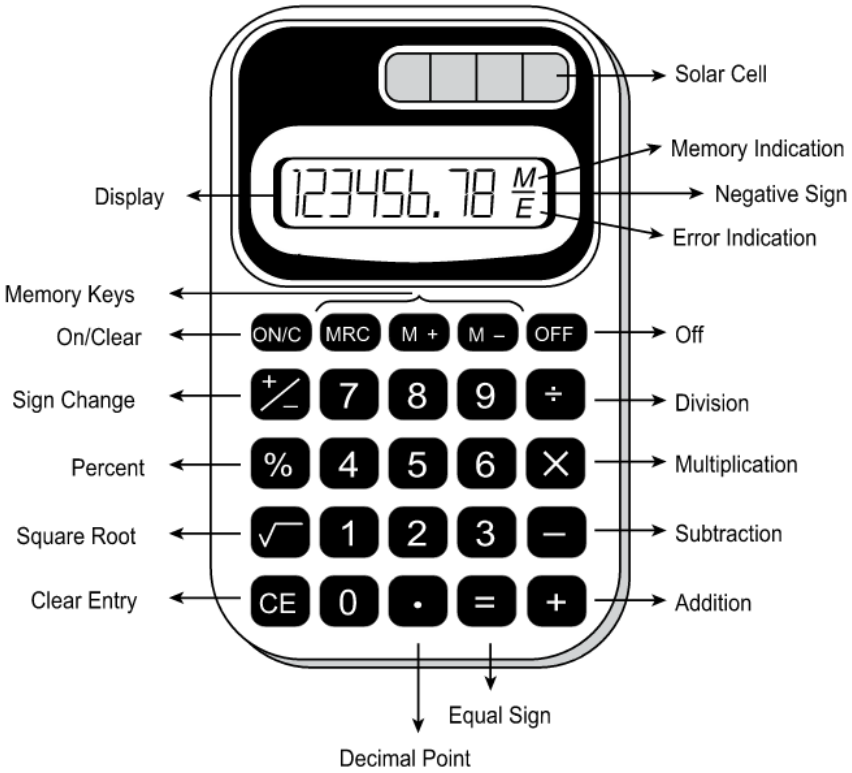
Computer-based practice tests are available online at http://download.pearsonaccessnext.com/fl/fl-practicetest.html?links=true.

Directions for Answering the Biology 1 Sample Questions

Mark your answers in this booklet. You may refer to the Periodic Table on page 3 as needed. Your teacher has the answers to the sample questions, which are also available at http://www.fldoe.org/core/fileparse.php/5662/urlt/NGSSS-EOC-SampleAnswers.pdf.

This is a picture of a generic 4-function calculator and its parts.

GENERIC 4-FUNCTION CALCULATOR

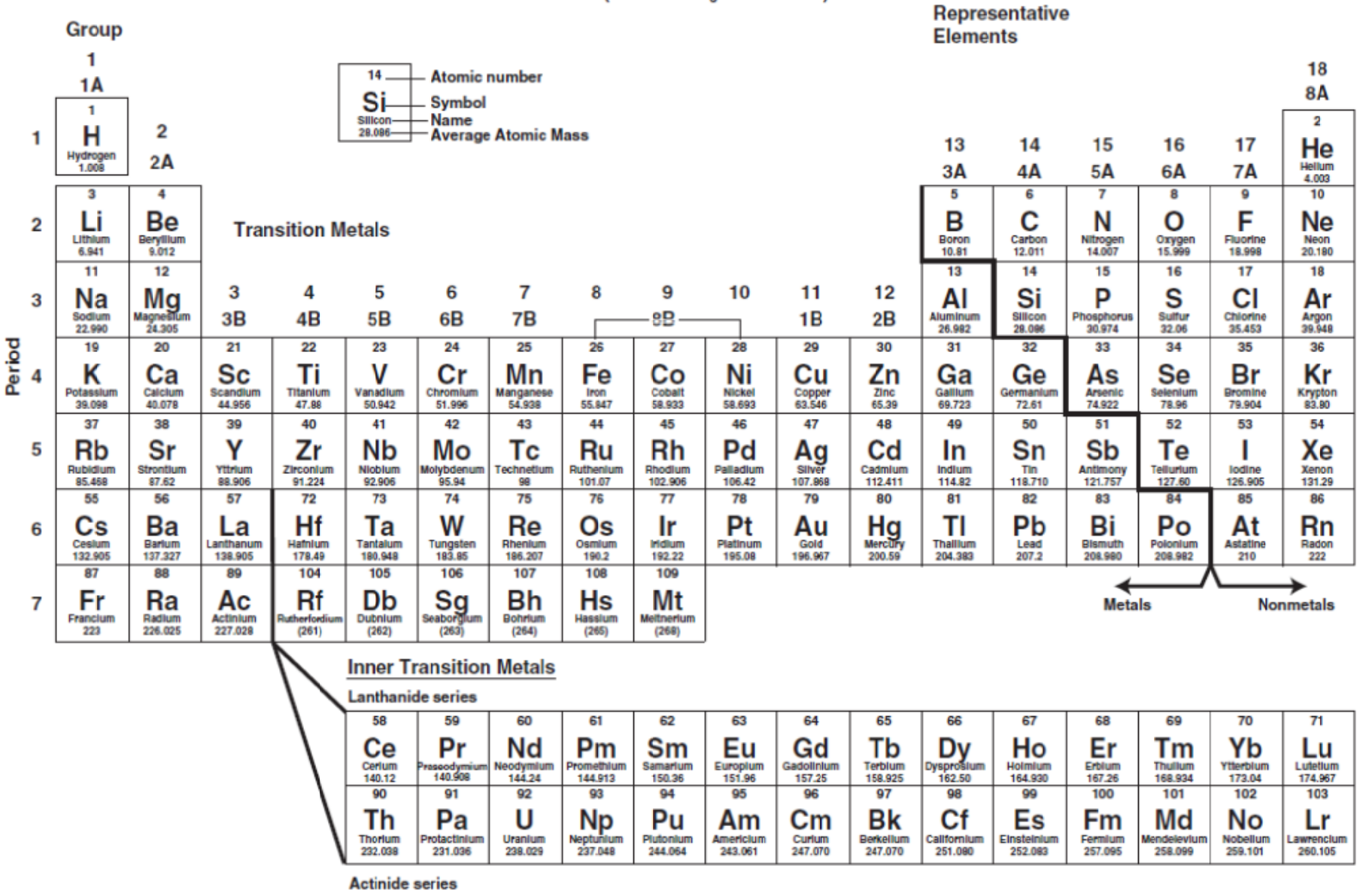


HELPFUL HINTS FOR USING A FOUR-FUNCTION CALCULATOR

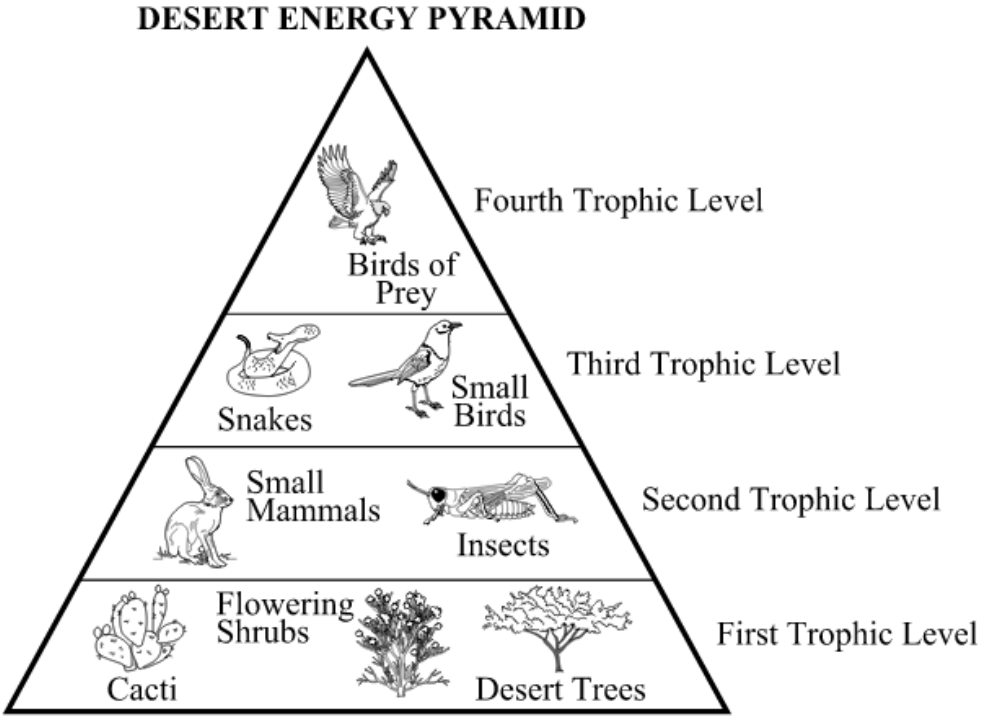
1. Read the problem very carefully. Then decide whether or not you need the calculator to help you solve the problem.
2. When starting a new problem, always clear your calculator by pressing the on/clear key.
3. If you see an **E** in the display, clear the error before you begin.
4. If you see an **M** in the display, clear the memory and the calculator before you begin.
5. If the number in the display is not one of the answer choices, check your work.
6. Remember, your calculator will NOT automatically perform the algebraic order of operations.
7. Calculators might display an incorrect answer if you press the keys too quickly. When working with calculators, use careful and deliberate keystrokes, and always remember to check your answer to make sure that it is reasonable.
8. The negative sign may appear either to the left or to the right of the number.
9. When solving items, wait until the final step to round decimal equivalents and/or approximations. Focus on whether the item specifies the decimal place, equivalent fraction, and/or *pi* approximation needed for the answer. In most cases, front-end estimation and truncation are not accurate processes for estimation.
10. Always check your answer to make sure that you have completed all of the necessary steps.

Periodic Table of the Elements

(based on $^{12}_{6}C = 12.0000$)



1. A team of ecologists observed feeding patterns of several populations in the desert. The energy pyramid shown below depicts the feeding patterns the ecologists observed.



Which of the following **best** explains the difference in the amount of available energy in the trophic levels of the desert ecosystem?

Ⓐ There is less energy available in the producers because their tissues are less dense than those at higher trophic levels.

Ⓑ There is more energy available in the second trophic level because less energy is needed for hunting compared to the higher trophic levels.

Ⓒ There is more available energy in the birds of prey because they have greater muscle mass for storing energy than organisms in lower trophic levels have.

Ⓓ There is less available energy in the fourth trophic level because of the loss of energy through metabolism in each of the lower trophic levels.

2. Water is essential for life. Its special properties make water the single most important molecule in plant life. Which of the following properties of water enable it to move from the roots to the leaves of plants?

Ⓐ Water expands as it freezes.

Ⓑ Water is an excellent solvent.

Ⓒ Water exhibits cohesive behavior.

Ⓓ Water is able to moderate temperatures.

3. An osmosis investigation was conducted using chicken eggs to represent cells with semipermeable membranes. The mass of each egg was measured to determine how much water diffused into or out of the eggs. The eggs were first soaked in vinegar to dissolve the shell. Each egg was then placed in one of three different solutions for 24 hours. The table below shows the results of the investigation.

OSMOSIS IN CELLS

Solution	Average Mass of Eggs Before Soaking (grams)	Average Mass of Eggs After Soaking (grams)	Difference in Average Mass (grams)	Percent Change in Average Mass
Vinegar (95% water)	71.2	98.6	27.4	+38.5
Corn syrup (5% water)	98.6	64.5	34.1	-34.6
Distilled water (100% water)	64.5	105.3	40.8	+63.3

Based on this experiment, which of the following should be inferred about cells with semipermeable membranes?

Ⓐ Substances other than water may also cross the cell membrane.

Ⓑ Substances other than water may block pores in the cell membrane.

Ⓒ Water enters the cell when placed in environments of high water concentration.

Ⓓ Water leaves the cell when placed in environments with a low concentration of solutes.

4. One of the accepted scientific theories describing the origin of life on Earth is known as chemical evolution. According to this theory, which of the following events would need to occur **first** for life to evolve?

Ⓐ onset of photosynthesis

Ⓑ origin of genetic material

Ⓒ synthesis of organic molecules

Ⓓ formation of the plasma membrane

5. Hemophilia is a sex-linked, recessive trait. Which of the following describes the probability of hemophilia in the offspring of a man who does not have hemophilia and a woman who is a heterozygous carrier?

Ⓐ There is a 100% chance that their sons will have hemophilia.

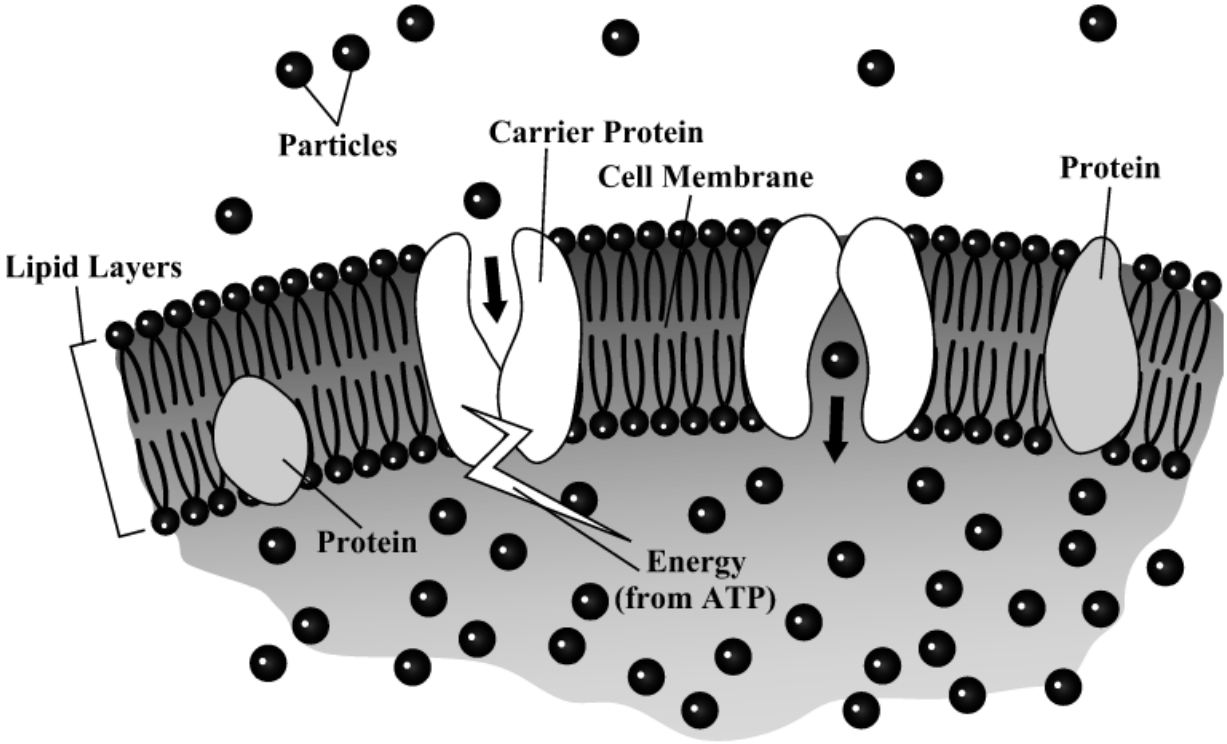
Ⓑ There is a 0% chance that their daughters will have hemophilia.

Ⓒ There is a 25% chance that their sons will have hemophilia.

Ⓓ There is a 50% chance that their daughters will have hemophilia.

For questions 6, 7, and 8, refer to the following passage and illustration.

A cell membrane is composed of a double layer of lipids in which many kinds of proteins are embedded. Many of these proteins act like gates, allowing only certain particles to enter or leave the cell.



When a particle has to go against its concentration gradient through one of these gates, energy is supplied by the cell to the correct protein to move the particle through the membrane. A sodium-potassium ion pump is an example of a type of carrier protein that uses a large portion of the cell's energy to move sodium ions through the cell membrane.

6. The sodium-potassium ion pump found in some cell membranes is made of which of the following basic structural components?

Ⓐ amino acids

Ⓑ fatty acids

Ⓒ monosaccharides

Ⓓ nucleotides

7. What is a primary function of the cell membrane?

Ⓐ determining genetic traits

Ⓑ defending against foreign particles

Ⓒ breaking down proteins for energy

Ⓓ generating energy from mineral nutrients

8. Why does the study of cell membranes lead to a better understanding of cell function?

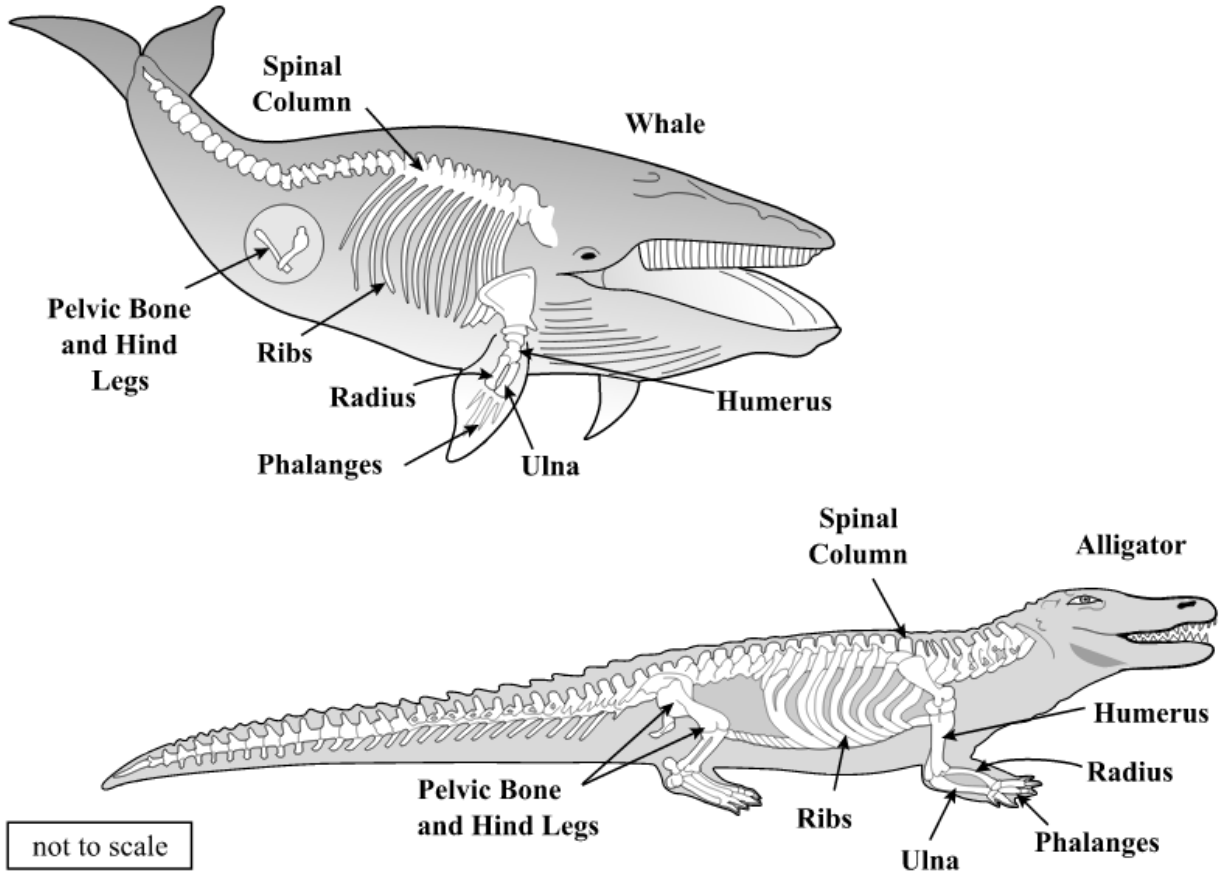
Ⓐ All cell functions occur in the cell membrane.

Ⓑ All energy transfers occur at the cell membrane.

Ⓒ All cell membranes contain the information for making proteins.

Ⓓ All materials needed for cell functions must pass through the cell membrane.

9. The scientific theory of evolution is supported by different types of evidence. The diagrams below show the skeletons of two different animal species.



How does comparing the skeletons of these animals provide support for the scientific theory of evolution?

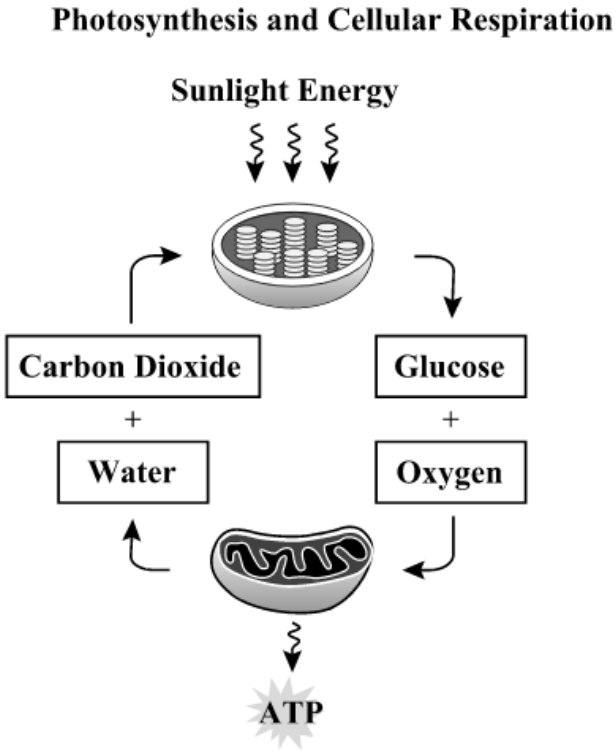
Ⓐ It provides information about the organisms' habitats.

Ⓑ It shows possible common ancestry between organisms.

Ⓒ It provides information to determine the organisms' ages.

Ⓓ It shows possible chromosomal similarities between organisms.

10. The diagram below shows the relationship between photosynthesis and cellular respiration and the organelles in which they occur.



Which statement describes how photosynthesis and cellular respiration are interrelated?

Ⓐ Oxygen is produced during cellular respiration and stored during photosynthesis.

Ⓑ Carbon dioxide and water released by cellular respiration are used in photosynthesis.

Ⓒ Photosynthesis releases the energy that is stored during the process of cellular respiration.

Ⓓ Glucose is used during cellular respiration to produce food that is broken down during photosynthesis.

11. As food travels through the digestive system, it is exposed to a variety of pH levels. The stomach has a pH of 2 due to the presence of hydrochloric acid (HCl), and the small intestine has a pH ranging from 7 to 9. HCl converts pepsinogen into pepsin, an enzyme that digests proteins in the stomach. Which of the following **most likely** happens to pepsin as it enters the small intestine?

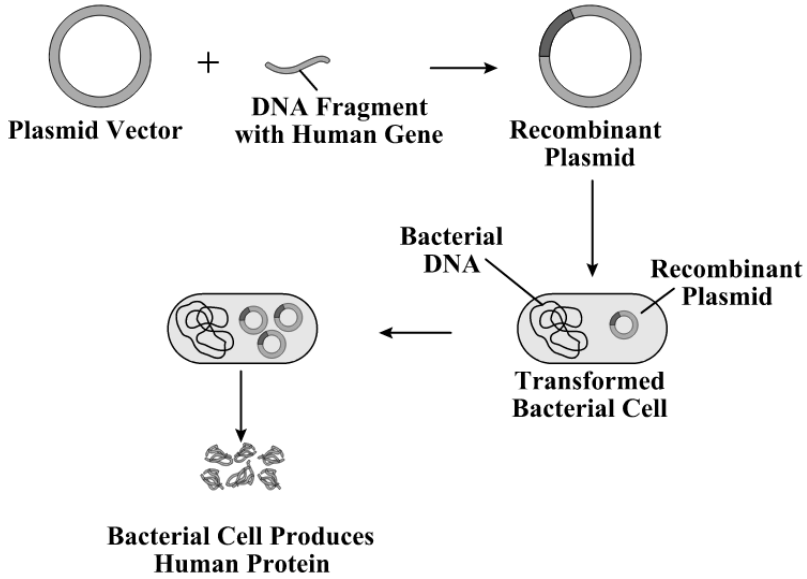
Ⓐ It becomes inactive.

Ⓑ It begins to replicate.

Ⓒ Its shape changes to engulf large proteins.

Ⓓ Its activity increases to digest more proteins.

12. Genes for medically important proteins can be cloned and inserted into bacteria, as shown in the diagram below.



Why can bacteria recognize a human gene and then produce a human protein?

Ⓐ DNA replication in bacteria and humans is the same.

Ⓑ Bacterial cells contain the same organelles as human cells.

Ⓒ The basic components of DNA are the same in humans and bacteria.

Ⓓ Bacterial cells and human cells contain the same kind of chromosomes.

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