

1. A student tested different foods to determine which organic compounds were present. She based her results on the following information:

Test	Positive Reaction	Organic Compound Indicated
brown paper	shiny spot	fat
Benedict's solution	color change	sugar
iodine solution	color change	starch
Biuret's solution	color change	protein

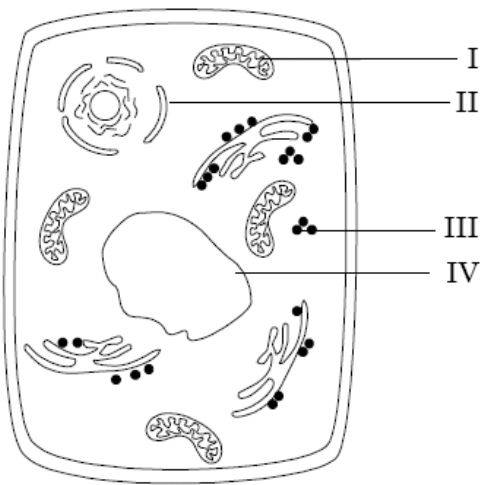
All four tests were performed on skim milk. The observations were that Benedict's solution changed color and Biuret's solution changed color. All other tests had negative results. Which organic compounds were present in skim milk?

- A sugar and protein
- B fat and sugar
- C sugar and starch
- D starch and protein
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2. Enzymes are classified as which of the following biological organic compounds?
- A carbohydrates
- B lipids
- C nucleic acids
- D proteins
3. Some organelles have their own DNA that is distinct from the cell's nuclear DNA. This is true of which organelle?
- A cell wall
- B mitochondrion
- C plasma membrane
- D vacuole

4. Pollen in plants is **most similar** to which type of cell in humans?

A egg
B embryo
C sperm
D zygote

5. Protein synthesis occurs at which of the structures shown below?



A I
B II
C III
D IV

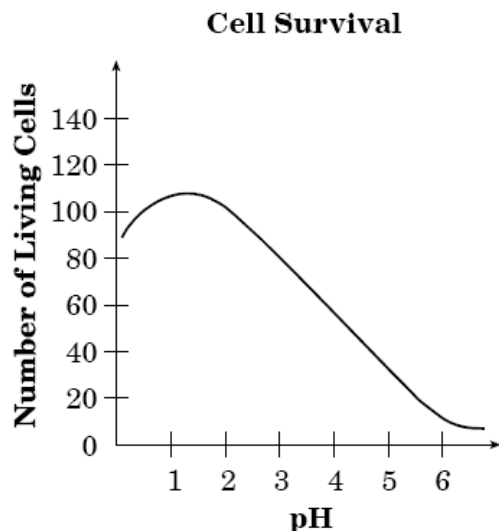
6. What would happen if an animal cell were placed in a fluid containing less salt than inside the cell?

A The cell walls would rupture.
B The cytoplasm of the cell would expand.
C Osmosis would carry fluid out of the cell.
D No change would take place.

7. Why do cells need buffering agents?

A to function properly in an extremely acid internal environment
B to function properly in an extremely basic internal environment
C to minimize the changes in pH of the internal environment
D to maintain constant internal environment at a pH of 10

8. Consider this graph:



Which statement **best** summarizes the information in the graph?

- A The cells survive best under acidic conditions.
- B The cells survive best under basic conditions.
- C These cells would survive better in distilled water.
- D The survival of these cells does not affect pH.

9. Placing wilted lettuce in cold water will make it crisp again. Which statement **best** describes what happens to restore the lettuce to its original condition?

- A Water left the lettuce cells by diffusion.
- B Water entered the cells of the lettuce by osmosis.
- C Osmosis caused salts to enter the lettuce cells.
- D Salts in the leaf caused water to leave the cells.

10. Which cell process will move substances against a concentration gradient?

- A diffusion
- B facilitated diffusion
- C active transport
- D osmosis

11. Individuals who lack lactase are unable to break down the sugar lactose. Which term **best** describes lactase?

- A enzyme
- B fatty acid
- C lipid
- D starch

12. The bacteria that cause tetanus can survive in a puncture wound that has healed on the outer surface of the skin. Through what process do these bacteria acquire the energy they need to survive?
- A aerobic respiration
 - B anaerobic respiration
 - C chemosynthesis
 - D photosynthesis
13. In terms of ATP production, which process results in the **most** stored energy?
- A aerobic respiration
 - B anaerobic respiration
 - C fermentation
 - D photosynthesis
14. Which statement **best** distinguishes aerobic from anaerobic respiration?
- A Only aerobic respiration involves fermentation.
 - B Only anaerobic respiration occurs in the mitochondria.
 - C Only aerobic respiration requires oxygen.
 - D Only anaerobic respiration produces carbon dioxide.
15. Human sperm cells must move rapidly, often against gravity, in order to reach the egg before they die. Based on this information, which organelle would be more abundant in a sperm cell than a skin cell?
- A chloroplasts
 - B ribosomes
 - C nuclei
 - D mitochondria
16. Which **most accurately** describes the difference in ATP production between aerobic respiration and anaerobic respiration?
- A Aerobic respiration produces more ATP than anaerobic respiration.
 - B Anaerobic respiration produces more ATP than aerobic respiration.
 - C Only anaerobic respiration produces measurable amounts of ATP.
 - D Anaerobic and aerobic respiration produce the same amount of ATP.
17. Why is anaerobic respiration, in addition to aerobic respiration, utilized by humans during strenuous physical activity?
- A because perspiration increases
 - B because blood pressure increases
 - C because oxygen supply is inadequate
 - D because the heart beats faster

End of Goal 2 Sample Items