1. Enzymes are classified as which of the following biological organic compounds?
   A carbohydrates  
   B lipids  
   C nucleic acids  
   D proteins

2. 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

3. Pollen in plants is most similar to which type of cell in humans?
   A egg  
   B embryo  
   C sperm  
   D zygote

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

5. Why do cells need buffering agents?
   A to maintain constant internal environment at a pH of 10  
   B to minimize the changes in pH of the internal environment  
   C to function properly in an extremely basic internal environment  
   D to function properly in an extremely acid internal environment
6. 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.

7. 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.

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

A  diffusion
B  facilitated diffusion
C  osmosis
D  active transport

9. 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
10. 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

11. In terms of ATP production, which process results in the most stored energy?

A  aerobic respiration  
B  anaerobic respiration  
C  fermentation  
D  photosynthesis

12. 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.

13. 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.
1  Objective:  2.01
Compare and contrast the structure and functions of the following organic molecules:
• Carbohydrates
• Proteins
• Lipids
• Nucleic acids
Thinking Skill:  Knowledge  Correct Answer:  D

2  Objective:  2.02
Investigate and describe the structure and functions of cells including:
b. Cell specialization.
c. Communication among cells within an organism.
Thinking Skill:  Knowledge  Correct Answer:  B

3  Objective:  2.02
Investigate and describe the structure and functions of cells including:
b. Cell specialization.
c. Communication among cells within an organism.
Thinking Skill:  Analyzing  Correct Answer:  C

4  Objective:  2.02
Investigate and describe the structure and functions of cells including:
b. Cell specialization.
c. Communication among cells within an organism.
Thinking Skill:  Knowledge  Correct Answer:  C

5  Objective:  2.02
Investigate and describe the structure and functions of cells including:
b. Cell specialization.
c. Communication among cells within an organism.
Thinking Skill:  Knowledge  Correct Answer:  B

6  Objective:  2.03
Investigate and analyze the cell as a living system including:
a. Maintenance of homeostasis.
b. Movement of materials into and out of cells.
c. Energy use and release in biochemical reactions.
Thinking Skill:  Analyzing  Correct Answer:  A
Objective: 2.03
Investigate and analyze the cell as a living system including:
  a. Maintenance of homeostasis.
  b. Movement of materials into and out of cells.
  c. Energy use and release in biochemical reactions.
Thinking Skill: Analyzing       Correct Answer:  B

8 Objective: 2.03
Investigate and analyze the cell as a living system including:
  a. Maintenance of homeostasis.
  b. Movement of materials into and out of cells.
  c. Energy use and release in biochemical reactions.
Thinking Skill: Knowledge       Correct Answer:  D

9 Objective: 2.04
Investigate and describe the structure and function of enzymes and explain their importance in biological systems.
Thinking Skill: Applying        Correct Answer:  A

10 Objective: 2.05
Investigate and analyze the bioenergetic reactions:
  a. Aerobic Respiration.
  b. Anaerobic Respiration.
  c. Photosynthesis.
  d. Compare and contrast photosynthesis and respiration.
Thinking Skill: Knowledge       Correct Answer:  B

11 Objective: 2.05
Investigate and analyze the bioenergetic reactions:
  a. Aerobic Respiration.
  b. Anaerobic Respiration.
  c. Photosynthesis.
  d. Compare and contrast photosynthesis and respiration.
Thinking Skill: Organizing      Correct Answer:  A

12 Objective: 2.05
Investigate and analyze the bioenergetic reactions:
  a. Aerobic Respiration.
  b. Anaerobic Respiration.
  c. Photosynthesis.
  d. Compare and contrast photosynthesis and respiration.
Thinking Skill: Analyzing       Correct Answer:  C
13  **Objective: 2.05**  
Investigate and analyze the bioenergetic reactions:  
a. Aerobic Respiration.  
b. Anaerobic Respiration.  
c. Photosynthesis.  
d. Compare and contrast photosynthesis and respiration.  
Thinking Skill: Analyzing  
Correct Answer: A