SECTION 7-1 REVIEW

GLYCOLYSIS AND FERMENTATION

VOCABULARY REVIEW Define the following terms.

1. cellular respiration ____________________________

2. glycolysis ____________________________

3. lactic-acid fermentation ____________________________

4. alcoholic fermentation ____________________________

MULTIPLE CHOICE Write the correct letter in the blank.

1. Glycolysis takes place
   a. in the cytosol.  
   b. in the mitochondria.  
   c. only if oxygen is present.  
   d. only if oxygen is absent.

2. During glycolysis, glucose is
   a. produced from two molecules of pyruvic acid.  
   b. converted into two molecules of ATP.  
   c. partially broken down and some of its stored energy is released.  
   d. partially broken down and its stored energy is increased.

3. Both lactic-acid fermentation and alcoholic fermentation produce
   a. a two-carbon molecule from a six-carbon molecule.  
   b. CO₂ from a three-carbon molecule.  
   c. ATP from ADP and phosphate.  
   d. NAD⁺ from NADH and H⁺.

4. The efficiency of glycolysis is approximately
   a. 0.35%.  
   b. 3.5%.  
   c. 35%.  
   d. 350%.

5. The anaerobic pathways provide enough energy to meet all of the energy needs of
   a. all organisms.  
   b. all unicellular and most multicellular organisms.  
   c. many unicellular and some multicellular organisms.  
   d. no organisms.
SHORT ANSWER Answer the questions in the space provided.

1. Why are the fermentation pathways referred to as "anaerobic" pathways? ________________________________

2. What are the energy-containing products of glycolysis? ________________________________

3. Of what importance are lactic-acid fermentation and alcoholic fermentation to the cells that use these pathways? ________________________________

4. Critical Thinking The vitamin niacin is an essential component of NAD⁺. Niacin can be consumed in food or manufactured in the body from tryptophan, an amino acid. How would a person's ability to break down glucose through glycolysis be affected if the person's diet were deficient in both niacin and tryptophan? Explain your answer. ________________________________

STRUCTURES AND FUNCTIONS The diagram below depicts the stages of glycolysis and fermentation. Complete the diagram by writing the names of the pathways in the ovals and the names of the molecules in the boxes.

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   a
   C C C C C C
   b
   C C C C C
   c
   2 C C C
   O₂ absent
   d
   e
   f
   C C C
   g
   C C
   + CO₂
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