

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. | c. only if oxygen is present. |
| b. in the mitochondria. | d. only if oxygen is absent. |
- _____ 2. During glycolysis, glucose is
- | | |
|---|---|
| a. produced from two molecules of pyruvic acid. | c. partially broken down and some of its stored energy is released. |
| b. converted into two molecules of ATP. | 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. | c. ATP from ADP and phosphate. |
| b. CO ₂ from a three-carbon molecule. | d. NAD ⁺ from NADH and H ⁺ . |
- _____ 4. The efficiency of glycolysis is approximately
- | | | | |
|----------|--------|---------|----------|
| a. 0.2%. | b. 2%. | c. 20%. | d. 200%. |
|----------|--------|---------|----------|
- _____ 5. The anaerobic pathways provide enough energy to meet all of the energy needs of
- | | |
|---|--|
| a. all organisms. | c. many unicellular and some multi-cellular organisms. |
| b. all unicellular and most multi-cellular organisms. | d. no organisms. |

SHORT ANSWER Answer the questions in the space provided.

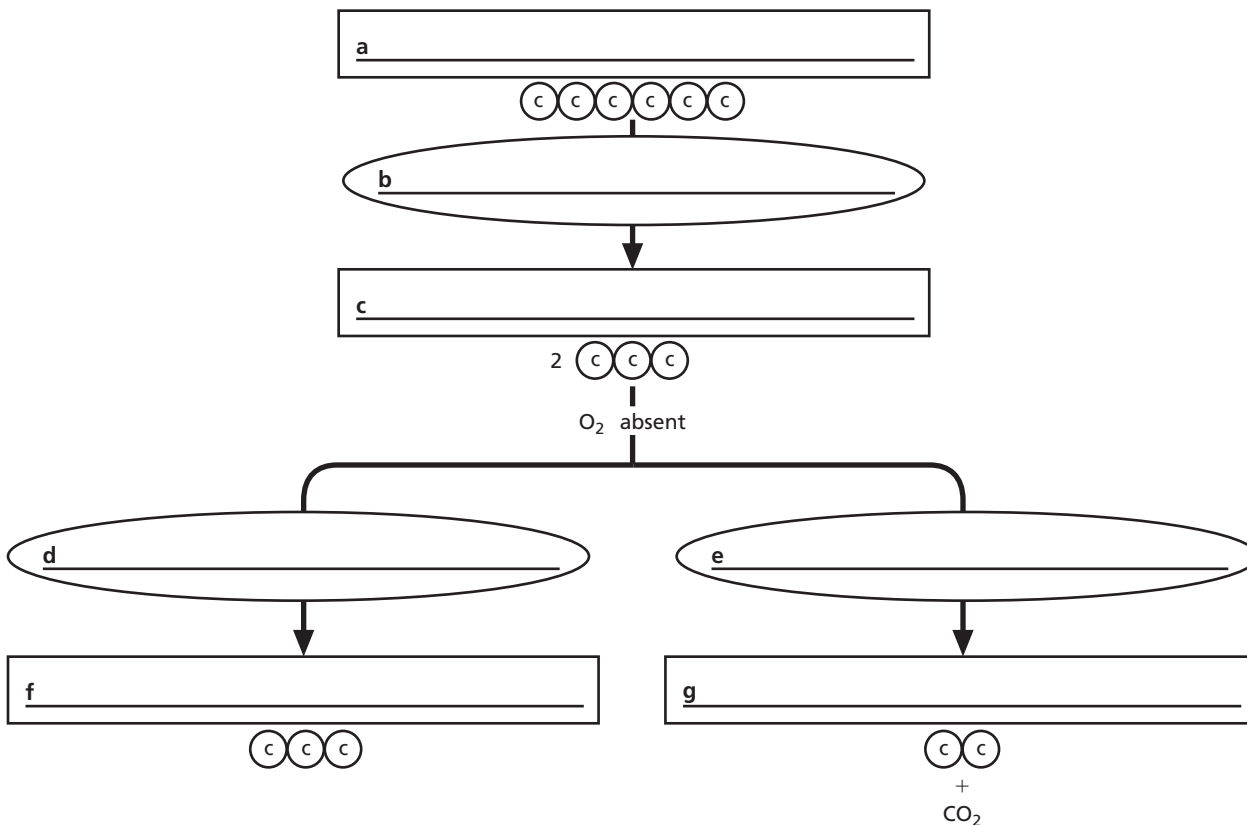
- Why are the fermentation pathways referred to as “anaerobic” pathways? _____

- What are the energy-containing products of glycolysis? _____

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

- 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 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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SECTION 7-2 REVIEW**AEROBIC RESPIRATION****VOCABULARY REVIEW** Define the following terms.

1. aerobic respiration _____

2. mitochondrial matrix _____

3. Krebs cycle _____

4. FAD _____

MULTIPLE CHOICE Write the correct letter in the blank.

- _____ 1. The breakdown product of glucose that diffuses into the mitochondrial matrix for further breakdown is
 - a. acetyl CoA.
 - b. pyruvic acid.
 - c. oxaloacetic acid.
 - d. citric acid.
- _____ 2. The starting substance of the Krebs cycle, which is regenerated at the end of the cycle, is
 - a. acetyl CoA.
 - b. pyruvic acid.
 - c. oxaloacetic acid.
 - d. citric acid.
- _____ 3. The Krebs cycle
 - a. produces two molecules of CO₂.
 - b. produces a six-carbon molecule from six molecules of CO₂.
 - c. produces NAD⁺ from NADH and H⁺.
 - d. generates most of the ATP produced in aerobic respiration.
- _____ 4. The electron transport chain of aerobic respiration
 - a. generates O₂ from H₂O.
 - b. produces NADH by chemiosmosis.
 - c. pumps electrons into the mitochondrial matrix.
 - d. pumps protons into the space between the inner and outer mitochondrial membranes.
- _____ 5. The maximum efficiency of aerobic respiration is approximately
 - a. 0.39%.
 - b. 3.9%.
 - c. 39%.
 - d. 390%.

SHORT ANSWER Answer the questions in the space provided.

1. In the Krebs cycle, what molecule acquires most of the energy that is released by the oxidation of acetyl CoA, and how many of these molecules are produced during each turn of the cycle?

2. Which reactions of aerobic respiration occur in the inner mitochondrial membrane?

3. Write the equation for the complete oxidation of glucose in aerobic respiration.

4. **Critical Thinking** How is the structure of a mitochondrion well adapted for the activities it carries out? _____

STRUCTURES AND FUNCTIONS Use the diagram to answer the following questions.

The diagram below summarizes the electron transport chain and chemiosmosis in aerobic respiration. Label the substances that are transported along the arrows labeled *a–d* in the spaces provided. Label the reactants or products that are represented by *e–g* in the spaces provided.

