Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_

2.4 Chemical Reactions and Enzymes

Directions: Use the textbook to aid you in answering the following questions.

1. What happens to chemical bonds during chemical reactions? Why is the melting of ice not a chemical reaction?

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1. Describe the two types of energy changes that can occur in a chemical reaction.

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1. What is activation energy?

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1. What is a catalyst? Please provide an example of a biological catalyst.

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**Label** the diagram below. Notice how the addition of an enzyme **lowers the activation energy** in this reaction.

*Use the diagram to answer Questions 4-5*

 **Label** the enzyme, the active site, and the products in the diagram.



**5.** Write what is happening at each numbered part of the diagram.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Explain how enzymes work, including the role of the enzyme-substrate complex.

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7. Describe some factors that may influence enzymes activity.

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8. Explain why a lock and key are used to describe the way an enzyme works.

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9. Changing the temperature or pH can change an enzyme’s shape. Explain how changing the temperature or pH might affect the function of an enzyme. (Hint: think about the analogy of the lock and key)

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