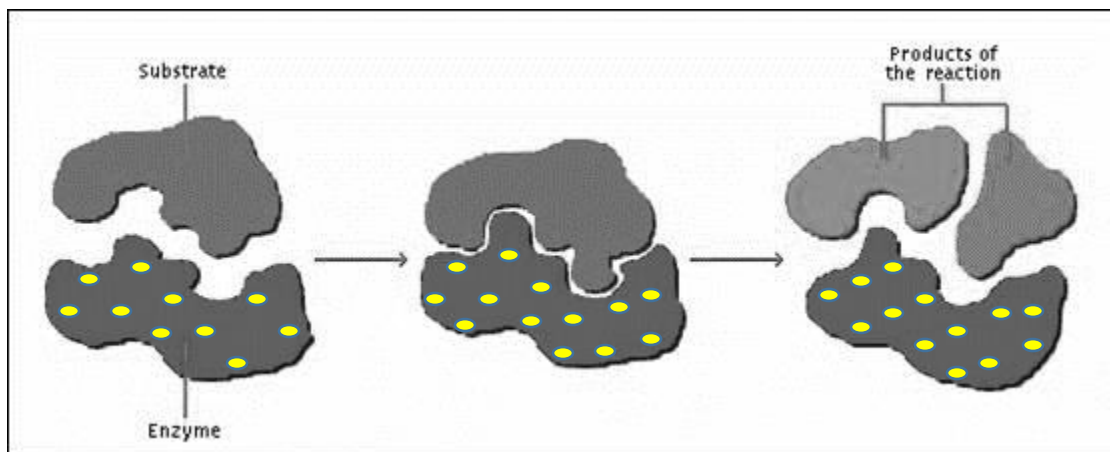


Name: \_\_\_\_\_

## ENZYMES

**Enzymes** are **proteins!** Enzymes are used in the body to speed up chemical reactions and lower activation energy. During digestion, they break down food into molecules used inside the body. Enzymes use these molecules from food to build cells and tissues. Each enzyme is specific to one substrate. This means each enzyme can only bind with ONE thing. A **substrate** is the molecule the enzyme binds to. The enzyme has a special shape that will only fit that one substrate. It is called an **active site**. The substrate and enzyme fit together like a key in a lock at the active site. The enzyme then breaks the substrate apart into products. **Products** are the molecules that result from the reaction. Enzymes can be reused over and over again. There are two things that will denature (destroy) an enzyme. These are **high temperatures** and strong **pH** levels. Cold temperatures just slow them down. To **denature** an enzyme is to change the shape and the enzyme no longer works.

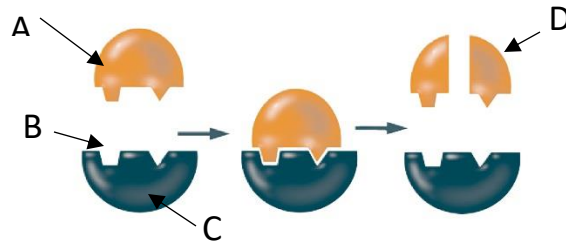


Answer the following questions or fill in the blanks:

1. Which group of biomolecules do enzymes belong to? \_\_\_\_\_
2. What two functions do enzymes have?
  1. \_\_\_\_\_
  2. \_\_\_\_\_
3. In digestion, enzymes \_\_\_\_\_ food.
4. Molecules from food are used to \_\_\_\_\_ cells and tissues.
5. Enzymes can only bond with \_\_\_\_\_ substrate.
6. The enzyme and the substrate bond at the \_\_\_\_\_.
7. The enzyme breaks the substrate apart forming \_\_\_\_\_.
8. Are enzymes reusable? \_\_\_\_\_
9. What two things can stop an enzyme by denaturing it? \_\_\_\_\_
10. What slows an enzyme down? \_\_\_\_\_

11. Label the image below with these words: **Enzyme, Substrate, Active Site, Product**

A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_  
D \_\_\_\_\_



12. Can the enzyme in this reaction be reused? \_\_\_\_\_

13. What will high (hot) temperatures do to the enzyme? \_\_\_\_\_

14. What will low (cold) temperatures do to the enzyme? \_\_\_\_\_

15. How many different kinds of substrates can this enzyme bond to? \_\_\_\_\_

16. Label the image below with these words: **Enzyme, Substrate, Active Site, Product**



A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_  
D \_\_\_\_\_

17. What part of the enzyme makes it specific to one substrate (only able to act on one substrate).  
a. Its shape (active site)      b. Its color      c. Its size      d. Its location

18. Enzymes do the following for chemical reactions.  
a. Lower the energy needed for the reaction to occur  
b. Raise the energy needed for the reaction to occur  
c. Prevent the reaction from occurring  
d. Maintain the reaction at a steady pace