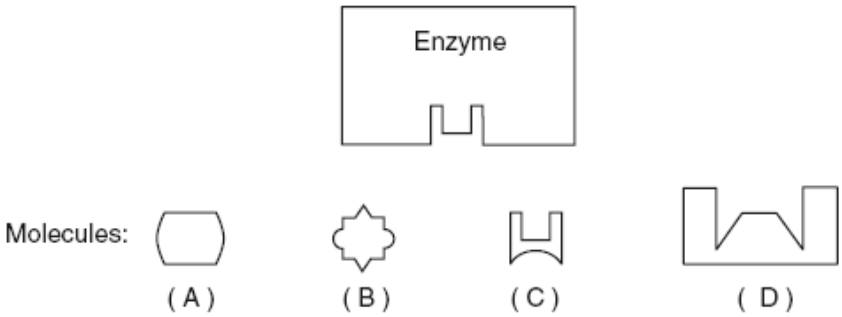
Name _____

ENZYME REVIEW

1. An enzyme and four different molecules are shown in the diagram below.



The enzyme would most likely affect reactions involving

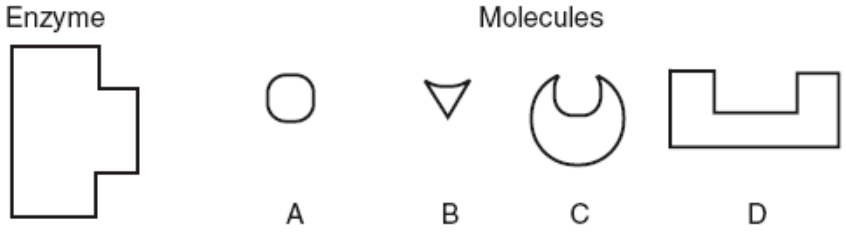
(1) molecule *A*, only

(2) molecule *C*, only

(3) molecules *B* and *D*

(4) molecules *A* and *C*

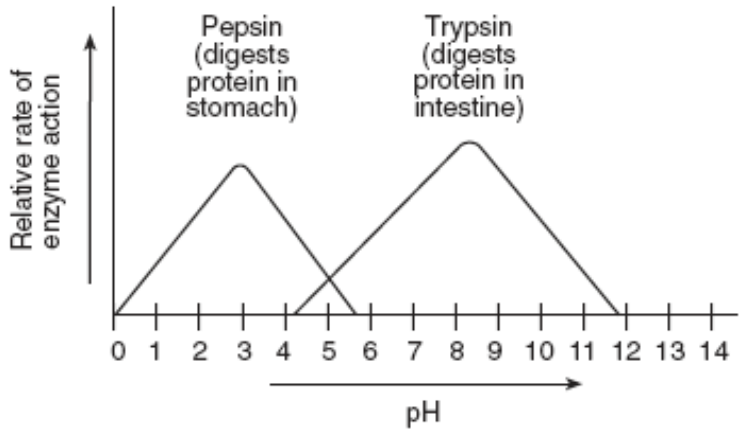
2. Base your answers to questions 2 through 4 on the diagram below that represents a human enzyme and four types of molecules present in a solution in a flask.



Which molecule would most likely react with the enzyme? _____

3. Explain your answer to question 2. What principle about how enzymes work does the question illustrate?

4. Base your answers to the following questions on the graph below and on your knowledge of biology.



5. In what **organ of the digestive system** does pepsin work? _____

6. In what **organ of the digestive system** does trypsin work? _____

7. What is the optimal pH for both enzymes?

Pepsin _____ is this pH acid or basic? _____

Trypsin_____ is this pH acid or basic? _____

8. Predict the reactivity of trypsin at pH 14.

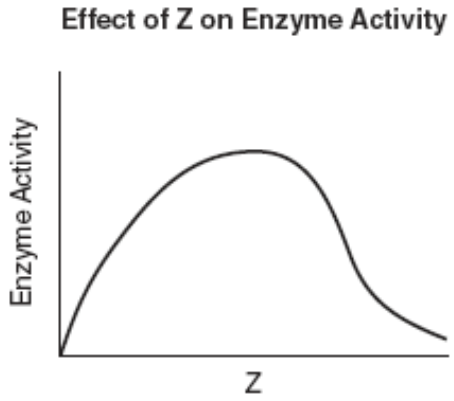
9. When do neither enzyme work?

10. Compare the rate of the pepsin-catalyzed reaction at pH 3 with the rate of the trypsin-catalyzed reaction at pH 3.

11. At what pH values is pepsin likely to be denatured? When is the structure of pepsin changed? Justify your answer.

12. What can you infer about the pH of a stomach and an intestine? Justify your answer.

13. An incomplete graph is shown below. What **two** internal body conditions could appropriately be used to replace letter *Z* on the axis?



14. What kind of organic molecule is an enzyme? _____

15. List 2 internal environmental factors that affect how well enzymes function.

16. What happens to water when you heat it to 100°C?

17. What happens to proteins dissolved in that water when you heat it to 100°C?

18. What specific change happens to an enzyme that stops it from working when you heat it?

19. Explain why changing the shape of an enzyme could affect the ability of the enzyme to function.

20. What most likely happens to the rate of reaction of a human enzyme when the temperature is increased gradually from 10°C to 30°C. Explain your answer.

21. What most likely happens to the rate of reaction of a human enzyme when the temperature is increased gradually from 40°C to 90°C. Explain your answer.

22. What is the optimal temperature for the functionality of a human enzyme? _____

23. Draw a generalized graph of the action of an **enzyme from the human body** as the temperature changes from 0°C to 100°C. Mark the temperature of **optimal enzyme activity**.