ANSWER KEY.

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Enzymes

Biology | ANSWER KEY

Answer in complete sentences. Show your setup for calculations.

1. Write the term that matches each definition. Choose from catalyst, substrate, and active site.

Definition	Term
The molecule an enzyme acts on	**substrate**
The pocket on an enzyme where the substrate fits	**active site**
A substance that speeds up a reaction and is not used up	**catalyst**

Use the terms in the lesson.

2. An enzyme produces 30 mL of product in 5 minutes.

(a) What is the rate of the reaction? Show your setup.

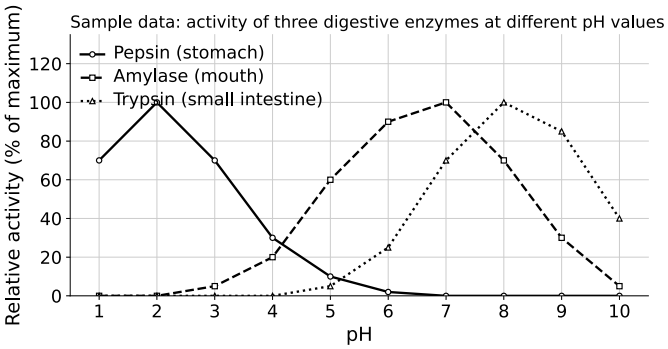
(b) At this rate, how many mL of product would be made in 8 minutes?

(a) 30 mL ÷ 5 min = **6 mL per minute**

(b) 6 mL per min × 8 min = **48 mL**

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3. The graph shows the activity of three digestive enzymes at different pH values (sample data).



(a) What is the optimum pH of trypsin?

(b) Which enzyme works best in the stomach, at pH 2?

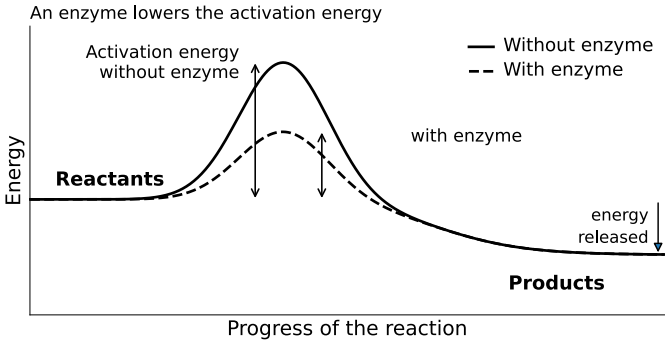
(c) Explain why amylase stops working in the stomach.

(a) **pH 8**

(b) **Pepsin**

(c) **The acid in the stomach changes the charges on the R groups and the shape of the active site. The amylase is denatured, so the substrate no longer fits.**

4. The energy diagram shows a reaction with and without an enzyme.



(a) Which curve shows the reaction with the enzyme?

(b) Explain how the enzyme speeds up the reaction.

(a) **The dashed curve (the one with the lower peak)**

(b) **The enzyme lowers the activation energy, so more molecules have enough energy to react in a given time. The enzyme is not used up.**

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