

**Enzymes Review Answers****Part One**

Provide the best term:

1. The region on an enzyme where it connects to the substrate: active site
2. The non-protein part of an enzyme: cofactor/coenzyme
3. The protein part of an enzyme apoenzyme
4. The energy that is required to get a chemical reaction started: activation energy
5. The sum or total of all the organism's chemical reactions is called: metabolism
6. A molecule that an enzyme bonds to briefly (provide 2 answers): substrate/cofactor/coenzyme/product
7. An enzyme itself is made up of several larger molecules called: proteins
8. The basic units of these large molecules are amino acids which are linked together by peptide bonds.
9. A molecule that resembles an enzymes substrate and binds to it is called: competitive inhibitor
10. The rate of an enzymatic reaction increases as the temperature increases up to an optimum temperature at which the reaction occurs at the fastest rate. Generally, at around 50°C, the shape (active site) of a protein is destroyed. The enzyme is then said to be denatured.
11. Changes in pH may also change the final structure of an enzyme thus affecting the shape (or binding capacity) of the enzyme.
12. This part of the enzyme accepts or contributes atoms to the reaction the enzyme is catalyzing: coenzyme/cofactor/active site
13. This theory states how an enzyme perfectly fits or physically suits its substrate. Lock and Key
14. After catalyzing a chemical reaction this happens to the enzymes: product is released and returns to normal shape
15. Molecules that we call vitamins function as coenzymes in our bodies.
16. How do specific enzymes catalyze their specific chemical reactions?

The active site of each enzyme is specific to the substrate molecule and will not fit other molecules

**Part Two**

Name and describe four factors that affect the activity of enzymes.

- Temperature
- pH
- Amount of Substrate (concentration)
- Amount of enzyme (concentration)

**Part Three**

Make a 15 question study guide based on the notes you have concerning the eight digestive enzymes: salivary amylase, pepsin, bile, pancreatic amylase, trypsin, lipase, peptidase and maltase. Be creative in your questions.

## ENZYMES: Self Test

1. An enzyme is made up of several large molecules called \_\_\_\_proteins\_\_\_\_.
2. The basic unit of these large molecules are \_amino acids\_\_\_\_ which are linked together by \_peptide\_\_\_\_ bonds.
3. The distinctive properties of an enzyme are determined by the \_\_tertiary\_\_\_\_ structure of its protein.
4. The site at which a substrate molecule attaches to an enzyme is called the \_\_active site\_\_\_\_. The particular nature of this site makes the enzyme \_specific\_\_\_\_ to its substrate.
5. An enzyme functions to lower the \_\_activation energy\_\_\_\_ of a chemical reaction but itself remains \_unchanged\_\_ in the reaction.
6. Non-protein, low molecular weight substances, such as magnesium, which are required in certain enzymatic reactions are called \_cofactors\_.
7. Non-protein organic molecules may also play crucial roles in enzyme catalyzed reactions. NAD is an example of such a \_\_coenzyme\_\_\_\_.
8. The rate of an enzymatic reaction \_\_increases\_\_ as the temperature increases up to an optimum temperature at which the reaction occurs at the fastest rate. At around 50°C, the \_\_tertiary\_\_\_\_ structure of a protein is destroyed. The enzyme is then said to be \_\_denatured\_\_\_\_.
9. Changes in \_\_pH\_\_ also may change the final structure of the enzyme, thus affecting the binding capacity of the enzyme.
10. \_\_Competitive\_\_\_\_ inhibition occurs when a compound inhibits a reaction by (temporarily) occupying the active site of the enzyme and displacing the substrate. This type of inhibition depends on the \_\_shape/structure\_\_\_\_ of each kind of molecule present.