

Name: Answer Key

Review Sheet for Biochemistry

*Study your cards and old quiz!

What elements are found in carbohydrates? C, H, O

Why are carbohydrates important? energy

What is the ratio of H:O in carbohydrates? 2:1

What are the building blocks of carbohydrates? monosaccharides / glucose

Name a disaccharide: maltose

Identify 3 polysaccharides: starch, cellulose, glycogen

What elements are found in lipids? C, H, O

What are the building blocks of lipids? glycerol + fatty acids

Why are lipids important? stored energy source

What elements are found in proteins? C, H, O, N, ... S

What are the building blocks of proteins? amino acids

Where are proteins made in the cell? ribosomes

What determines the function of the protein? sequence of amino acids

Identify 3 important proteins and give their function:

1. enzyme
2. hemoglobin
3. antibody

What is the function of an enzyme? speed up the rate of chemical reactions

Give another name for an enzyme: catalyst

Define denaturation: when the shape of the enzyme changes and it no longer functions.

What is the active site? the region of the enzyme where

What would the substrate be for Maltase: maltose the substrate binds.

Lipase: Lipid

Protease: Protein

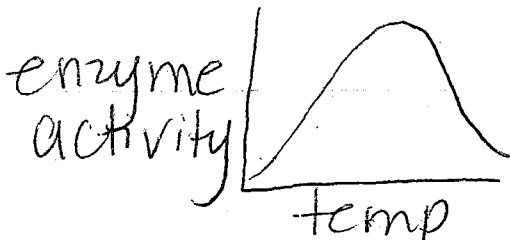
Identify and explain 3 factors that affect enzyme activity:

1. Temp.

2. pH

3. enzyme substrate concentration

Draw a graph to represent what happens to enzyme activity when temperature is increased:



What determines the function of an enzyme? sequence of amino acids

What happens to an enzyme after the reaction is complete? gets recycled

What elements are found in nucleic acids? CHONP

What are the building blocks of nucleic acids? nucleotides

Give 2 examples of nucleic acids:

1. DNA

2. RNA

What happens during a dehydration synthesis reaction? water is removed to combine compounds

What happens during a hydrolysis reaction? water is added to break compounds apart.

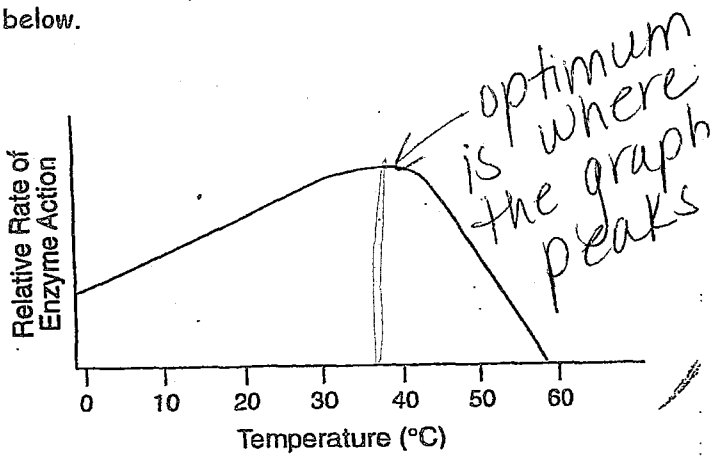
1. The process by which digestive enzymes catalyze the breakdown of larger molecules to smaller molecules with the addition of water is known as

- (1) hydrolysis
- (2) photosynthesis
- (3) synthesis
- (4) pinocytosis

2. Which organic molecule is correctly paired with an end product of its digestion?

- (1) carbohydrate-fatty acid
- (2) nucleic acid-glycerol
- (3) lipid-nucleotide
- (4) protein-amino acid

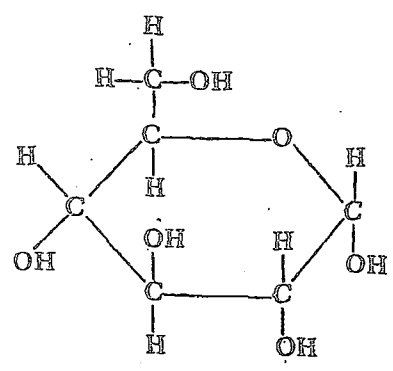
3. The effect of temperature on the relative rate of action of an enzyme is represented in the graph below.



The optimum temperature for the action of this enzyme is approximately

- (1) 37°C
- (2) 50°C
- (3) 15°C
- (4) 22°C

5.

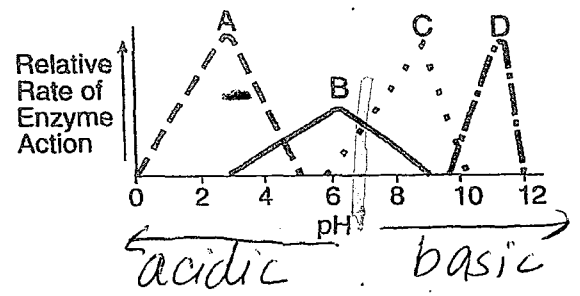


The structural formula represents a molecule of

- (1) maltose
- (2) alanine
- (3) glucose
- (4) glycerol

6.

Base your answer on the graph below and on your knowledge of biology. The graph shows the relative rates of action of four enzymes, A, B, C, and D.

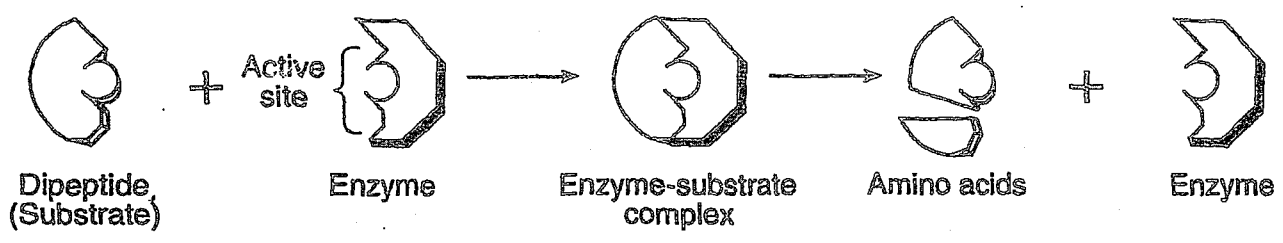


Which two enzymes would function in a region of the human body having a neutral pH?

- (1) C and D
- (2) B and D
- (3) A and B
- (4) B and C

4.

A process that occurs in the human body is shown in the diagram below.



What would happen if a temperature change caused the shape of the active site to be altered?

- (1) The dipeptide would digest slower or not at all.
- (2) The dipeptide would digest faster.
- (3) The amino acids would combine slower or not at all.
- (4) The amino acids would combine faster.

A disaccharide combines with water to produce two monosaccharides in the process known as

- (1) photosynthesis
- (2) aerobic respiration
- (3) dehydration synthesis
- (4) hydrolysis

Add water to break apart

The shape of a protein molecule is influenced by

- (1) whether it is organic or inorganic
- (2) the sequence of amino acids in it
- (3) the number of genes found in the nucleus
- (4) the number of chromosomes in the cell

9. An element found in all proteins but not found in carbohydrates and lipids is

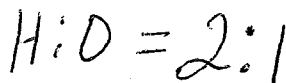
- (1) hydrogen
- (2) carbon
- (3) nitrogen
- (4) oxygen

10. An enzyme that works best in an acidic environment would function best at a pH of

- (1) 11
- (2) 9
- (3) 3
- (4) 7

11. Which chemical formula represents a carbohydrate?

- (1) CO_2
- (2) $C_{12}H_{22}O_{11}$
- (3) $C_3H_7O_2N$
- (4) CH_4



12. Lipase, maltase, and protease are members of a group of catalysts known as

- (1) fats
- (2) carbohydrates
- (3) hormones
- (4) enzymes

ASE = enzyme