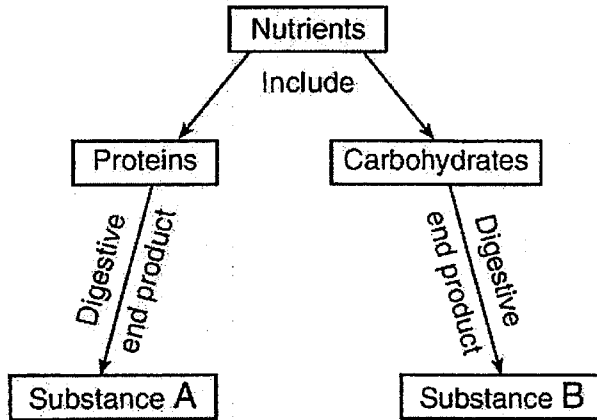


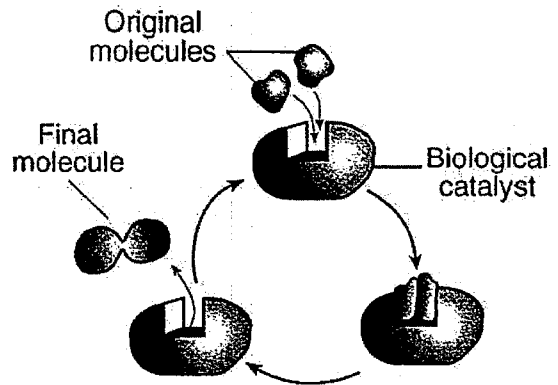
- Plants such as the Venus flytrap produce chemical compounds that break down insects into substances that are usable by the plant. The chemical compounds that break down the insects are most likely
 - fats
 - minerals
 - biological catalysts
 - complex carbohydrates
- Base your answer to the following question on the information in the diagram below and on your knowledge of biology.



In a heterotrophic organism, substance A could be used directly for

- photosynthesis
 - synthesis of enzymes
 - a building block of starch
 - a genetic code
- All chemical breakdown processes in cells directly involve
 - reactions that are controlled by catalysts
 - enzymes that are stored in mitochondria
 - the production of catalysts in vacuoles
 - enzymes that have the same genetic base sequence
 - Which statement describes all enzymes?
 - They control the transport of materials.
 - They provide energy for chemical reactions.
 - They affect the rate of chemical reactions.
 - They absorb oxygen from the environment.
 - Luciferin is a molecule that, when broken down in fireflies, produces heat and light. The rate at which luciferin is broken down in cells is controlled by
 - a carbohydrate
 - a simple sugar
 - an enzyme
 - a complex fat

- The diagram below represents a series of reactions that can occur in an organism.

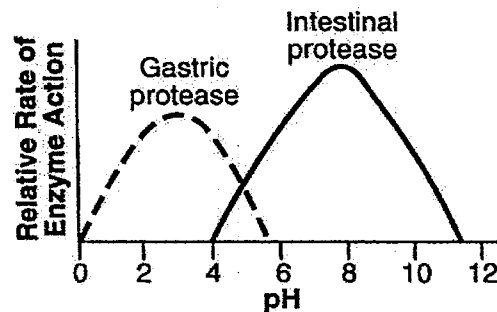


This diagram best illustrates the relationship between

- enzymes and synthesis
 - amino acids and glucose
 - antigens and immunity
 - ribosomes and sugars
- The sweet taste of freshly picked corn is due to the high sugar content in the kernels. Enzyme action converts about 50% of the sugar to starch within one day after picking. To preserve its sweetness, the freshly picked corn is immersed in boiling water for a few minutes, and then cooled.

Which statement most likely explains why the boiled corn kernels remain sweet?

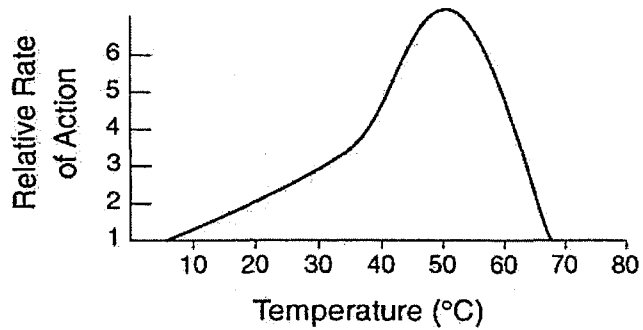
- Boiling destroys sugar molecules so they cannot be converted to starch.
 - Boiling kills a fungus on the corn that is needed to convert sugar to starch.
 - Boiling activates the enzyme that converts amino acids to sugar.
 - Boiling deactivates the enzyme responsible for converting sugar to starch
- Base your answer to the following question on the graph below and on your knowledge of biology.



What is the optimum pH for the action of intestinal protease?

- 5
- 8
- 10
- 12

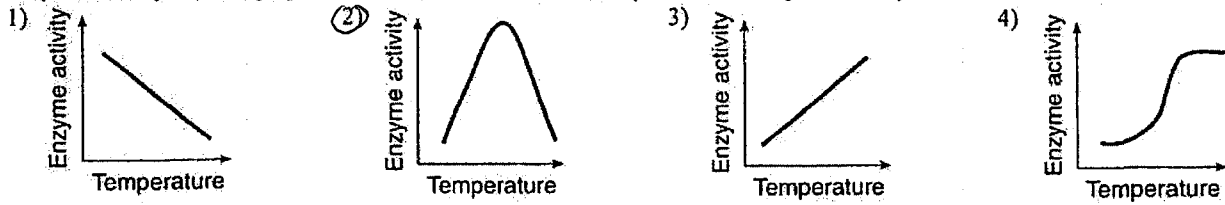
9. The graph below shows the effect of temperature on the relative rate of action of enzyme *X* on a protein.



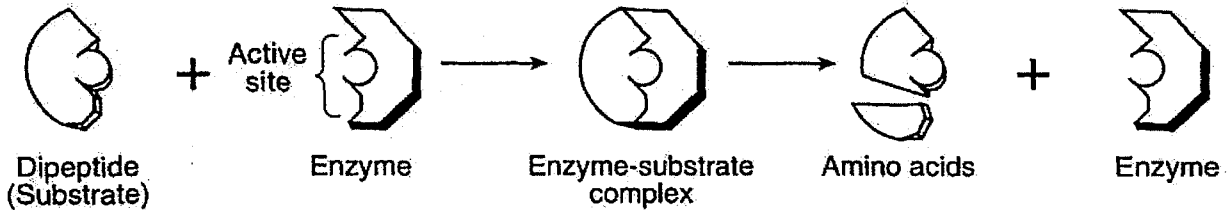
Which change would *not* affect the relative rate of action of enzyme *X*?

- 1) the addition of cold water when the reaction is at 50°C
 - 2) an increase in temperature from 70°C to 80°C
 - 3) the removal of the protein when the reaction is at 30°C
 - 4) a decrease in temperature from 40°C to 10°C
10. Enzyme molecules normally interact with substrate molecules. Some medicines work by blocking enzyme activity in pathogens. These medicines are effective because they
- 1) are the same size as the enzyme
 - 2) are the same size as the substrate molecules
 - 3) have a shape that fits into the enzyme
 - 4) have a shape that fits into all cell receptors

11. Enzymes have an optimum temperature at which they work best. Temperatures above and below this optimum will decrease enzyme activity. Which graph best illustrates the effect of temperature on enzyme activity?



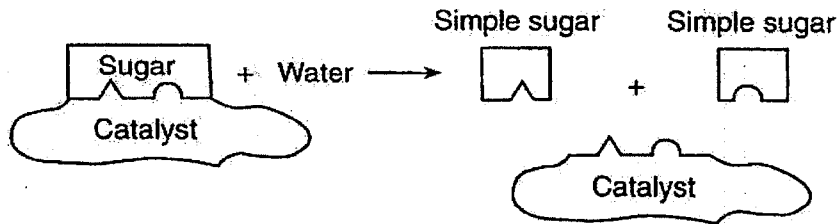
12. A process that occurs in the human body is shown in the diagram below.



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

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

13. The diagram below illustrates a biochemical process that occurs in organisms.



The substance labeled "catalyst" is also known as

- 1) a hormone
- 2) an enzyme
- 3) an antibody
- 4) an inorganic compound

14. Base your answer to the following question on the statement below and on your knowledge of biology.

Some internal environmental factors may interfere with the ability of an enzyme to function efficiently.

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

Specific substrate won't fit.

