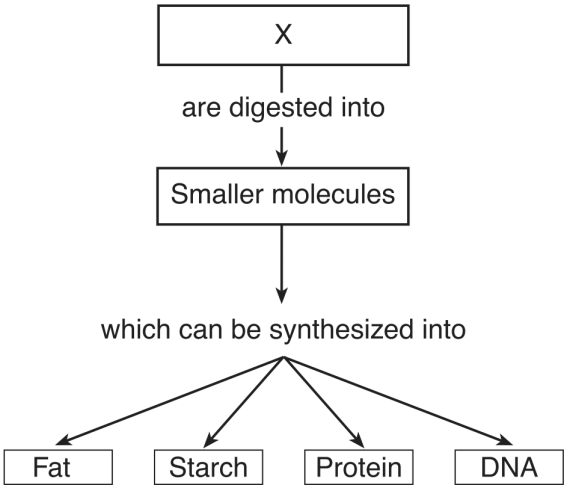
Biochemistry Regents Practice

Name: _____ **Date:** _____

1. The diagram below represents a sequence of events that occurs in living things.



Letter *X* represents

A. inorganic molecules

B. organic molecules

C. biological catalysts

D. simple sugars

2. Which two terms are considered to be opposite processes?

A. photosynthesis and autotrophic nutrition

B. cloning and mitosis

C. digestion and synthesis

D. dynamic equilibrium and homeostasis

3. Which statement describes a similarity between all enzymes, antibodies, and hormones?

A. Their chemical structure is critical to their ability to function.

B. Their ability to replicate identical copies ensures continuation of the species.

C. They work better at 100° C than 37° C.

D. They are made by and carried by the blood.

4. The diagram below represents a process that occurs in organisms.

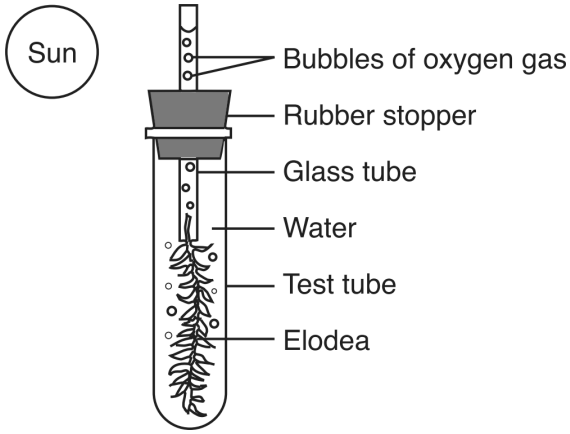
Which row in the chart indicates what *A* and *B* in the boxes could represent?

Row	A	B
(1)	starch	proteins
(2)	starch	amino acids
(3)	protein	amino acids
(4)	protein	simple sugars

A. (1) B. (2) C. (3) D. (4)

5. Base your answer(s) to the following question(s) on the information and diagram below and on your knowledge of biology.

A small water plant (elodea) was placed in bright sunlight for five hours as indicated below. Bubbles of oxygen gas were observed being released from the plant.



What substance did the plant most likely absorb from the water for the process that produces the oxygen gas?

A. dissolved nitrogen B. an enzyme

C. carbon dioxide D. a hormone

6. 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

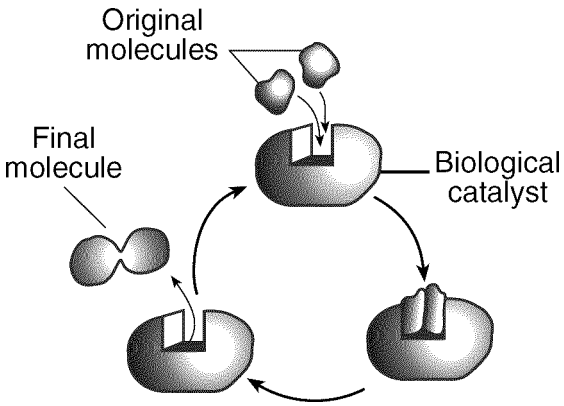
A. fats

B. minerals

C. biological catalysts

D. complex carbohydrates

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



This diagram best illustrates the relationship between

A. enzymes and synthesis

B. amino acids and glucose

C. antigens and immunity

D. ribosomes and sugars

8. In plants, simple sugars are *least* likely to be

A. linked together to form proteins

B. broken down into carbon dioxide and water

C. used as a source of energy

D. stored in the form of starch molecules

9. The function of a specific enzyme is most directly influenced by its

A. molecular size B. physical shape

C. carrying capacity D. stored energy

10. Which statement best describes enzymes?

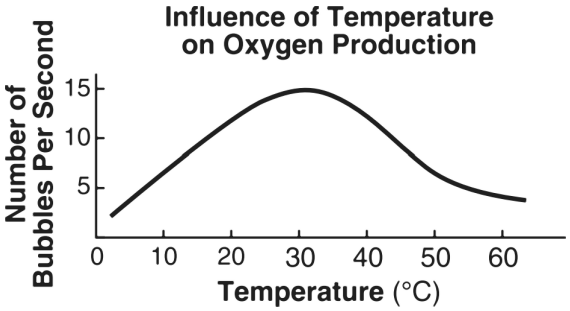
A. Every enzyme controls many different reactions.

B. The rate of activity of an enzyme might change as pH changes.

C. Temperature changes do not affect enzymes.

D. Enzymes are produced from the building blocks of carbohydrates.

11. The graph below shows the results of an action of the enzyme catalase on a piece of meat. Evidence of enzyme activity is indicated by bubbles of oxygen. Which statement best summarizes the activity of catalase shown in the graph?



A. The enzyme works better at 10°C than at 50°C.

B. The enzyme works better at 5°C than at 65°C.

C. The enzyme works better at 35°C than at either temperature extreme.

D. The enzyme works at the same level in all environments.

12. Which row in the chart below contains correct information concerning synthesis?

Row	Building Blocks	Substance Synthesized Using the Building Blocks
(1)	glucose molecules	DNA
(2)	simple sugars	protein
(3)	amino acids	enzyme
(4)	molecular bases	starch

A. Row (1) B. Row (2)

C. Row (3) D. Row (4)

13. Meat tenderizer contains an enzyme that interacts with meat. If meat is coated with tenderizer and then placed in a refrigerator for a short time, how would the enzyme be affected?

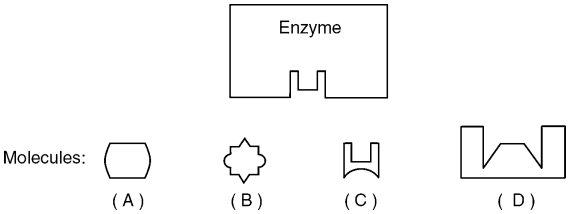
A. It would be broken down.

B. Its activity would slow down.

C. Its shape would change.

D. It would no longer act as an enzyme.

14. An enzyme and four different molecules are shown in the accompanying diagram.

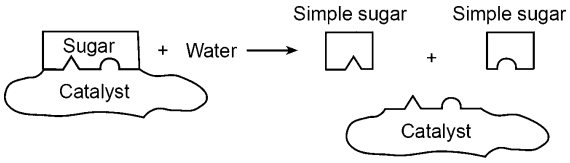


The enzyme would most likely affect reactions involving

A. molecule A, only B. molecule C, only

C. molecules B and *D* D. molecules A and *C*

15. The accompanying diagram illustrates a biochemical process that occurs in organisms.



The substance labeled "catalyst" is also known as

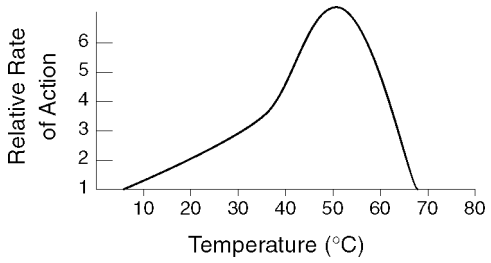
A. a hormone

B. an enzyme

C. an antibody

D. an inorganic compound

16. 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*?

A. the addition of cold water when the reaction is at 50° C

B. an increase in temperature from 70° C to 80° C

C. the removal of the protein when the reaction is at 30° C

D. a decrease in temperature from 40° C to 10° C

17. What occurs during the digestion of proteins?

A. Specific enzymes break down proteins into amino acids.

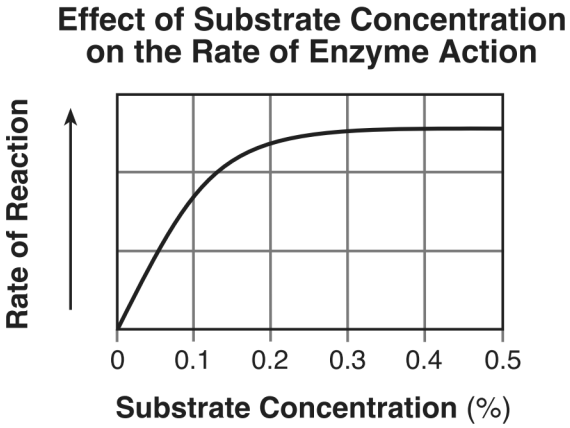
B. Specific hormones break down proteins into simple sugars.

C. Specific hormones break down proteins into complex starches.

D. Specific enzymes break down proteins into simple sugars.

18. Base your answer to the following question(s) on the information below and on your knowledge of biology.

The graph below shows the effect of substrate concentration on the action of enzyme X. This enzyme is functioning at its optimal temperature, 36° C, and at its optimal pH, 5.5.



State what would most likely happen to the rate of enzyme action if the temperature were reduced by 10 degrees. Support your answer.

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1.
Answer: B

2.
Answer: C

3.
Answer: A

4.
Answer: C

5.
Answer: B

6.
Answer: C

7.
Answer: A

8.
Answer: A

9.
Answer: B

10.
Answer: B

11.
Answer: C

12.
Answer: C

13.
Answer: B

14.
Answer: B

15.
Answer: B

16.
Answer: B

17.
Answer: A

18.
Answer: The reaction will slow down because it is below the optimal temperature.