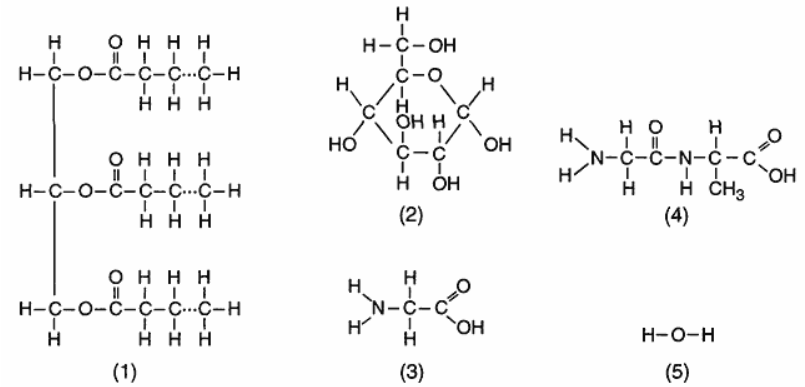
1. Which chemical formula represents a carbohydrate?

   A) CH_4 B) $C_3H_7O_2N$

   C) $C_{12}H_{22}O_{11}$ D) CO_2

2. Base your answer to the following question on the diagram below. For each of the following phrases, select the molecule, chosen from those shown below, which is best described by that phrase.



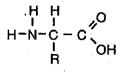
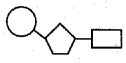
An example of a carbohydrate

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

3. The process by which glucose is converted to starch is known as

   A) protein hydrolysis
   B) dehydration synthesis
   C) chemical digestion
   D) cellular respiration

Base your answers to questions **4** and **5** on on the chart below and your knowledge of Biology.

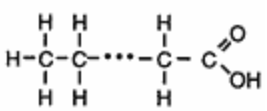
Class of Substance	Basic Unit of Structure	One Possible Function	Examples
A		*B*	*C*
Carbohydrate	*D*	Structural component of cell walls	*E*
F	*G*	Structural component of cell membranes	Fats, waxes
H		Protein synthesis	*I*

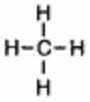
4. In which section of the chart do the substances starch and glycogen belong?

   A) A B) E C) C D) I

5. Which belongs in section **G** ?

   A) 

   B) 

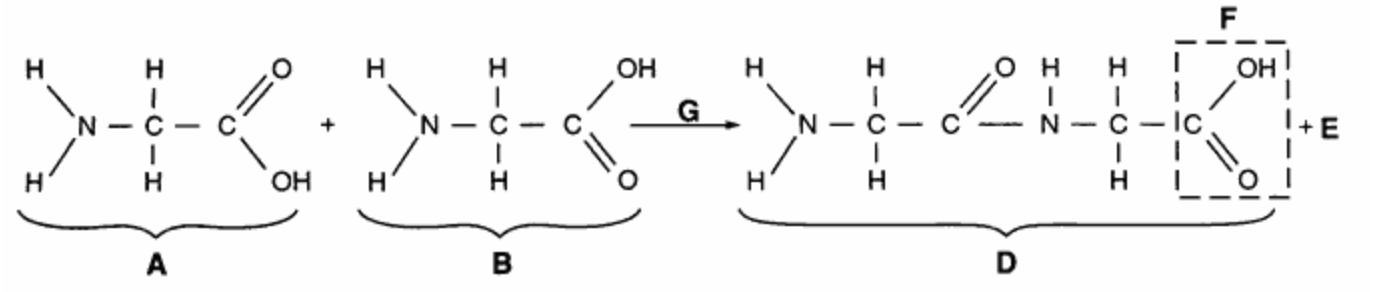
   C) 

   D) 

6. Even though human proteins are synthesized from only 20 different amino acids, there are thousands of different proteins found in human cells. This great variety of proteins is possible because the

   A) size of a specific amino acid can vary within a protein
   B) chemical composition of a specific amino acid can vary
   C) sequence and number of amino acids can be different in each protein
   D) same amino acid can have many different properties

Base your answers to questions **7** and **8** on the chemical reaction represented below.



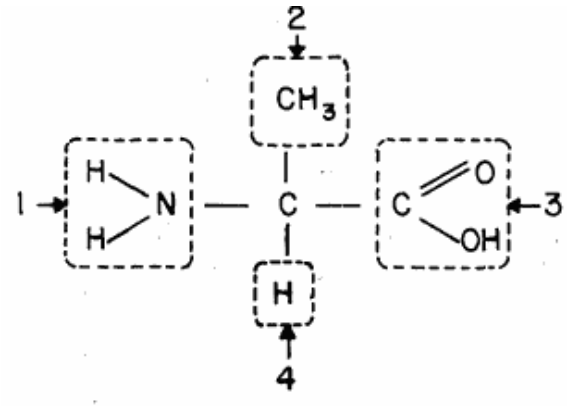
7. The portion of the molecule in box *F* is known as

   A) an amino group
   B) a carboxyl group
   C) a polymer
   D) a monosaccharide

8. Amino acids are indicated by letters

   A) *A* and *B* B) *A* and *G* C) *G* and *D* D) *B* and *D*

9. Base your answer to the following question on the structural formula below and on your knowledge of biology.



Which group of atoms varies from one type of amino acid to another?

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

10. In a DNA sample, 15% of the bases are thymine (T). What percentage of the bases in this sample are adenine (A)?

    A) 15% B) 30% C) 35% D) 85%

11. For which organic compounds must information be encoded in DNA for green plants to synthesize the other three compounds?

    A) sugars
    B) starches
    C) fats
    D) proteins

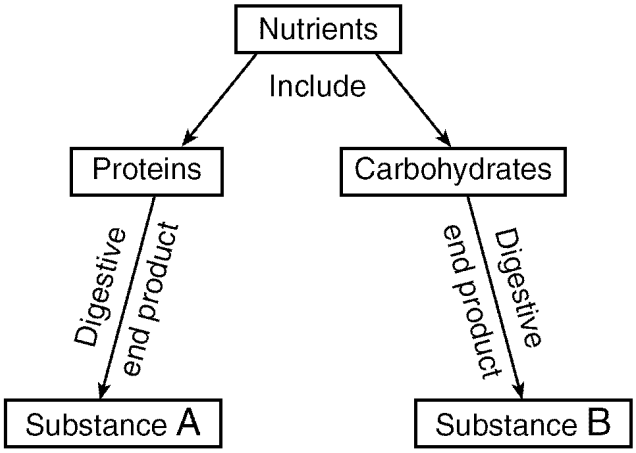
12. Base your answer to the following question on the information below and on your knowledge of biology.

Organisms living in a bog environment must be able to tolerate nitrogen-poor, acidic conditions. Bog plants such as the Venus flytrap and sundew are able to obtain their nitrogen by attracting and consuming insects. These plants produce chemicals that break down the insects into usable compounds.

The chemicals present in the plants that break down the insects are most likely

A) fats
B) hormones
C) enzymes
D) carbohydrates

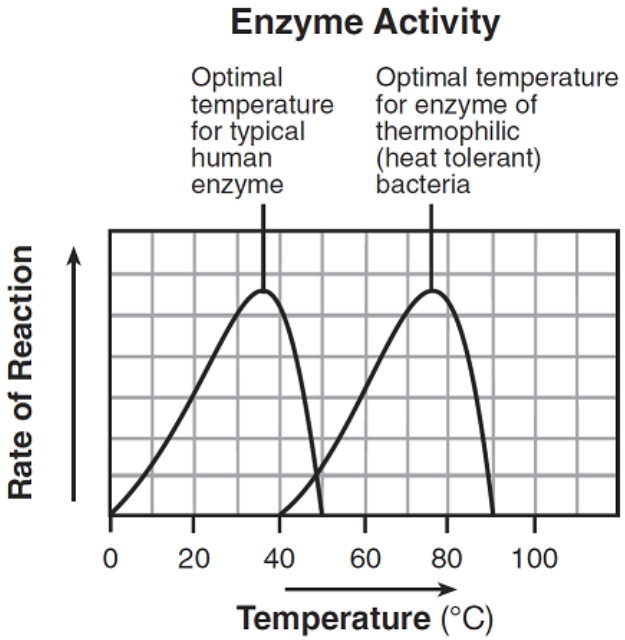
13. Base your answer to the following question on the information in the diagram below and on your knowledge of biology.



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

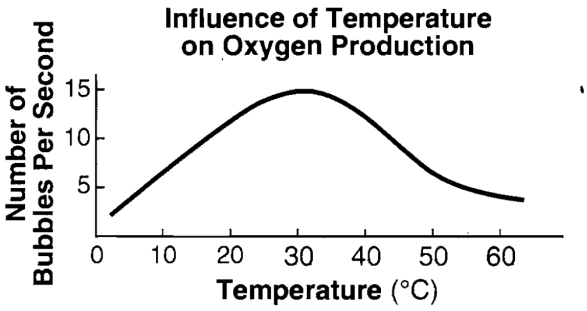
A) photosynthesis
B) synthesis of enzymes
C) a building block of starch
D) a genetic code

14. Which statement is supported by the information in the graph below?



A) The enzymes respond in a similar way to changes in temperature.
B) The enzymes in bacteria function best at 40°C.
C) The enzymes function best at the same temperature.
D) The enzymes breakdown the same substances.

15. 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.

16. 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.

17. 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.

18. Which substance is an inorganic molecule?

A) starch
B) DNA
C) water
D) fat