

CHAPTER REVIEW

CHAPTER

4

Know the Terms

Select the most appropriate words from the list to complete the following paragraphs.

- | | | | |
|-----------------------|----------------|-------------------|-----------------|
| nucleic acids | amino acids | peptide bond | adenine |
| thymine | polysaccharide | saturated | glycerol |
| DNA | lipids | enzymes | RNA |
| ribose | cytosine | carbohydrates | monosaccharides |
| hydrolysis | proteins | oxygen | disaccharide |
| hydrogen | fatty acids | guanine | carbon |
| dehydration synthesis | deoxyribose | organic compounds | unsaturated |

Living organisms are composed of a special category of molecules called (1). Molecules must have both (2) and (3) atoms in them to be in this category. In addition they usually contain (4) atoms as well.

Sugars and starches are (5), which always have a carbon to hydrogen ratio of 2:1. They are composed of building blocks called (6). Two of these units can be attached to each other through a process called (7), which results in a (8). If more subunits are hooked on, we get a (9). This type of molecule can be broken into its building blocks again through the reverse reaction, called (10).

(11) have a hydrogen to oxygen ratio greater than 2:1 and include fats, oils, and waxes. If the carbon-to-carbon bonds in these molecules are all single bonds, they are said to be (12). If there are any double bonded carbons, the molecule is said to be (13). The building blocks of these molecules are (14) and (15).

The group of organic molecules that contain nitrogen are called (16). They have (17) as their building blocks. The bond connecting two of these together is called a (18). Some of these molecules function as (19), which catalyze chemical reactions within cells.

The group of organic molecules that were first discovered in the nucleus of the cell are called (20). There are two kinds of these molecules. They are (21) and (22). One of these is described as a double helix. Its subunits are composed of a five-carbon sugar, called (23), and one of four bases.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____

CHAPTER REVIEW

Understand the Concepts

Answer the following questions in one or two sentences.

1. Why are a hydrogen and hydroxyl removed during a dehydration synthesis reaction? _____

2. Why are a hydrogen and hydroxyl necessary for hydrolysis? _____

3. Why can organic molecules get so large? _____

4. How is a peptide bond formed? _____

5. How are the two chains of a double helix held together? _____

6. Why are small amounts of enzymes sufficient to catalyze a large number of chemical reactions? _____

7. Explain how glucose, fructose, and galactose can be different molecules even though they all have the same molecular formula ($C_6H_{12}O_6$). _____

8. Why is the polar nature of a water molecule important to living organisms? _____
