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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. organic compounds
2. carbon
3. hydrogen
4. oxygen
5. carbohydrates
6. monosaccharide
7. dehydration synthesis
8. ~~polysaccharide~~ disaccharide
9. polysaccharide
10. ~~d~~hydrolysis
11. Lipids
12. saturated
13. unsaturated
14. fatty acid
15. glycerol
16. proteins
17. amino acids
18. Peptide bond
19. enzymes
20. nucleic Acids
21. DNA
22. RNA
23. Ribodeoxyribose

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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? They form H_2O or water which is removed to form bonds between 2 monomers

2. Why are a hydrogen and hydroxyl necessary for hydrolysis? In the form of H_2O they act to break the bond between 2 compounds to break down larger compounds into smaller

3. Why can organic molecules get so large? Carbon can form 4 bonds and can bond to eachother → forms long chain

4. How is a peptide bond formed? Dehydration Synthesis between 2 amino acids

5. How are the two chains of a double helix held together? bonds that form between bases of opposite chains A → T, C → G

6. Why are small amounts of enzymes sufficient to catalyze a large number of chemical reactions? Catalysts can be reused w/out changing in the chemical rxn

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

8. Why is the polar nature of a water molecule important to living organisms? Cohesion → high specific heat so temperature does not change drastically
Adhesion → substances dissolve in H_2O
Both → capillary action provide plants w/ H_2O