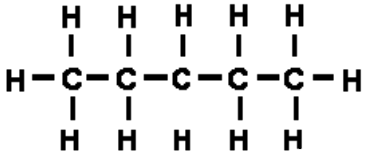
Name _____ Date _____ Period _____

CHEMISTARY OF LIFE – ASSIGNMENT 4

Molecules of Life
(pages 22-30)

I. MOLECULES OF LIFE

1. Carbon shares its electrons with as many as _____different atoms at once.
2. Organic molecules, like the one illustrated here, usually have a "backbone" made out of the element _____.



3. Organic molecules also contain _____.
4. Are organic molecules characteristic of living or nonliving matter? _____
5. Organic molecules can often attain large sizes and are thus called _____ or _____.
6. Polymers are built of smaller units, called _____.

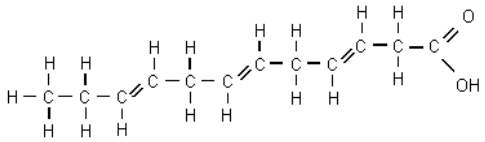
II. CARBOHYDRATES

1. The building blocks of carbohydrates are the simple sugars, known technically as _____. The simple sugar _____ is one example.
2. Carbohydrates are the primary source of _____ in the diet.
3. Table sugar, sucrose, is an example of a(n) _____, being built from two sugar molecules.
4. Large organic molecules are built through a reaction called _____ that removes molecules of _____.
5. During digestion, organic molecules are broken down into component parts by adding _____ molecules through a reaction referred to as _____.
6. When many glucose molecules are joined, the macromolecule (polymer) _____ results.
7. Humans store glucose in the form of a polymer known as _____ in their livers. Another polysaccharide, _____, lends structural support to plant cell walls and is not digestible by humans.

III. LIPIDS

1. Lipids function as _____ and keep us warm; they provide long-term storage of _____; and they form a protective _____ around our internal organs.
2. Dietary fats are most commonly in the form of _____, which are formed form one _____ molecule and three _____ _____molecules.
3. Since they repel water and are nonpolar, they are called _____ fats.

4. Write the words *saturated* and *unsaturated* on the line below the appropriate structure.



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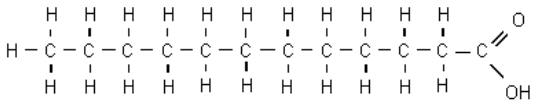

_____

5. What does saturated mean? _____

_____

6. Emulsifiers brake up fats through process called _____- in which the emulsifier surrounds individual fat molecules. _____ from the gallbladder functions in the same way in the digestive system.
7. A type of lipid with a polar phosphate group, called a(n) _____, is a major component of membranes.
8. Cholesterol is the precursor of several lipids, known as _____, that function as hormones in the body.

IV. PROTEINS

1. Name 3 functions of proteins:
   i. _____
   ii. _____
   iii. _____
2. Define enzyme _____.
3. Proteins are _____ with _____ monomers.
4. What are the four atoms that make up proteins? _____

   _____
5. Diagram the structural formula for the amino acid cysteine in the box below:

6. During condensation synthesis between two amino acids a _____ and a molecule of _____ results. The bond that joins the two amino acids is a _____ _____.
7. List and describe the four levels of protein organization :

_____

_____

_____

_____

8. Explain the importance of final protein shape: _____

_____

V. NUCLEIC ACIDS

1. Name the two types of nucleic acids. Include their full name and abbreviation: _____
2. What atoms are found in nucleic acids? _____
3. If DNA and RNA are the macromolecule, what is the monomer of the nucleic acids?
4. Diagram a nucleotide below:
5. What are the four different types of bases in DNA? _____

   _____
6. In RNA _____ replaces the base thymine.
7. What important structure does DNA make up? _____
8. The primary energy carrier in cells in: _____
9. How many ATP molecules can be made from one glucose molecule? _____
10. Complete the following table for the four molecules of life:

Macromolecule	Monomer	Atoms	Structure & Function

11. Complete the attached diagram of DNA using your colored pencils.

Structure	Symbol	Color