Biological Macromolecules Worksheet

Exercise 1.

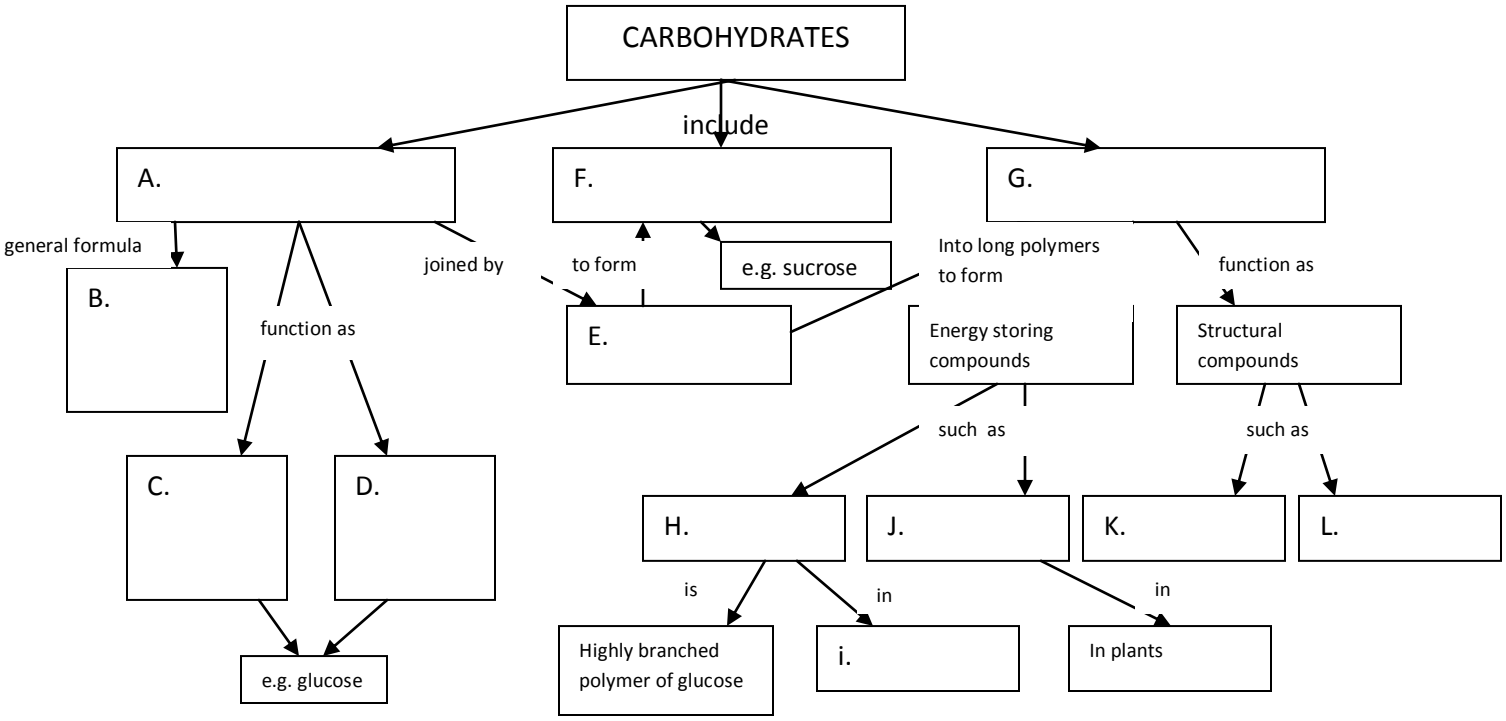
A. Draw either the molecular or structural formula for each of the following organic molecules.

1) glucose
2) triglyceride
3) phospholipid
4) amino acid

B. for each of the following polymers, draw or otherwise define the monomer units that make up the polymer to the rest of the community. You will be able to find the answers in your textbook, if you look carefully.

Starch and glycogen
Cellulose
Insect Exoskeletons
Human hair, bird feathers, reptile scales
Silk

Exercise 2. CONCEPT MAP



Exercise 3.

1. A triglyceride contains _____ and _____.
2. A fatty acid is unsaturated if it contains _____.
3. Saturated fatty acids and unsaturated fatty acids differ in _____.
4. Explain why phospholipids form a bilayer membrane.

Exercise 4.

Define what a **protein** is and/or of what it is made.
(Being in favor of young people is not a valid answer)
Define all the different **functions** that a protein may have.
Define what a **nucleic acid** is and/or of what it is made. How many different kinds of nucleic acids can you name?
Define these terms :
macromolecules
polymer
enzyme
active site
peptide
polypeptide
amino acid
peptide bond
primary structure, secondary structure, tertiary structure, quaternary structure,
disulfide bridges
enzyme inhibitors
nucleotides
phosphodiester bond
purines
pyrimidines
double helix

Exercise 5. Match the following numbers with the appropriate statement. A number may be used more than once.

Numbers: 0, 1, 2, 3, 4, 5, 6, 12, 20

Statements:

a. the number _____ of different nitrogenous bases in DNA
b. the number _____ of different chemical classes of amino acids
c. the number _____ of chains of nucleotides in a DNA molecule
d. the number _____ of different nitrogenous bases in RNA
e. the number _____ of different amino acids found in proteins
f. the number _____ of chains of nucleotides in most RNA molecules

Exercise 6

1. What are the building block unit of proteins? How do these building blocks differ from each other?
2. List three structural differences and one functional difference between DNA and RNA.
3. The most abundant protein in your body is collagen which is a type of _____ protein.
4. _____ refers to a protein losing its three dimensional structure.
5. Hereditary information is stored in macromolecules called _____?
6. The double helix structure of DNA has been compared to a spiral staircase. What makes up the sides of the staircase and what the steps? What holds these parts together?
7. Can we use DNA and Proteins to monitor the progress of evolution? If so, How?
8. Why would a change in pH cause a protein to denature?
9. A denatured protein may reform to its original functional shape, when returned to its normal environment. What does this indicate about a protein's conformation?