Elements & Macromolecules in Organisms

Most common elements in living things are **carbon, hydrogen, nitrogen, and oxygen**. These four elements constitute about **95% of your body weight**. All compounds can be classified in two broad categories --- **organic and inorganic compounds**. Organic compounds are made primarily of **carbon**. Carbon has **four outer electrons** and can form four bonds. Carbon can form **single** bonds with another atom and also bond to other carbon molecules forming **double, triple, or quadruple bonds**. Organic compounds also contain **hydrogen**. Since hydrogen has only one electron, it can form only **single bonds**.

Each small organic molecule can be a unit of a large organic molecule called a **macromolecule**. There are **four classes of macromolecules** (polysaccharides or **carbohydrates**, triglycerides or **lipids**, polypeptides or **proteins**, and **nucleic acids** such as DNA & RNA). **Carbohydrates and lipids** are made of only carbon, hydrogen, and oxygen **(CHO)**. **Proteins** are made of carbon, hydrogen, oxygen, and nitrogen **(CHON)**. **Nucleic acids** such as DNA and RNA contain carbon, hydrogen, oxygen, nitrogen, and phosphorus **(CHON P)**.

Use the drawing of the **amino acid on this worksheet** (look ahead to another page for this sketch and remember that the NUMBER OF LINES from a single atom is their NUMBER OF BONDS) to determine the number of bonds formed by:

_____ Oxygen _____Hydrogen _____ Nitrogen

The body also needs trace amounts of other elements such as calcium, potassium, and sulfur for proper functioning of muscles, nerves, etc. ***Color*** each of the **elements on the next page** according to the color listed next to the element's symbol. Then ***Color code*** the **squirrel** with the correct proportion of each element's color. Now ***color code*** the carrot with the same colors as you used on the squirrel.

Questions:

1. Name the 4 main elements that make up 95% of an organism.

2. Name the 4 types of bonds carbon can form.

3. What are macromolecules?