Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_\_\_\_

Chapter 2: The Chemistry of Life

SC.912.L.18.1- Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.

SC.912.L.18.11- Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.

SC.912.L.18.12- Discuss the special properties of water that contribute to Earth’s suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.

**Vocabulary:**

Atom-

Nucleus-

Electron-

Element-

Compound-

Ionic bond-

Ion-

Covalent bond-

Molecule-

Van der Waals forces-

Hydrogen bond-

Cohesion-

Adhesion-

Mixture-

Solution-

Solute-

Solvent-

Suspension-

pH scale-

Acid-

Base-

Buffer-

Monomer-

Polymer-

Carbohydrate-

Lipid-

Nucleotide-

Nucleic acid-

Protein-

Amino acid-

Chemical reaction-

Reactant-

Product-

Activation energy-

Catalyst-

Enzyme-

Substrate-

**Questions:**

As described on page 43-44, describe what an isotope is. How are radioactive isotopes used in the various fields of science?

Summarize the following bonds in the chart below:

|  |  |  |  |
| --- | --- | --- | --- |
| Ionic Bonds | Covalent Bonds | Van der Waals forces | Hydrogen Bonds |
|  |  |  |  |

As discussed on page 48, summarize the special properties of water in the chart below:

|  |  |
| --- | --- |
| Cohesion: | Example: |
| Adhesion: | Example: |
| Heat Capacity: | Example: |
| Water in Living Things: | Example: |

In the space below, draw the picture on page 53, Figure 2-13. Label the picture with the following terms: monomer, polymerization and polymer.

How are the terms activation energy, catalyst and enzymes interrelated? Describe their relationship.

Complete the following table about macromolecules after reading pages 53-57:

|  |  |
| --- | --- |
| **Carbohydrates** (notes: including simple sugars, complex carbohydrates and starches & cellulose) | Structure (draw) |
| Function (blue key): |
| **Lipids** (notes) | Structure (draw) |
| Function (blue key):  |
| **Nucleic Acids** (notes) | Structure (draw) |
| Function (blue key):  |
| **Proteins** (notes) | Structure (draw) |
| Function (blue key):  |