BIOL 1010

Learning Module 2

Learning Outcomes for Chapter 2 and 3

1) Use the periodic table to identify the atomic number, atomic mass, and electron number of atoms from different elements.
2) Correlate the electron shell model for different elements to the number of valence electrons and covalent bonds that an atom will have.
3) Differentiate between covalent, ionic and hydrogen bonds.
4) Contrast the behavior of molecules that have polar covalent bonds to those that have nonpolar covalent bonds.
5) Explain how hydrogen bonding gives water it's life-giving properties such as being a solvent, stabilizing temperature, and cohesion.
6) Use the pH table to determine whether a solution is an acid or a base and to identify the solution's relative hydrogen and hydroxide concentration.

Learning Tasks

1) Read Chapter 2 and 3 in your textbook .

2) Review the periodic table that your instructor handed out in class, and be sure that you can identify how many protons, neutrons, and electrons an atom of any element has. Be able to draw an electron shell model of any atom from hydrogen to argon. Identify how many valence electrons each of these atoms have and how many covalent bonds each atom could form. This website has a nice review of these concepts >http://www.biology.arizona.edu/biochemistry/tutorials/chemistry/page1.html<

3) Review figures 2.12, 2.14 & 2.16. Distinguish between covalent, ionic, and hydrogen bonds.

4) Review figure 3.2. Explain how hydrogen bonding gives water it's life-giving properties: solvent, temperature stabilizing, cohesion

5) Review figure 3.9. Use the pH scale to determine the relative hydrogen and hydroxide concentration of different solutions.

6) Define the following, important biological terms.

A) Element, atom, proton, neutron, electron, isotope
B) Electron shell model, valence electrons
C) Covalent bond, ionic bond, hydrogen bond
D) Molecules, compounds
E) Electronegative, polar bond, nonpolar bond
F) Hydrophilic, hydrophobic
G) Solute, solvent, solution
H) ph scale, acid, base, hydroxide, hydrogen ion, buffer