Chapter 6 Study Guide

Section 6.1

1. What is the difference between an atom and a molecule?
2. Differentiate between covalent bonds and van der Waals forces (called hydrogen bonds when in water).

Section 6.2

1. What is a chemical reaction?
2. Which of the compounds below are reactants, and which are products?

PbO2 + 4HCl PbCl2  + Cl2 +2H2O

1. Balance the following equations. Show your work.

\_\_\_\_Zn + \_\_\_\_ HCl 🡪 \_\_\_\_ ZnCl2  + \_\_\_\_ H2

\_\_\_\_\_ Fe + \_\_\_\_ Cl2  🡪 \_\_\_\_FeCl3

1. In the Catalase Liver Lab, what were the reactants? What were the products? (Check your lab sheet)
2. What is the term for the amount of energy that is needed for a chemical reaction to occur?
3. What is an enzyme?
4. Explain the relationship between an enzyme and a substrate.
5. Draw a picture that shows how an enzyme works, label the enzyme, substrate, products, and enzyme-substrate complex.
6. What do the prefixes exo and endo mean?
7. What is the difference between an exothermic reaction and an endothermic reaction?
8. Draw graphs that show the progression of an exothermic and endothermic reaction. On each graph, draw the alternate pathway created by adding an enzyme.
9. How does shape affect the function of an enzyme?
10. What factors might cause the shape on an active site to change? What is this called?

Section 6.3

1. What pH are most biological processes performed at?
2. Draw the pH scale on page 165 of your book. Indicate where a strong acid, strong base, weak acid, weak base, and neutral substance would be on the scale.
3. What is a buffer? What might happen if your body did not have buffers?

Section 6.4

1. Organic chemistry is the study of molecules containing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Create a table that lists the four major macromolecules, shows their general shapes, lists their major functions and their monomers.
3. How are monomers and polymers related?
4. Draw a picture of a monosaccharide, a disaccharide, and a polysaccharide.
5. Differentiate between dehydration synthesis and hydrolysis. Draw a picture of each process.
6. Differentiate between saturated and unsaturated fats.
7. Draw and label all the parts of an amino acid.
8. Draw two amino acids bonded together. Circle the peptide bond.
9. What causes the different shapes of amino acids? How can those shapes be altered and what are the effects? (Think enzymes)
10. Draw and label a picture of a nucleotide.
11. Draw and label a picture of a nucleic acid polymer.

To do well on the test you must:

* Identify **all macromolecules, their monomers, and their parts** with a picture
* Be able to show and explain dehydration synthesis and hydrolysis
* Tell if a reaction is endothermic or exothermic and how it will feel to the touch
* All we have learned about enzyme function and the factors affecting it
* Be able to tell from a graph the optimal conditions for a particular enzyme
* Identify a balanced equation
* Know all Quizlet vocab words