I. The Chemical Context of Life: (Ch.2)

1. Check your objectives and make sure you understand the basic chemistry stuff! (Focus on the type of bonds and their relative strengths.)

II. Water and Life (Ch.3)

1. Explain major properties of water and how each of the properties contribute to sustaining life on Earth.

2. Practice drawing how water forms hydrogen bonds around each other or with other molecules. Explain the significance of this interaction.

III. Macromolecules and Subunits (Ch. 4&5)

1. List the 4 major macromolecules that are important as building blocks of life and their major functions.

2. For each of the 4 major macromolecules, identify each subunits and explain key structural pieces that contributes to its function. (i.e. Protein is made up of xxxxxx, since the R group changes, the sequence of the polypeptide is what determines the shape of the protein folding, therefore allowing differences in protein function). **Check the specific objectives listed on the website for some structure and function type questions**

3. Make a graphic organizer using ONLY the images of chemical structures (from the cheat sheet of images from the book)…then practice labeling them correctly.

4. Draw out the following reactions and track where water is from/goes:
    - Dehydration synthesis
    - Hydrolysis

IV. Energetics (Ch 8.1 & 8.2)

1. Fill out the following grid to predict the spontaneity of a reaction. (make sure you indicate the condition for the T in order for the Gibbs free energy equation to hold true.

	Delta H < 0	Delta H > 0
Delta S > 0		
Delta S < 0		

2. Explain why free energy is required for living systems to maintain organization, to grow or to reproduce. (Give an example)

3. Describe some living processes that require input of free energy and how the living organism utilizes chains of reactions to survive.

V. ATP and Energy Coupling (Ch 8.3)

1. Explain energy coupling and the importance of ATP molecule in the energy coupling concept.

2. What is the significance of the phosphorylated intermediates?

VI. Enzyme (Ch 8.4-8.5)

1. Describe the structure and function of an enzyme.

2. Sketch a free-energy graph for a reaction and sketch what happened to the reaction when enzyme is involved in lowering the activation energy. Explain!

3. Explain the following terms and how it relates to enzyme function:
   - pH
   - Temperature
   - Cofactor/coenzyme
   - Substrate concentration
   - Inhibitors
   - Allosteric activator vs. inhibitor
   - Feedback mechanism in enzyme function.