**Biology Mid-Year Review**

**Chemistry of Life: Chapter 6**

Draw and label the four major types of macromolecules.

Describe how each macromolecule is used by an organism.

Define enzymes.

Define active site, catalyst, activation energy, and substrate.

Explain the function of an enzyme in a cell.

Draw and label a picture of an enzyme catalyzing a reaction.

Explain how temperature and pH affect enzyme activity.

List the properties of water that are important for life.

Draw a water molecule and label the parts.

Define polar, covalent bonds, adhesion, and cohesion.

Compare and contrast ionic bonds and covalent bonds.

**Cells: Chapter 7**

What are the three tenets (parts) of cell theory?

Why did cell theory take so long to develop? Which scientists were most instrumental in its development?

Draw a diagram of the cell membrane and label the parts, be sure you are not drawing ONLY the phospholipid bilayer.

Explain how the cell membrane works (what are the functions of its parts, what does it do as a whole?)

Define: Osmosis, Diffusion

Define and give an example of each: Active Transport, Passive Transport

List the organelles that we have learned about along with their functions (see page 199).

Compare and contrast (Venn Diagram works well) plant and animal cells.

Define Eukaryotic and Prokaryotic, compare and contrast the two cell types.

**Cellular Energy: Chapter 8**

What is the basic/overall formula for photosynthesis?

How is energy transferred in photosynthesis? (What form of energy does photosynthesis begin with, what kinds of energy is it transferred to during the process)

Write the basic formula/overall for cellular respiration.

Define aerobic and anaerobic respiration. What is the difference between the two?

How are photosynthesis and cellular respiration related?

Define ATP.

How does ATP contribute to energy transfer within a cell? (How does a cell get energy from ATP?)

**Cell Cycle: Chapter 9**

Describe what happens in each phase of the cell cycle.

Draw and label each stage of mitosis. (Ignore the prometaphase, it DOES exist, but it is beyond the scope of your course)

Describe what happens in each stage of mitosis.

How do mutations affect cells?

Compare and contrast healthy and cancerous cells.

If a cell has 46 chromosomes and undergoes mitosis, how many daughter cells are produced from this original cell, and how many chromosomes will each daughter cell have?

What type of reproduction occurs via mitosis?

**Chapter 10: Sexual Reproduction and Genetics**

Define sexual reproduction and asexual reproduction. (see page 276)

How does sexual reproduction affect genetic diversity?

What is the product of meiosis? How is this product different than the product of mitosis + cytokinesis?