**Biology Fall Final Exam Study Guide**

**Energy**

1. How do organisms in an energy pyramid obtain their energy?
2. Which level in an energy pyramid has the most available energy?
3. Define chemical energy, thermal energy, potential energy, kinetic energy, and mechanical energy.
4. What is energy that is given off from a reaction lost to the environment as?
5. What is the chemical equation for cellular respiration?
6. Do plants perform cellular respiration?
7. What is the chemical equation for photosynthesis?
8. What is fermentation?
9. What types of organisms perform fermentation?
10. What are the two types of fermentation?
11. Which compound that is produced by respiration directly provides us with energy?

**Enzymes**

1. What is an enzyme?
2. How does an enzyme affect a reaction rate?
3. What does an enzyme do to activation energy?
4. What are 3 characteristics of an enzyme?
5. Draw an enzyme-substrate complex.
6. What does temperature do to an enzyme?

**Proteins**

1. What are the monomers of proteins?
2. How does temperature affect proteins?
3. Define the 4 structures of a protein. (Primary, Secondary, Tertiary, Quaternary)
4. Which part of an amino acid makes it unique?
5. Draw the structure of an amino acid.
6. What element does a compound need to contain in order for it to be considered organic?
7. What elements are in a protein?

**Carbohydrates**

1. What is the function of a carbohydrate?
2. What are the monomers of carbohydrates?
3. What elements are in a carbohydrate?
4. What is a monosaccharide, disaccharide and polysaccharide?
5. What is the function of insulin? Glucagon? Glycogen?

**Lipids and Cell Transport**

1. What are the differences between a saturated and unsaturated fatty acid?
2. What are the characteristics of a phospholipid?
3. What are the functions of the cell membrane?
4. What are the channels that span the membrane made of?
5. What are the 3 types of Passive Transport?
6. What is diffusion?
7. What is facilitated diffusion?
8. What is osmosis?
9. What is active transport?
10. Define Endocytosis and Exocytosis?
11. Define hypotonic, hypertonic and isotonic.
12. Explain what happens to a red blood cell when placed in a hypotonic, hypertonic, and isotonic solution.