**Biology Fall Final Exam Study Guide:**

**UNIT 1:**

1. What is the independent variable?
2. What is the dependent variable?
3. What is the control variable? Give an example.
4. What are constants?
5. How many variables should be purposefully changed in an experiment?
6. Can you read and interpret a graph?
7. Can you read and interpret a data table?
8. What is a hypothesis?
9. What is a theory?
10. Name and define all 8 characteristics of life.
11. Name in order and give examples for each level of organization in biology.

**UNIT 2:**

1. What are the 3 subatomic particles, their charges, and their locations?
2. What is special about carbon?
3. What is an ionic bond? What types of atoms make ionic bonds? Give an example.
4. Why is it important that water is less dense as a solid?
5. Why is water polar?
6. What is the pH scale? What ion do Acids have more of? What ion do Bases have more of?
7. What does it mean for a compound to be organic?
8. What is the molecular shape of carbohydrates?
9. What is the molecular shape of lipids?
10. What is the molecular shape of proteins?
11. What is the purpose of enzymes?

**UNIT 3:**

1. What are the differences between prokaryotes and eukaryotes?
2. What are the differences between a plant and an animal cell?
3. What is the function of the nucleus?
4. What is the function of the cell wall?
5. What is the function of the mitochondria?
6. What is the function of the chloroplast?
7. What is osmosis? How does water move across a membrane?
8. What is simple diffusion?
9. What is facilitated diffusion?
10. What types of cells divide using mitosis?
11. What is the end result of mitosis?

**UNIT 4:**

1. What is the purpose of photosynthesis?
2. How do you read a graph about pigments?
3. What is the equation for photosynthesis?
4. What ultimately happens to the energy that is taken in from the sun? (Where does it go??)
5. What environmental factors affect the rates of photosynthesis?
6. Where does cellular respiration take place?
7. What is the purpose of cellular respiration?
8. What is the equation for cellular respiration?
9. What are the 3 steps of cellular respiration? What happens and where in each? Know the amount of ATP from each.
10. Do plants do cellular respiration? What else does cellular respiration?

**UNIT 5:**

1. What is the structure of DNA? What are the steps made of? What are the sides of the ladder?
2. What is the building block of a nucleic acid?
3. What is the flow of information in protein synthesis?
4. How is RNA different from DNA?
5. What is DNA replication? Be able to do an example.
6. What is transcription? Be able to do an example.
7. What is mRNA?
8. What is translation? Be able to read a codon chart.
9. What is tRNA?
10. What are amino acids?