Biology Semester 1 Final Study Guide

Scientific Method:

1. Be able to read and analyze graphs, data tables and diagrams.
2. What are independent, dependent, and controlled variables (constants)? Be able to identify these in experiments.
3. Be able to identify correct graph components.
4. Be able to formulate an appropriate hypothesis for an experiment.
5. Be able to use data from data tables, graphs, and diagrams to formulate conclusions.

Ecology:

1. What are trophic levels? Identify autotroph, heterotroph, producer, primary consumer, secondary consumer, etc.). Be able to apply this knowledge.
2. What is the 10% rule and the energy pyramid? Explain the shape of the energy pyramid.
3. Explain and recognize the carbon cycle as well as other cycles.
4. What is the role of photosynthesis and cellular respiration in the carbon cycle?
5. What do the carbon, water and nitrogen cycles (nutrient cycles) have in common?
6. What is a food web? Be able to analyze example food webs.
7. Give examples of group behaviors and how they help with survival and reproduction.
8. What is carrying capacity? Be able analyze a population growth curve on a graph and identify what is occurring at different points on such a graph.
9. Explain what limiting factors are and give examples.
10. What is biodiversity and what are ways it is impacted by human activity in positive and negative ways?
11. What are invasive species and how do they affect biodiversity?

The Cell:

1. What are the cell types and explain differences and similarities (eukaryotic, prokaryotic, plant and animal cells)?
2. What are the chemical structures and building blocks of the four biomolecules (proteins, lipids, carbohydrates, nucleic acids)? What elements are found in each?
3. What are different biomolecules used for?
4. What is the purpose of an enzyme? What type of biomolecule is it?
5. What are the reactants and products of photosynthesis and cellular respiration? Make sure to know and recognize the equations for both.
6. What are the main purposes of cellular respiration and photosynthesis?

The Cell Cycle/Mitosis/Meiosis:

1. What is the cell cycle?
2. What is the purpose of mitosis? What is produced?
3. What is the purpose of meiosis? What is produced?
4. What are gametes?
5. Be able to recognize events of mitosis and meiosis on diagrams.
6. Be able to recognize and describe crossing over. What is the purpose of crossing over?
7. What is independent assortment and what is its purpose?
8. Be able to recognize and describe homologous chromosomes.