**BIOLOGY FINAL EXAM REVIEW-FALL 2017**

The final exam is a cumulative exam, covering information from the entire semester. It is composed of **50 multiple-choice** questions. You will have 2 hours to complete the exam, so use your time accordingly. REMEMBER- IT IS 25% OF YOUR SEMESTER GRADE!

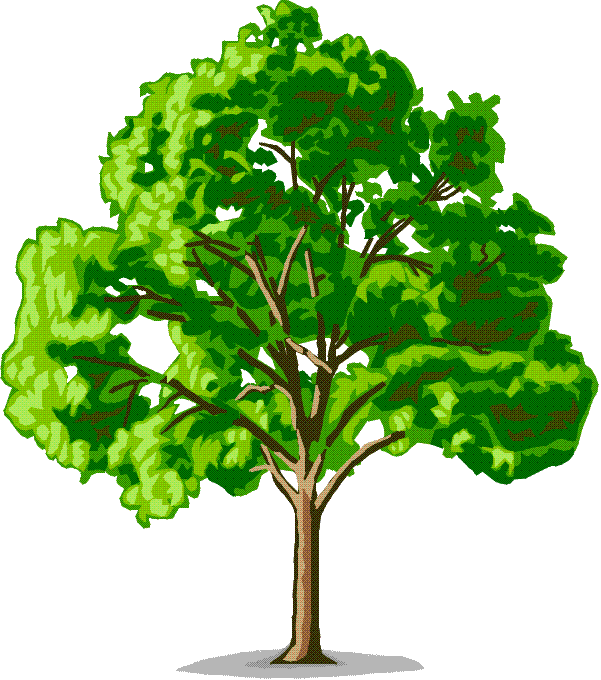
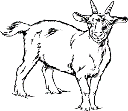
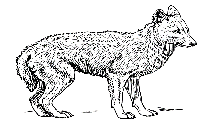
**Unit 1: The Nature of Science**

1. What is Biology?
2. Explain the components of a good hypothesis
3. Describe the following components of an experiment:
   1. Independent Variable
   2. Dependent Variable
   3. Constants
   4. Control Group
   5. Experimental Group

**Unit 2: Ecology**

1. *Define* and be able to *explain* how the following terms/concepts relate to the unit:
   1. Ecology d. Predation
   2. Mutualism e. Commensalism
   3. Parasitism
2. List the characteristics of living things.
3. What is homeostasis?
4. Write the levels of ecological organization on Earth from simplest to most complex.
5. What is the original source of energy for almost all the energy in most ecosystems?
6. Only 10 percent of the energy stored in an organism can be passed on to the next trophic level. What happens to the remaining 90% of the energy?





1. Label each of the levels of the food chain above as a producer or type of consumer.
2. How many trophic levels are represented in the food chain above? \_\_\_\_\_\_\_
3. Which trophic level has the most available energy?

**Unit 3: Biochemistry**

1. Describe a **monomer** vs. **polymer**.
2. List the functions of **carbohydrates**.
3. What is the monomer of a carbohydrate?
4. List the functions of **lipids**.
5. List examples of lipids
6. What are the 2 parts of the monomer that makes up a lipid
7. List the functions of **proteins**.
8. What is the monomer of a protein?
9. List the functions of **nucleic acids**.
10. Name the monomer of a nucleic acid and the 3 parts that make up the monomer.
11. What type of biomolecule is an **enzyme**?
12. Enzymes are catalysts. The primary function of an enzyme is-
13. What happens to an enzyme that has been **denatured**?
14. What does it mean for an enzyme to be substrate specific?
15. What are the factors that can affect enzyme activity?

**Unit 4: Cell Structure and Function**

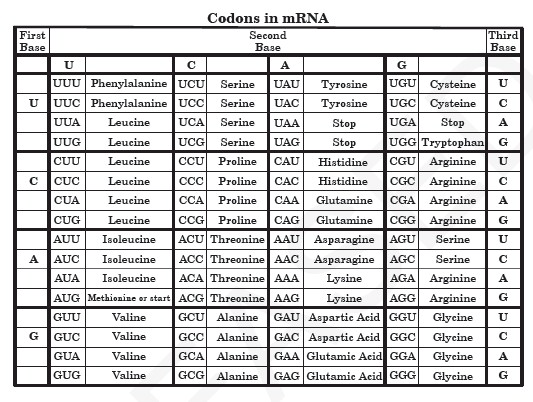
1. List several differences between organelles found in animal and plant cells.
2. Describe the function of the following organelles:
   1. Rough ER e. Chloroplasts
   2. Ribosomes f. Cell membrane
   3. Nucleus g. Cell wall
   4. Mitochondria
3. Describe the differences between prokaryotic and eukaryotic cells.
4. Compare/contrast cell wall and cell membrane structure and function
5. What are the channels and pumps in the cell membrane made of?
6. Describe what happens in cellular respiration. Include the reactants, products and the organelle that carries out cellular respiration.

**Define the following and know how they relate to the unit:**

1. Osmosis
2. Diffusion
3. Active Transport
4. Isotonic Solution
5. Hypertonic Solution
6. Hypotonic Solution

**Unit 5: DNA and Protein Synthesis**

1. Draw a nucleotide and label each component
2. Describe the steps of DNA Replication. Make sure to include when, where and how DNA replication occurs.
3. What is the role of DNA polymerase?
4. Compare and contrast DNA and RNA.
5. Describe the process of transcription. Make sure to include where, why and how transcription occurs.
6. Describe the process of translation. Make sure to include where, why and how translation occurs.
7. Be able to recognize diagrams that represent transcription and translation.
8. During translation, what determines which amino acid is added to the growing polypeptide?
9. How much adenine, guanine, and cytosine are present if a DNA strand contains 20% thymine?



\*Use the table above to answer the following questions:

Example DNA strand= **TACCGGCATCGT**

1. Write the **complementary mRNA** strand from the DNA sequence above.
2. Write the **amino acids** that will be translated from the DNA strand.