**Study Guide Unit 1 Exam AP Biology**

**Chapters 2-3**

* Understand the differences between the types of bonds {covalent (polar and nonpolar), ionic, hydrogen}
  + Also be able to identify the specific names of the bonds based on the biomolecules they are found in (glycosidic linkages, ester bonds, peptide bonds, phosphodiester linkages, disulfide bridges)
* Know and be able to identify the parts of all types of biomolecules (carbs, lipids, proteins and nucleic acids)
  + Ex. Nucleic Acids are made of monomers called nucleotides. Nucleotides consist of a phosphate group, a 5-carbon sugar and a nitrogenous base. DNA forms a double helix. The strands are anti-parallel with one running 5’ to 3’ and the other from 3’ to 5’. The backbone of the molecule is made of alternating phosphate groups and sugars, while the interior or rungs are made of the bases. The strands are said to be complementary because of the base pairing rules. A forms 2 hydrogen bonds to T and G forms 3 hydrogen bonds to C. (Always pairing a purine, A &G, to a pyrimidine, T & C, to ensure the distance between the strands.) The nitrogenous bases that are found in DNA are adenine, guanine, cytosine and thymine. The nitrogenous bases that are found in RNA are adenine, guanine, cytosine and uracil. RNA is also single stranded unlike DNA. Nucleic acids contain the elements C, H, O, N and P.
* Know the difference between organic and inorganic and how to classify molecules as either organic or inorganic. Also know examples of organic compounds.
* Understand pH. (Including the scale, how acids and basis react in water/solution, etc.)
* Know how to classify functional groups based on structural formula. Also know the properties of each.
* Understand condensation/dehydration and hydrolysis reactions and when they occur.
* Be able to describe why water is necessary for life. (Properties)
* Know the role, structure, examples, and be able to identify of each of the classes of biomolecules, including examples that were provided (ex. Hemoglobin, cellulose, etc.).

***Test Format:***

* 33 Multiple Choice Questions
* 2 FRQs (Free-Response Questions)