Biology Semester I Assessment Study Guide

**Chapter 2: The Science of Biology:**

-Describe the parts of the scientific method.

- Describe a hypothesis and its purpose in an experiment

- Compare quantitative and qualitative data

- Distinguish between observations and inferences

- Describe a variable in an experiment.

- Discuss the purpose of a control group in an experiment.

**Chapter 4: Chemical Basis of Life:**

- List the most common elements in living thing.

- Be able to compare and contrast elements and compounds.

- Describe the structure of an atom.

- What is an isotope and how can it be used to study biological processes.

- Describe the electron arrangements of atoms and how this affects its chemical reactivity.

- Describe an ionic bond. Give examples.

- Describe a covalent bond. Give examples.

**Chapter 5: The Molecules of Life:**

-Describe monomer, polymer and be able to relate them to biology and macromolecules

-Describe the processes of building and breaking polymers.

-Know what a disaccharide is and how disaccharides are formed.

-Name the polysaccharides starch, glycogen and cellulose and describe their functions.

-Identify a general characteristic of lipids..

-Describe and relate the term hydrophobic.

-Describe and relate the term hydrophilic.

-Describe why some lipids are saturated.

-Describe why some lipids are unsaturated.

-List functions of proteins.

-Describe the structure of amino acids and proteins..

-Describe what a polypeptide is and what its smaller unit is.

-Know what an enzyme is and how it functions.

-Know what activation energy is and what may affect it.

**Chapter 6: Tour of the Cell:**

-List and know the parts of a microscope.

-Know how to use the microscope.

-Describe how microscopes aid the study of cells.

-List the differences of animal and plant cells.

-Distinguish between prokaryotic and eukaryotic cells.

-Know the function of a plasma membrane.

-Identify the functions of proteins in cellular membranes.

- Know the structure of a plasma membrane and how this aids in its function.

-Describe diffusion.

-Relate diffusion with equilibrium.

-Describe how passive transport occurs.

-Describe osmosis.

-Relate osmosis to solute concentration.

-Explain how active transport differs from passive transport.

-Describe how large molecules move across a membrane (endocytosis, exocytosis) include the word vesicle in your description.

-Know the following cell organelles and their responsibility in the cell:

* + - * 1. Nucleus
        2. Cytoplasm
        3. Cell wall
        4. Endoplasmic reticulum
        5. Golgi apparatus
        6. Vacuoles
        7. Lysosomes
        8. Chloroplasts
        9. Mitochondria
        10. Cytoskeleton

## **Chapter 7: The Working Cell: Energy from Food:**

-Compare and contrast how autotroph and heterotrophs obtain food.

-Describe kinetic, potential and chemical energy.

-Describe the structure of ATP and how it stores energy. Be sure to include all the parts of an ATP

molecule.

-Describe the ATP cycle (include ATP, ADP and AMP).

-Know what organelle cellular respiration occurs.

-Summarize the three stages of cellular respiration.

-Know where each stage of cellular respiration occurs.

-Know the overall equation for cellular respiration.

-Know the reactants of cellular respiration.

-Know the products of cellular respiration.

-Know how many ATP molecules are produced during cellular respiration.

-Know how many ATP molecules are produced during each turn of the Krebs cycle.

-Know how many ATP molecules are needed in order for the Krebs cycle to begin.

-Know what enters the Krebs cycle.

-Describe ATP synthase where it is located and its function.

-Know in which part of cellular respiration the most molecules of ATP are produced.

-Describe fermentation as it relates to cellular respiration.

-Explain lactic acid as it relates to fermentation.

### Chapter 8: The Working Cell: Energy from Sunlight:

-Know the overall equation for photosynthesis.

-Know the reactants and the products of photosynthesis

-Know the relationship between photosynthesis and cellular respiration.

-Know the structure of a chloroplast.

-Know the structure of a leaf.

-Know the two steps of photosynthesis.

-Explain the light dependant stage.

-What is needed and what is produced in the light dependent stage.

-Describe where in the leaf the light dependent stage occurs.

-Explain why the light dependent stage is called water splitting.

- Explain the Calvin cycle of photosynthesis.

- Know the relationship between light dependant stage and the Calvin cycle.

- Know what is needed and what is produced during the Calvin cycle.

- Describe and explain the role of pigments in plants.

- Explain how light interacts with pigments.

- Be able to discuss the electromagnetic spectrum

**Chapter 28 – The Nervous System**

-Describe the basic structure and functions of the nervous system.

-Describe and explain the Central Nervous System (CNS).

-Describe and explain the Peripheral Nervous System (PNS).

-Describe the basic structure of a neuron.

-Explain how a neuron at rest stores potential energy.

-Describe how a nerve signal begins, travels and crosses synapses.

-Describe the function of the spinal cord.

-Identify the main parts of the brain and their functions.

**Chapter 29 – Nutrition and Digestion:**

-Know the four stages of food processing.

-Know the six type of nutrients found in food.

-Be able to label the digestive tube (tract) and trace the path of food through the organs.

-Know each of the organs and its function.