

## Biology Semester 1 Final Review

### Experimental Design

Vocab: hypothesis, bar graph, circle graph, line graph, accuracy, precision, scientific theory, scientific law, slope, bias, dependent variable, independent variable, constant, control, qualitative data, quantitative data.

- List the steps of the scientific method in order
- Define a hypothesis and the format for writing a scientific hypothesis
- Label, title and graph data
- Define the parts of experimental design
- Be able to identify the parts of an experiment (variables etc)
- Explain the difference between qualitative and quantitative data and know examples
- Know the three major types of graphs and when to use each.
- Be able to label/title a graph, graph the data and find the slope.
- Give examples of a positive, negative and constant slope.
- Explain how the independent and dependent variables are graphed.
- What is bias? What steps do scientists take to try to eliminate bias
- What is the difference between a scientific theory and a scientific law? Provide examples of each.
- Explain the difference between accuracy and precision. Provide examples.

### Unit 1: Introduction to Biology:

Vocab: Adaptation, Cell, Homeostasis, Biology, biodiversity System, biosphere, Natural selection, Evolution, Species, DNA

- List and describe the basic characteristics of all living things.
- What is biodiversity and where is it most prevalent?
- Compare and contrast sexual and asexual reproduction.
- Explain the idea that structure and function are related and give an example.

### Unit 2 Biochemistry

Vocab: condensation reaction, covalent bond, enzymes, functional group, hydrolysis, isomer, macromolecules, monomer, polymer, peptide bond, hydrogen bond, reactant, product, substrate, atom, ion, element, compound, proton, neutron, electron, ionic bond, polar, acid, base, pH scale, hydrogen ion, hydronium (OH) ion, buffer, chemical reaction, activation energy

- Compare and Contrast ionic and covalent bonds
- Draw the formation of an ionic or covalent bond
- Name Ionic and covalent compounds
- Explain the chemical function of a buffer
- Explain the difference between an acid and a base.
- List, define and give an example of the 4 macromolecules
- Identify the monomer of each macromolecule
- Identify the structure of each monomer

- Label the parts of a chemical reaction
- Explain the function of an enzyme in a chemical reaction
- Explain the process of a condensation reaction.
- Explain the process of a hydrolysis reaction.
- Be able to draw the basic structure of an atom
- Be able to identify a solution as basic or acidic in the lab.

### Unit 3 Cells

- Function of the organelles: cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles, vesicles, ribosomes, lysosomes, Endoplasmic reticulum, golgi apparatus.
- Be able to identify the organelles by a picture or description.
- Explain the differences between a prokaryote and eukaryote
- Explain the differences between a plant and animal cell
- Be able to identify a cell as plant or animal using the microscope.
- Explain Osmosis and Diffusion
- Compare and Contrast active and passive transport
- What does cell theory state?