**Biology 1st Semester Exam Review**

2013

1. Distinguish between living and non-living things, using the characteristics of life.
   * Know the characteristics of life and what defines what is living and non-living.
   * **Bio🡪Intro to Biochem🡪Biology Intro Notes🡪Characteristics of Life**
2. Differentiate between different levels of organization in living things.
   * Know what defines each level of organization.
   * **Bio🡪Intro to Biochem🡪Biology Intro Notes🡪Levels of Organization**
3. Describe the four groups of macromolecules in living things.
   * Know the macromolecules groups, their function, their monomer, their polymer, and the indicator used to identify them in substances.
   * **Bio🡪Intro to Biochem🡪Organic Compound Notes**
     1. **Carbohydrates; quick energy**
        1. **Simple sugars-indicator: Benedict’s,**
        2. **Starches- indicator: iodine**
        3. **Monomer: Monosaccharide**
        4. **Polymer: Polysaccharide**
     2. **Lipids (fats & oils); long term energy**
        1. **Indicator: Sudan IV**
     3. **Proteins: muscle building, enzymes, cell transport**
        1. **Indicator: buriet**
     4. **Nucleic Acids**
        1. **DNA, RNA**
4. Explain the role of enzymes in living things.
   * Be able to describe how enzymes work with a substrate and how they affect chemical reactions in living things.
     1. **Enzymes speed up chemical reactions in living things**
5. Explain the affects of a change in pH, temperature, surface area, and enzyme concentration on enzyme activity.
   * Be able to do what number 5 says ☺
     1. **Concentration of enzyme: rate of reaction increased with an increase of enzymes.**
     2. **pH: lower the pH the more activity in the liver.**
     3. **Substrate concentration: substrate concentration increases rate of enzyme activity increases.**
     4. **Temperature: enzyme activity increases with temperature until it reaches 37/38 degrees Celsius**
6. What does the cell theory state.
   * Know the 3 parts of the cell theory.
   * **Bio🡪Cell Structure & Function🡪 Cell Structure & Function Notes🡪Cell Theory**
     1. **all living things are made of cells**
     2. **all new cells come from existing cells**
     3. **cells are the basic unit of structure & function in living things**
7. Differentiate between prokaryotic & eukaryotic cells.
   * **Prokaryotes: cells that do not have a nucleus**
   * **Eukaryotes: Cells with a nucleus**
   * Know that bacteria are the only prokaryotic cells.
8. Differentiate between unicellular & multicellular.
   * **Unicellular: one cell**
     1. **Bacteria, some protists**
   * **Multicellular: many cells**
     1. **Fungi, plants, animals**
   * Know which kingdoms have unicellular & multicellular organisms.
9. Explain the function of basic cell organelles in both plant & animal cells.
   * Nucleus, cytoplasm, cell membrane, chromosomes, ribosomes, endoplasmic reticulum, golgi apparatus, vacuoles, mitochondria. Cytoskeleton.
   * Organelles only found in animal cells: lysosomes, centrioles
   * Organelles only found in plant cells: cell wall, chloroplasts
10. Differentiate between different types of cell transport.
    * Passive: diffusion, facilitated diffusion, osmosis
      1. **Diffusion: high to low, no energy needed**
      2. **Facilitated diffusion: high to low, no energy needed, needs a protein channel to help**
      3. **Osmosis: diffusion of water**
    * Active: membrane pump, endocytosis (phagocytosis, pinocytosis), exocytosis.
      1. **Active transport: requires energy because it goes from low to high**
         1. **Membrane pump: helps pump molecules across the membrane**
         2. **Phagocytosis: large solids**
         3. **Pinocytosis: large liquid molecules**
         4. **Exocytosis: movement of molecules out of the cell**
    * Be able to recognize real-life examples of these processes.
11. Differentiate between types of solutions cell can be in and how these solutions affect a cell.
    * Hypotonic, hypertonic, isotonic