

Name _____

Period _____

AP Biology

Date _____

REVIEW UNIT 1: BIOCHEMISTRY — “TOP TEN”

A. Top “10” — If you learned anything from this unit, you should have learned:

1. All living matter made up of CHONPS
2. Bonds
 - a. covalent bonds are strong
 - b. hydrogen bonds are weak
 - c. polar molecules (water) vs. non-polar molecules (hydrocarbons, lipids)
 - d. reaction with water (cytoplasm & extracellular solution) vs. cell membrane
 - hydrophobic vs. hydrophilic
3. Reactions of life
 - a. dehydration synthesis
 - releases water
 - synthesis: builds covalent bonds
 - anabolic, endergonic
 - b. hydrolysis
 - uses water
 - digestion: break covalent bonds
 - catabolic, exergonic
4. Water
 - a. polar molecule leads to special properties
 - cohesion, adhesion == transpiration
 - high specific heat == evaporative cooling. moderates local temperatures
 - less dense as solid == sustain life in frozen ponds & lakes
 - good solvent == water-based cellular fluids
5. Macromolecules
 - a. carbohydrates
 - sugar monomer
 - short term energy, structure
 - examples: glucose, starch, cellulose, chitin
 - b. lipids
 - phospholipids (cell membrane)
 - energy storage (fat, oils)
 - steroid hormones

- examples: phospholipids, fat, cholesterol, testosterone, estrogen
- c. proteins (amino acids)
- amino acid monomer
 - 4 levels of structure
 - bonding at each level: covalent, H bonds, hydrophobic interactions, van der Waals forces, ionic bonds, disulfide (covalent) bridges
 - many functions: enzymes, structure, regulatory molecules
 - examples: pepsin, myosin, actin, hemoglobin, insulin, ATP synthase, aquaporin
- d. nucleic acids
- nucleotide monomers
 - genetic information storage
 - examples: DNA, RNA