

## Review Sheet

### Biology I, Biochemistry exam (chapter 2 in book)

#### Key Terms

Atom	nonpolar covalent bond	organic compound
molecule	polar covalent bond	carbohydrate
Protons	ionic bond	mono-, di-, polysaccharides
Neutrons	acid	nucleic acids (DNA, RNA)
Electrons	base	nucleotides
ions	pH	lipids
	buffer	fatty acids
	cohesion	protein
	adhesion	Amino acids
	hydrogen bond	polypeptides
		peptide bond

#### Objectives

- 1) Know the *location and charge* of the 3 subatomic particles (protons, neutrons and electrons)
- 2) Describe the difference between a covalent and an ionic bond. Explain the difference between a nonpolar covalent bond and a polar covalent bond.
- 3) Explain the difference between acids and bases and be able to identify an acid or base by its position on the pH scale. Also explain what the role of a buffer is in a biological system.
- 4) Describe how the properties of water (hydrogen bonding, cohesion, adhesion, capillary action) result from the polar structure of a water molecule.
- 5) Explain the role of condensation (dehydration synthesis) and hydrolysis reactions in the formation and break down of organic compounds (links # 11 and 12) on the website (works better in Firefox)
- 6) **\*\*Know** the different kinds of macromolecules (carbohydrates, proteins, lipids, and nucleic acids) and functions and properties of each (Study the table of organic compounds that you made in class and your notes) (also study links 1-4 (NOTE: link 4 has more detail than you need so you might want to skip that one))
- 7) Be able to recognize chemical structures of monomers and polymers of the 4 major macromolecules (biomolecules) – review the handout from class and pictures in the notes and book (see class notes page – Biomolecules)
- 8) Understand the difference between an  $\alpha$ -glycosidic bond and a  $\beta$ -glycosidic bond in polysaccharide structure and their importance to digestion (use notes or find online – not in book)
- 9) Recognize an unsaturated fatty acid from a saturated fatty acid (diagram packet as well as online notes)
- 10) Draw and describe the structure of an amino acid. Which region differs from one amino acid to another?
- 11) Explain how peptide bonds form between amino acids in a condensation reaction. (not in book, look at link # 11, screen 3 for explanation)
- 12) Explain the four levels of organization of a protein (link #14 and video #1 (and notes/handout))
- 13) Be able to predict the way a protein chain will fold if given the nature (hydrophilic, hydrophobic, charged, etc) of the amino acids in the chain.
- 14) Review the information from your protein folding tutorial we did in class (link #5) as well as the macromolecule (biomolecule) homework 1-18.

