Review Topics for Molecules Test

Readings: All of chapter 2 including diagrams

Definitions for:

atom	Atomic mass	atomic number	
molecule	chemical reaction	covalent bond	ionic bond
energy	activation energy	enzyme	
acid	base	buffer	ion
polar	hydrogen bond	macromolecules	saturated
element	condensation reaction	protein	amino acid
pH scale	carbohydrate	lipids	nucleic acid
hydrophobic	hydrophilic	phospholipid	nucleotide

How electrons fill energy levels for stability (2, 8, 8, 10)

Calculating atomic number, atomic mass, proton, neutron, and electron numbers

Some reactions gain and some lose energy

Important biological molecules, which atoms are most common in these (C,O, H, N, P)

Bonding patterns of C, O, H (for instance H always forms 1 bond with 1 other atom)

Measuring pH, what makes a solution neutral?

What happens when you mix an acid and base?

What special properties of water allow it to dissolve so much? Why is water sticky?

What is the effect of a buffer?

What are the reactants and products of photosynthesis?

What happens when you mix salt, water, and oil in various combinations, and why?

What makes proteins, and how (what type of bond)?

What is the same, and what is different between types of sugars (carbohydrates)?

What is the same, and what is different between types of proteins?

What is the same, and what is different between types of amino acids?

What factors affect the reaction rate for enzymes?

Do all enzymes work best in the same conditions? How do temp. and pH affect them?

Why are enzymes important for organisms?

Why are phospholipids important for cells?

What is the general structure of lipids, carbohydrates, proteins, and nucleic acids?

What is the same, and what is different between DNA and RNA?

What part of a DNA molecule do the phosphate group and sugar group make?

What are the four nucleotides? Which binds with which? (you won't have to spell them)

NOTE: in RNA thymine (T) is replaced by uracil (U).

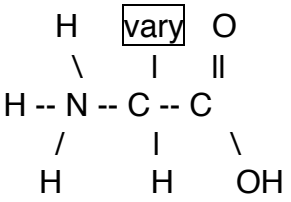
Why is DNA important?

Fill in the correct nitrogen bases to match the DNA strand below:

C T A A T G T

__ __ __ __ __ __ __

Is the molecule below a carbohydrate, lipid, protein, or neither?



Biology Ch.2 Practice Test: Chemistry of Life Name_____

1. Use a periodic table to fill out the following chart:

Element	Protons	Electrons	Neutrons	Electrons gained or lost to be stable	Charge when stable
Calcium					

2. Natural gas (methane) is a simple element made of 4 hydrogen and 1 carbon atom.

H Determine the TOTAL number of electrons in a methane molecule: _____

H-C-H

H Determine the number of electrons that form the bonds in methane: _____

Do you think methane has ionic or covalent bonds (or both)? _____

3. How many electrons are in the outer energy level of Chlorine? _____
   How many electrons could fit in this energy level when it is full? _____

4. A solution is basic when a buffer is added. Will the pH go up or down? _____

5. A solution with a pH of 2 is _____ times as acidic as one with a pH of 5?

6. Chemical _____ are rearranged in a chemical reaction.

7. Which four atoms make up most of the macromolecules of life? _____

8. Glycine is the simplest amino acid, with a variable part (R- group) that is just one hydrogen. Which of the following is the correct chemical composition of glycine?

a) $C_2NH_5O_2$ b) $C_3N_2H_5O_2$ c)$C_3NH_5O_2$ d) CNH_5O_2 e) C_2NH_5O

9. If the _____ or number of amino acids is changed, then the shape of a protein could change.

10. You buy a new can of cooking spray to grease pans at home. Unfortunately, you drop the can in the driveway and it explodes. The propellant from the can escapes, and the contents of the can splatters on your driveway. It is a warm day, and you notice the contents of the can solidify on your driveway. Do you think the contents of the can
    a) were saturated or unsaturated?
    b) were from a plant or animal?
    c) were a danger to your arteries?
11. What happens to an enzyme that gets really hot?

12. Use your foldable, or the book, or the internet for help, then **draw** a

Carbohydrate Lipid Protein Nucleic Acid