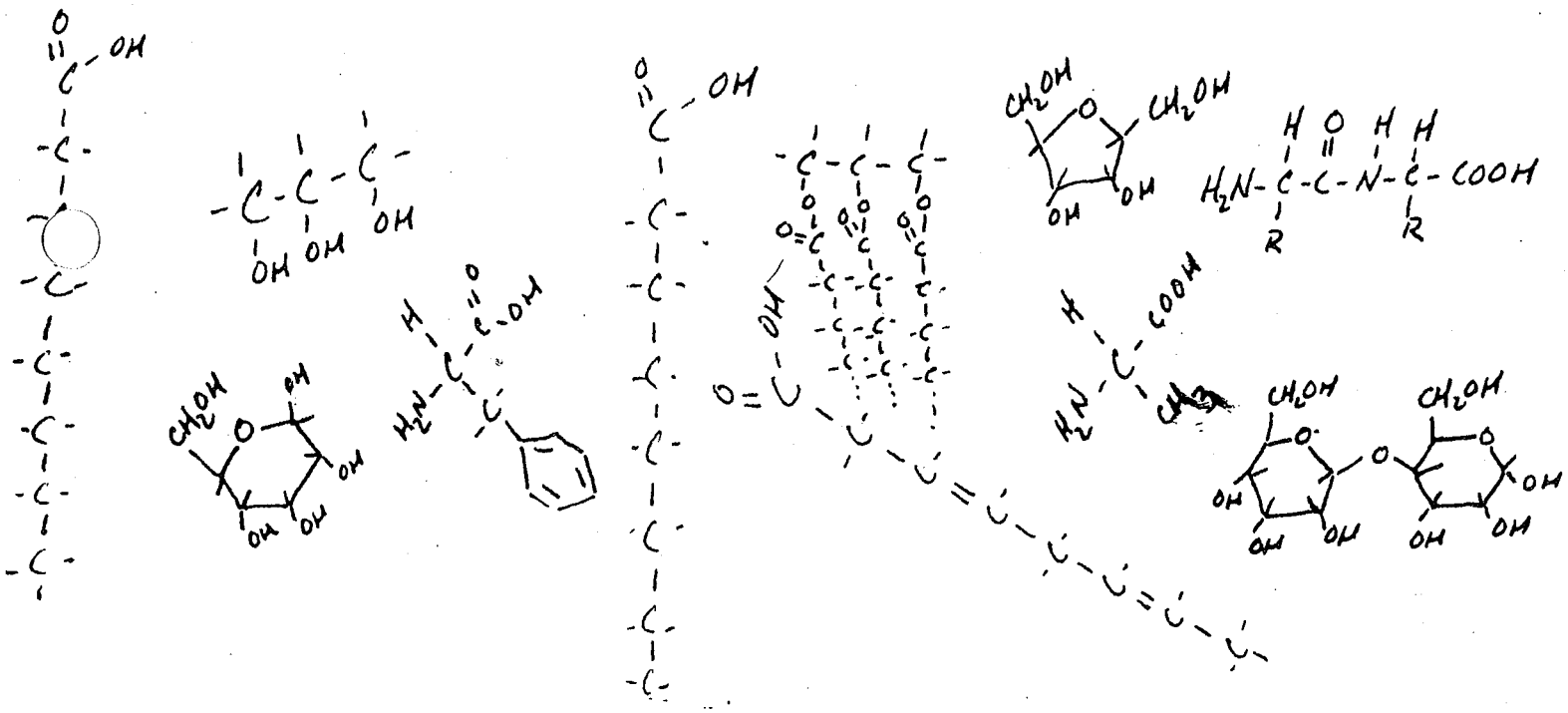
Name _____

BIOCHEMISTRY REVIEW GUIDE

1. Explain the relationship(s) among atoms, molecules, elements, and compounds and describe the three types of chemical bonds that form between atoms as well as their relative strengths.
2. Explain what causes a solution to have an acidic or basic pH and/or calculate how many times more acidic/basic one solution is than another (ex. pH 3 v. pH 6). Given a starting pH and a target pH, compose a procedure to produce a solution of target pH.
3. Identify and/or describe the characteristics (use functional groups and other clues) and functions of the four classes of macromolecules (this includes 3D models) and demonstrate a dehydration synthesis reaction to form a triglyceride (the type of lipid we demonstrated on the board in class). Identify each of the following biomolecules.



4. Diagram a dehydration synthesis reaction as it occurs between two monosaccharides.
5. Diagram a dehydration synthesis reaction as it occurs between a glycerol molecule and three fatty acids.
6. Diagram the reaction by which amino acids bond to form polypeptide chains (be sure to indicate the type of bond that is formed between neighboring amino acids). Additionally, describe how and why the polypeptide strand (primary structure)

will coil into the secondary structure, fold into the tertiary structure and form the quarternary or globular structure of proteins.

7. Diagram a molecule of DNA that is 5 base pairs large. Be sure to indicate the hydrogen bonds in the molecule, what is meant by DNA's complementary nature, which parts of the molecule indicate individual nucleotides, deoxyribose sugars, phosphate groups and nitrogen bases.
8. Describe the relationship between genes, nucleic acids, amino acids, and proteins.