Biochemistry Test Review

1. Describe the following macromolecules with the following requirements:

* Protein- (Polymer names, Monomer names, 3 Functions)
* Carbohydrates- (Polymer names, Monomer names, 3 Functions)
* Lipids- (Polymer names, Monomer names, 3 Functions)
* Nucleic Acids- (Polymer names, Monomer names, 3 Functions)

1. Draw the chemical structure of an amino acid. Label the R group, amino, and carboxyl groups.
   1. What does the R group represent?
   2. If you drop a protein in oil, will hydrophobic or hydrophilic R groups be on the exterior of the protein? Why?
2. What type of bond makes up the secondary, tertiary, and quaternary structure of a protein? What type of bond makes up the primary structure?
3. Most proteins in our body are made up of 20 different types of amino acids. What 2 factors account for the different structures of proteins?
4. What is the role of the cofactor in an enzyme?
5. Draw and label an enzyme; include the substrate, active site, & allosteric site. Describe what each site is for.
6. What is the difference between allosteric regulation and competitive inhibition?
7. What is the difference between the structure of fats and phospholipids? What is similar?
8. Where can you find phospholipids? How do they interact BOTH (1) together and with (2) water to form the cell membrane?
9. What is the correlation between diffusion and entropy?
10. Describe a similarity AND difference between chitin and cellulose.
11. Describe the similarity AND difference between glycogen and starch.
12. In the structure of all monosaccharides, what is similar? What is different?

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