

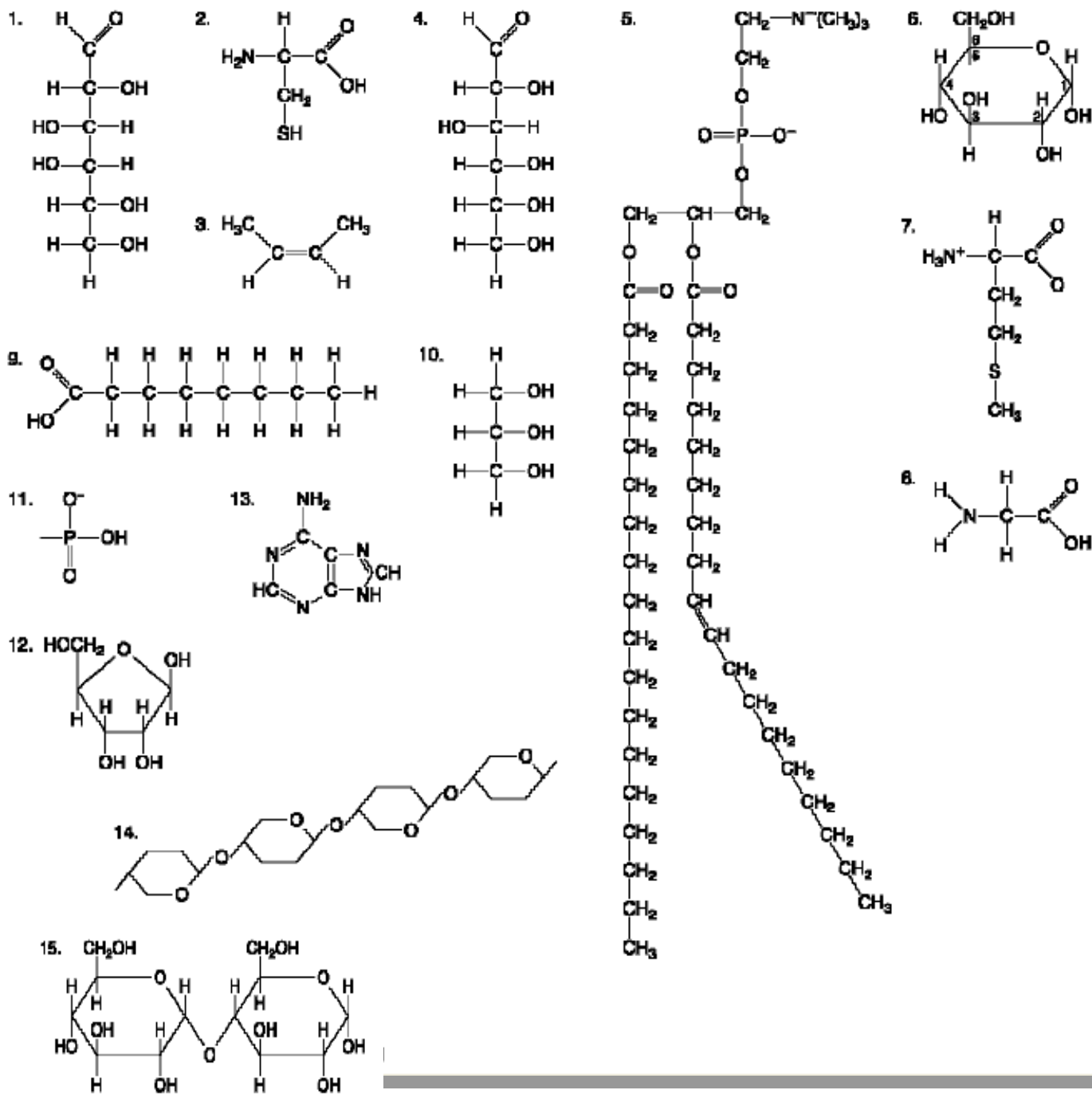
## AP BIOLOGY: UNIT 1 CELEBRATION OUTLINE: Biochemistry

1. Describe chemical equilibrium.
2. Describe the formation of hydrogen bonds in water.
3. Which property of water is probably *most* important for the functioning of organisms at the molecular level?
4. What is responsible for the cohesive property of water?
5. What would the pH of a solution with a hydroxide ion concentration  $[\text{OH}^-]$  of  $10^{-8} \text{ M}$ ?
6. One liter of a solution with a pH of 4 has how many more  $\text{H}^+$  than 1 liter of a solution with a pH of 7?
7. Which property of the carbon atom gives it compatibility with a greater number of different elements than any other type of atom?
8. Know the definition of a structural isomer.
9. Be able to identify the 6 functional groups most important to the chemistry of life and properties of each.
10. Which two functional groups are *always* found in amino acids?
11. In terms of their monomers, what is true of both starch and cellulose?
12. Be able to identify the following molecules: monosaccharide, disaccharide, polysaccharide, amino acid, fatty acid (know the difference between saturated and unsaturated), hydrocarbon, phosphate group, nitrogenous base, phospholipid, glycerol ... ***see molecules on back of this outline!!!***
13. In terms of polymers of macromolecules, describe the relationship between dehydration synthesis and hydrolysis.
14. Why do each of the 20 amino acids found in polypeptides exhibit different chemical and physical properties?
15. What type of bond is created during the formation of the primary structure of a protein?
16. The alpha-helix and the beta-pleated sheet are both common forms found in which level of protein structure?
17. Describe the tertiary structure of a protein.
18. What would be an expected consequence of changing one amino acid in a particular protein?
19. Give a general description of the class of molecules known as nucleotides.
20. Know the basic structural differences between DNA and RNA.
21. Know what 4 elements make up over 96% of all living matter.
22. Know which class of macromolecule does not have polymers.

*The celebration will consist of 2 short answer, 10 matching, 23 multiple choice questions, and 2 free response (essay) questions.*

*The first free response question will be on the various properties of water and the significance of water's ability to moderate temperature both within living organisms and within the environment (Chapter 3: 41-44).*

*The second free response will be on protein chemical composition and structure (Chapter 5: 71-80).*



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