

## Chapter 2 Objectives

Some of these objectives will not be specifically covered in class but you are responsible for being able to answer all of them.

**(These Objectives also cover the material you should know from the handout I gave you in class.)**

1. Describe the structure of an atom and define the terms *atomic mass* and *atomic number*.
2. List the components of an atom and explain how they are organized.
3. Draw and label a carbon atom, a hydrogen atom, an oxygen atom, and a nitrogen atom complete with nucleus, electron shells/clouds, protons, neutrons and electrons.
4. Explain why different atoms are able to form characteristic numbers of bonds.
5. Explain how covalent bonds are formed and distinguish between nonpolar and polar covalent bonds.
6. Explain hydrogen bonds and be able to draw water molecules with their hydrogen bonds.
7. Describe the structure of an ion and explain how ionic bonds are formed.
8. Explain the difference between a cation and an anion.
9. Define the terms *acidic*, *basic*, *acids* and *bases* and their relationship with hydrogen ion concentration.
10. Define *pH* and describe the relationship between pH and the  $H^+$  concentration of a solution.
11. Explain what is meant by the pH scale.

12. Define **buffer**. Explain how buffers work. Using chemical equations, explain how bicarbonate ion and carbonic acid function as a buffer pair.
13. Explain how the pH scale of the blood is stabilized by bicarbonate buffer and define the terms **acidosis** and **alkalosis** as they relate to blood pH.
14. Explain how carbon atoms can bond with each other and with atoms of hydrogen, oxygen, and nitrogen.