

## A Brief Chemistry Reference

*BC Biology 12 (Appendix B, pages 493 – 499)*

**Match** the terms to the correct definition.

- |                       |   |
|-----------------------|---|
| 1. ___ matter         | A. either elements or compounds   |
| 2. ___ pure substance | B. contain two or more pure substances in random physical assortment                                  |
| 3. ___ element        | C. made up of subatomic particles   |
| 4. ___ compound       | D. anything that takes up space and has mass  |
| 5. ___ mixture        | E. cannot be broken down further  |
| 6. ___ atoms          | F. pure substance made up of two or more elements that have been chemically combined in a fixed ratio |

7. **Complete** the table.

Subatomic Particle	Symbol	Type of Charge	Amt of Charge	Mass (u)
Proton				
Neutron				
Electron				

8. The protons and neutrons are clustered together in the \_\_\_\_\_<sup>(a)</sup>, which contains over \_\_\_\_\_<sup>(b)</sup> of an atom's mass but makes up less than \_\_\_\_\_<sup>(c)</sup> of its volume. The electrons surround the nucleus in regions called \_\_\_\_\_<sup>(d)</sup>. Electrons make up less than \_\_\_\_\_<sup>(e)</sup> of an atom's mass, although the shells they occupy make up over \_\_\_\_\_<sup>(f)</sup> of its volume.

9. What is the name of the outermost shell? \_\_\_\_\_

10. Distinguish between *covalent bonds* and *ionic bonds*.

Covalent bonds	
Description	Diagram
Ionic bonds	
Description	Diagram

11. Most of the biochemical reactions in a living cell take place in a water solution. Water has a special type of bond called a \_\_\_\_\_<sup>(a)</sup>. This bond is due to the unequal sharing of electrons between the oxygen and hydrogen atoms. The attraction between water molecules is called a \_\_\_\_\_<sup>(b)</sup>. These are weaker than covalent bonds but are strong compared to other bonds that form between molecules. Hydrogen bonds are found not just in water – they are also in other important biological molecules, such as \_\_\_\_\_<sup>(c)</sup> and \_\_\_\_\_<sup>(d)</sup>.

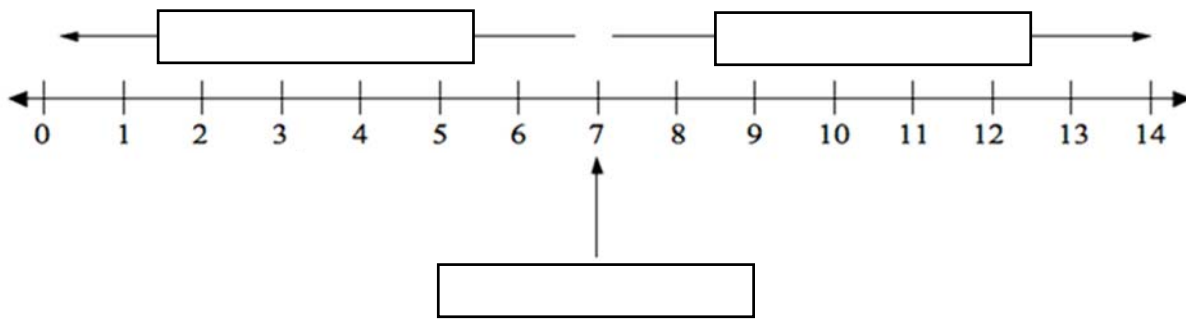
12. **Draw** a diagram of a water molecule in the space below (including the polarity).

13. What is an **ion**? In your description use the terms *cation* and *anion*.

14. **Name** each ion with the described biological significance. *NOT in the same order as the textbook!*

Name	Symbol	Special Significance
		important in acid-base balance
		important in acid-base balance
		important in acid-base balance
		found in bones, teeth, and the high-energy molecules that cells use for energy
		found body fluids; important in muscle contraction and nerve conduction
		found primarily inside cells; important in muscle contraction and nerve conduction
		found in bones and teeth; important in muscle contractions
		found in body fluids; important in maintaining fluid balance

15. Complete the pH scale below.



16. Which of the following body substances is the most acidic?

- A. saliva
- B. stomach fluids
- C. blood
- D. pancreatic fluids

17. Use the tables on pages 498 - 499 to define the following prefixes or suffixes.

- a) cereb- \_\_\_\_\_
- b) circ- \_\_\_\_\_
- c) cyto- \_\_\_\_\_
- d) derm-/-derm \_\_\_\_\_
- e) erythro- \_\_\_\_\_
- f) gastro- \_\_\_\_\_
- g) hydr/o- \_\_\_\_\_
- h) hyper- \_\_\_\_\_
- i) hypo- \_\_\_\_\_
- j) leuc/o- \_\_\_\_\_
- k) nephr- \_\_\_\_\_
- l) -oma \_\_\_\_\_
- m) pneum- \_\_\_\_\_
- n) ur- \_\_\_\_\_
- o) visc- \_\_\_\_\_