

Name: _____
Mr. Willis
Biology: _____
Date: _____

Unit I
Biology – The Nature of Science
Need extra help?
Check out <http://www.nwr1biology.com>

I

Read the short passage and respond to the question(s) below.

Rdg. 17 – Chemical Bonds (Chapter 2)

The atoms in compounds are held together by **chemical bonds**. Much of chemistry is devoted to understanding how and when chemical bonds form. Bond formation involves the electrons that surround each atomic nucleus. The electrons that are available to form bonds are called valence electrons. **The main types of chemical bonds are ionic bonds and covalent bonds.**

An **ionic bond** is formed when one or more electrons are transferred from one atom to another. Recall that atoms are electrically neutral because they have equal numbers of protons and electrons. An atom that loses electrons has a positive charge. An atom that gains electrons has a negative charge. These positively and negatively charged atoms are known as **ions**.

The figure at right shows how ionic bonds form between sodium and chlorine in table salt. A sodium atom easily loses its one valence electron and becomes a sodium ion (Na^+). A chlorine atom easily gains an electron and becomes a chloride ion (Cl^-). In a salt crystal, there are trillions of sodium and chloride ions. These oppositely charged ions have a strong attraction. The attraction between oppositely charged ions is an ionic bond.

Sometimes electrons are shared by atoms instead of being transferred. What does it mean to “share” electrons? It means that the moving electrons actually travel in the orbitals of both atoms. A **covalent bond** forms when electrons are shared between atoms. When the atoms share two electrons, the bond is called a single covalent bond. Sometimes the atoms share four electrons and form a double bond. In a few cases, atoms can share six electrons and form a triple bond.

The structure that results when atoms are joined together by covalent bonds is called a molecule. The **molecule** is the smallest unit of most compounds. The diagram, below, of a water molecule shows that each hydrogen atom forms a single covalent bond with the oxygen atom.

Draw a model of the water molecule described above.

Draw a model that displays the way sodium loses an electron and chlorine gains an electron to form salt.

Name: _____

Mr. Willis

Biology: _____

Date: _____

Unit I

Biology – The Nature of Science

Need extra help?

Check out <http://www.nwr1biology.com>

I