Review # 3 Assignment- Unit 3- Chemical Bonding

Chapter 7- Ionic and Metallic Bonding

Fill in the blank:

1. Valence electrons are the electrons in the highest occupied energy level of an element's atoms.
2. To find the number of valence electrons in an atom of a representative element, look at the group number.
3. Electron dot structures are diagrams that show valence electrons as dots.
4. In forming compounds, atoms tend to achieve the electron configuration of a noble gas. This is called the octet rule.
5. An atom's loss of valence electrons produces a cation or a positively charged ion.
6. The gain of negatively charged electrons by a neutral atom produces an anion.
7. The ions that are produced when atoms of chlorine and other halogens gain electrons are called: halide ions.
8. Compounds composed of cations and anions are called: Ionic Compounds
9. The electrostatic forces that hold ions together in ionic compounds are called: Ionic bonds.
10. A formula unit is the lowest whole-number ratio of ions in an ionic compound.
11. Most ionic compounds are crystalline solids at room temperature, have high melting points and conduct electricity.
12. The valence electrons of metal atoms can be modeled as a sea of electrons.
13. Metallic bonds consist of the attraction of the free-floating valence electrons for the positively charged metal ions.
14. The mobility of the electrons can be used to explain these two properties of metals: ductility and malleability.
15. Alloys are mixtures composed of two or more elements, at least one of which is a metal.
16. Alloys can form from their component atoms in different ways. The two forms are: substitutional and intersitial.

Chapter 8- Molecular Bonding

1. The atoms held together by sharing electrons are joined by Covalent bonds
2. A molecule is a neutral group of atoms joined together by covalent bonds.
3. A diatomic molecule is a molecule consisting of two atoms.
4. A compound composed of molecules is called a molecular compound
5. Molecular compounds tend to have relatively lower melting and boiling point than ionic compounds.
6. Two atoms held together by sharing a pair of electrons are joined by a single covalent bond
7. A pair of valence electrons that is not shared between atoms is called a unshared pair.
8. A bond that involves two shared pairs of electrons is a double covalent bond
9. A bond formed by sharing three pairs of electrons is a triple covalent bond
10. The theory in which electron pairs cause molecular shape to adjust so that the valence-electron pairs stay as far apart as possible. VSEPR Theory
11. When atoms in a bond pull equally, the bonding electrons are shared equally and the bond is nonpolar covalent.