Bonding Mastery Quiz Study Guide

*The quiz for the bonding unit will be Wednesday, April 13th. It will consist of 20 multiple choice questions. You will be given a periodic table and a list of polyatomic ions. This study guide serves as a reference for study only, and may be submitted at the beginning of class on the 13th for* ***up to******10 points******extra credit*** *on the quiz.*

1. How do metals obey the octet rule when forming compounds (do they gain or lose electrons)? How do nonmetals obey the octet rule when forming compounds?

2. Know the valence electrons and oxidation numbers (charges) for each group on the periodic table (fill in the chart below):

|  |  |  |
| --- | --- | --- |
| **Group #** | **# of Valence Electrons** | **Oxidation # (Charge)** |
| **1** |  |  |
| **2** |  |  |
| **13** |  |  |
| **14** |  |  |
| **15** |  |  |
| **16** |  |  |
| **17** |  |  |
| **18** |  |  |

3. How are ionic bonds formed? Which types of ions are needed to form ionic bonds?

4. How are covalent bonds formed? Which types of ions are needed to form covalent bonds?

5. How are metallic bonds formed? Which types of ions are needed to form metallic bonds?

6. Be able to identify bond type by formula (examples below):  
 a) H2O =

b) MgOH =

c) CuCl2 =

d) Zn-Cu alloy =

e) N2O5 =

7. Illustrate an ionic bond between sodium and chlorine:

Illustrate a covalent bond between chlorine and chlorine:

8. Be able to name compounds and write formulas (examples below):

a) MgCl2 =

b) P2O3 =

c) carbon tetrachloride =

d) aluminum sulfide =

9. Know the properties of ionic and covalent bonds (fill in the chart below):

|  |  |  |
| --- | --- | --- |
| **Property** | **Ionic** | **Covalent** |
| Valence electrons are transferred or shared? |  |  |
| Relative bond strength (Strong or weak) |  |  |
| Structure |  |  |
| Electrical Conductivity (Good or Poor) |  |  |
| State at room temperature |  |  |
| Melting/Boiling Points (High or low) |  |  |

10. Rank the periodic table groups on reactivity, with 1 being the most reactive and 4 being the least reactive:

Metal Ions Nonmetal Ions

Group 1 = Group 15 =

Group 2 = Group 16 =

Group 13 = Group 17 =

Group 14 = Group 18 =