**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Unit 1C BONDING REVIEW**

**Part 1: Ionic Compounds – Writing Formulas and Naming Compounds**

1.   Use the periodic table to find the number of valence electrons in an atom.

                            a.  Sodium \_\_\_\_    b. Carbon \_\_\_\_\_  C. Phosphorus \_\_\_\_\_

2.   Draw electron dot formulas of the following representative elements

                     K                                         Al                                O                                 Cl

3.   State the octet rule.

 4. Positive ions are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Negative ions are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5.   Describe the formation of the sodium ion using an electron dot structure.

6.   Describe the formation of the sulfide ion using an electron dot structure.

7.   In an ionic bond, electrons are shared / transferred / connected between atoms. (Circle one)

8. Ionic bonds form between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (metals, nonmetals, metalloids)

 9. What is a polyatomic ion?

10.   Explain why the compound NaCl is an ionic compound and identify characteristics (properties) of ionic compounds that it would likely have.

11.Explain how melted ionic compounds and aqueous solutions of ionic compounds electrical conductivity.

12. How many valence electrons does the element iodine have? What is the formula for iodine's most stable ion?

13. Use electron dot formulas to predict the formula of the ionic compound formed when sodium and sulfur combine.

14. Using electron dot diagrams, determine the formula of the ionic compound formed when barium and phosphorus combine.

15. How many valence electrons does the element gallium have? What is the formula for galium's most stable ion?

16. Write the formula for the ion formed when nitrogen gains electrons to attain a noble gas configuration.

17. Using electron dot diagrams, show the formation the ionic compound formed when astatine and strontium combine?

18. A “formula unit” is the simplest or lowest \_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_ in an ionic compound.

19. List the oxidation number (charge) and group name for the following groups of elements

Group 1 charge:\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group 2 charge:\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group 16 (6A) charge:\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group 17 (7A) charge:\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. Which of the following compounds contains the Sn+4 ion?

a. Sn2Br b. SnCl c. SnI2 D. SnO2

21. Name the following compounds. (Some compounds may need a roman numeral)

MgI2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Fe2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Al(NO3)3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_NH4Br\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CuCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_K2CO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Al2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_NaCl\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. Write the formula for the following chemical compounds

Copper (I) Oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Aluminum nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Potassium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Iron (III) sulfide\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Calcium hydroxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Calcium Oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Aluminum Nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lithium Phosphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_

23. What is the oxidation number of the unknown element X in the compound MgX2?

**Part 2 Molecular Compounds and Covalent Bonding**

Match the following **compounds** to the three bond types.

Each answer may be used once, more than once, or not at all.

**Covalent Bond (nonmetal to non) Ionic Bond (metal to non)**

|  |  |  |
| --- | --- | --- |
| 1. \_\_\_ KBr 2. \_\_\_ CO2 3. \_\_\_ CH4 | 1. \_\_\_ CaCl2 2. \_\_\_ Br2 3. \_\_\_ Na2O 4. \_\_\_ SiO2 | 1. \_\_\_ ZnI2 2. \_\_\_ NaCl 3. \_\_\_ C(graphite) 4. \_\_\_ C3H8 |

Molecular Compounds - How Do Atoms Stick Together?

Draw the Lewis Symbols of the following molecules. Only single bonds are used. Name each compound.

|  |  |  |
| --- | --- | --- |
| Br2 | CBr4 | H2O2 |
| H2S | PH3 | SiH4 |

Lewis Dots of Molecules

Draw the Lewis Symbols of these molecules that include double and triple bonds. Name each compound.

|  |  |  |
| --- | --- | --- |
| P2 | Se2 | C2Cl2 |

Properties of Types of Bonds

Match the following **statements** to the two bond types.

Each answer may be used once, more than once, or not at all.

**C) Covalent Bond I) Ionic Bond**

|  |  |
| --- | --- |
| \_\_\_1. the strongest bond  \_\_\_2. alternating positive and negative particles  \_\_\_3. sharing electrons between two atoms | \_\_\_4. conducts electricity when dissolved in water  \_\_\_5. involves a transfer of electrons  \_\_\_6. involved in molecules and in network solids  \_\_\_7. does not usually conduct electricity |

Organize the compounds below into two columns. One of ionic compounds and one of molecular compounds.

CaSO4 CH4 CO2 BaCl2 NH3 KNO3 LiOH

Ionic Compounds Molecular Compounds