**Unit 3 Study Guide**

**Define the following terms:**

1. **Valence Electrons**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Oxidation Number**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Octet Rule**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Ionic Bond**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Covalent Bond**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Binary Compound**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Practice solving for the element’s oxidation number. Write the oxidation number above the element symbol:

Ca K O Ba P F Li Sr Se I N Be Cl

**Ionic Bonding Practice**

**Write the correct chemical formula for the following compounds. Simplify if possible!**

A) Lithium Sulfide B) Gallium Arsenide

C) Potassium Nitride D) Beryllium Phosphide

**Write the correct name of the following compounds**.

A) LiBr B) BaI2

C) Fe2S D) AlP

G) MnCl F) Na2O

**Covalent Bonding Practice:**

**Write the correct formula for the following covalent bonds:**

A) Nitrogen Monoxide B) TribromineTetraoxide

C) Carbon Pentafluoride D) DisiliconMonoiodide

E) TetrasulfurOctachloride F) HeptaseleniumPentaphosphide

**Write the correct name for the following compounds. USE PREFIXES and DO NOT CRISS CROSS:**

A) NO B) CO2

C) Te3N5 D) HCl

E) H3F9 F) Br2S2

**Compound Name: Ionic/Covalent? Write the Formula:**

1. Potassium Flouride \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Pentabrominediphosphide \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. HexaflouroineTrisulfide \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Copper (II) Oxide \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Compound Formula Ionic/Covalent? Write the Name:**

1. MgBr2 \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. NaCl \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. S2O2 \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Fe2O3 \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CHARACTERISTICS:**Contrast the differences between Ionic and Covalent Bonds. You should have at least 5 things listed.

IONIC COMPOUNDS COVALENT COMPOUNDS

**Miscellaneous – Periodic Table**

1. What is a family on the periodic table?
2. What is similar about a family on the periodic table?
3. What is a period on the periodic table?
4. What is similar about a period?
5. Where are the metals located?
6. Where are the nonmetals located?
7. What is a cation?
8. What is an anion?

**Fill in the rest of the table.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Name of Group | Valence Electrons | Oxidation Numbers |
| A |  |  | 1+ |
| B | Alkalia Earth Metals |  |  |
| C |  | 3 |  |
| D | Carbon Family |  |  |
| E | Nitrogen Family |  |  |
| F |  | 6 |  |
| G |  |  | 1- |
| H |  | 8 |  |

**HONORS ONLY for the rest of the study guide:**

**Define Polyatomic Ion:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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Use the table below. If I give you the formula, write the name. If I give you the name, write the formula.

|  |  |  |  |
| --- | --- | --- | --- |
| **Polyatomic Ion** | **Oxidation Number** | **Polyatomic Ion** | **Oxidation Number** |
| Phosphate (PO4) | 3- | Nitrate (NO3) | 1- |
| Carbonate (CO3) | 2- | Sulfate (SO4) | 2- |
| Ammonium (NH4) | 1+ | Acetate (C2H3O2) | 1- |
| Hydroxide (OH) | 1- | Hydronium (H3O) | 1+ |

1. NH4Cl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Na3(PO4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. (NH4)3N \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. NH4NO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. sodium carbonate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. barium nitrate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. ammonium sulfate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. aluminum hydroxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_