

## UNIT 9 PRACTICE TEST

Name \_\_\_\_\_

### Multiple Choice Questions

- Ionic bonds are normally formed when
  - electrons are shared between a metal and a nonmetal
  - electrons are shared between two nonmetals
  - electrons are transferred from a metal to a nonmetal
  - electrons are transferred from a nonmetal to a metal
- Covalent bonds are normally formed when
  - electrons are shared between a metal and a nonmetal
  - electrons are shared between two nonmetals
  - electrons are transferred from a metal to a nonmetal
  - electrons are transferred from a nonmetal to a metal
- Which of these compounds is classified as IONIC?
  - CO<sub>2</sub>
  - SF<sub>2</sub>
  - ZnCl<sub>2</sub>
  - SeBr<sub>2</sub>
- Which of these compounds is classified as COVALENT?
  - PF<sub>3</sub>
  - GaCl<sub>3</sub>
  - NiBr<sub>3</sub>
  - CrO<sub>3</sub>
- Which of these compounds requires a Roman numeral in its name?
  - SF<sub>6</sub>
  - ZnO
  - AlBr<sub>3</sub>
  - PdCl<sub>2</sub>
- The correct formula for strontium phosphide is
  - Sr<sub>2</sub>P<sub>3</sub>
  - Sr<sub>3</sub>P<sub>2</sub>
  - SrPO<sub>4</sub>
  - Sr<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>
- The correct formula for aluminum sulfide is
  - Al<sub>2</sub>S<sub>3</sub>
  - Al<sub>3</sub>S<sub>2</sub>
  - AlSO<sub>4</sub>
  - Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>
- The correct formula for calcium hydroxide is
  - CaO
  - CaH<sub>2</sub>
  - CaOH<sub>2</sub>
  - Ca(OH)<sub>2</sub>
- The correct name for Na<sub>3</sub>N is
  - sodium nitride
  - trisodium mononitride
  - sodium(III) nitride
  - sodium nitrate
- The correct name for CaCl<sub>2</sub> is
  - calcium(II) chloride
  - calcium chloride
  - calcium dichloride
  - calcium chlorate
- The correct formula for sodium carbonate is
  - Na<sub>4</sub>C
  - NaCO<sub>3</sub>
  - Na<sub>2</sub>CO<sub>3</sub>
  - Na<sub>3</sub>CO<sub>3</sub>
- The correct name for Mg(NO<sub>3</sub>)<sub>2</sub> is
  - magnesium nitride
  - magnesium nitrate
  - magnesium dinitrate
  - magnesium(II) nitrate
- The correct name for CuCrO<sub>4</sub> is
  - copper chromate
  - copper(II) chromate
  - copper chromate(II)
  - copper chromium tetroxide
- The correct formula for dinitrogen trioxide is
  - N<sub>2</sub>O
  - N<sub>2</sub>O<sub>3</sub>
  - N<sub>2</sub>O<sub>4</sub>
  - N<sub>3</sub>O<sub>2</sub>
- The correct name for SF<sub>4</sub> is
  - sulfur(IV) fluoride
  - sulfur fluoride(IV)
  - sulfur trifluoride
  - sulfur tetrafluoride

### Short Answer Questions

1. Calculate the percent composition of caffeine,  $C_8H_{10}N_4O_2$ . Show your calculations to receive full credit.

\_\_\_\_\_ % carbon  
\_\_\_\_\_ % hydrogen  
\_\_\_\_\_ % nitrogen  
\_\_\_\_\_ % oxygen

2. Fill in the empirical formulas for each covalent compound below.

<b>Molecular Formula</b>	<b>Empirical Formula</b>	<b>Molecular Formula</b>	<b>Empirical Formula</b>
$C_{16}H_{12}O_4$		$C_{14}H_{20}O_2$	
$Na_2S_4O_6$		$K_2C_4H_4O_6$	

3. How many grams are in 5.66 moles of calcium carbonate?

4. A sample of sodium sulfate has a mass of 14.5 g. Calculate the number of sodium sulfate molecules present in the sample.

5. A substance with an empirical formula of  $CH_2$  has a molar mass of 84.18 g/mol. What is the molecular formula of this compound?

6. A substance with an empirical formula of  $CF_3$  has a molar mass of 138.02 g/mol. Determine the molecular formula of the compound and its name.

7. Decide if the description represents IONIC bonding or COVALENT bonding

\_\_\_\_\_ It is a non conductor of electricity, whether it exists as a solid, melted, or dissolved in water.

\_\_\_\_\_ It is a nonelectrolyte in the solid form, but it can become a good conductor when melted or dissolved in water.

\_\_\_\_\_ The building blocks of this type of compound are called molecules.

\_\_\_\_\_ The electrons are transferred from one element to another to form this type of bond.

\_\_\_\_\_ The electrons are shared in between elements in this type of bond.

8. Rank from ionic, covalent and metallic from strongest to weakest strength between molecules

## NAMING COMPOUNDS & WRITING CHEMICAL FORMULAS PRACTICE

### I. Simple Binary Ionic Compounds:

1.  $\text{MgCl}_2$

1. Lithium oxide

2.  $\text{NaI}$

2. Barium fluoride

3.  $\text{Na}_2\text{S}$

3. Cesium sulfide

4.  $\text{Cs}_2\text{Se}$

4. Beryllium oxide

5.  $\text{Al}_2\text{S}_3$

5. Strontium iodide

### II. Binary Ionic Compounds with Multi-Valent Metals:

1.  $\text{FeCl}_3$

1. Chromium (IV) sulfide

2.  $\text{SnS}_2$

2. Cobalt (II) bromide

3.  $\text{Ti}_2\text{O}_3$

3. Nickel (III) phosphide

4.  $\text{PbF}_2$

4. Gold (I) nitride

5.  $\text{PtSe}_2$

5. Iron (II) arsenide

### III. Ionic Compounds with Polyatomic Ions:

- |                                 |                         |
|---------------------------------|-------------------------|
| 1. $\text{NaCH}_3\text{COO}$    | 1. Silver nitrite       |
| 2. $\text{ZnCO}_3$              | 2. Ammonium hydroxide   |
| 3. $\text{Al}(\text{NO}_3)_3$   | 3. Magnesium Phosphite  |
| 4. $\text{KNO}_3$               | 4. Lead (IV) nitrate    |
| 5. $\text{Zn}_3(\text{PO}_4)_2$ | 5. Iron (III) carbonate |

### IV. Covalent Compounds:

- |                           |                         |
|---------------------------|-------------------------|
| 1. $\text{SF}_6$          | 1. Nitrogen monoxide    |
| 2. $\text{P}_2\text{O}_5$ | 2. Carbon dioxide       |
| 3. $\text{SiO}_4$         | 3. Bromine trioxide     |
| 4. $\text{NO}_2$          | 4. Xenon hexafluoride   |
| 5. $\text{H}_2\text{O}$   | 5. Difluorine disulfide |

### V. Acids:

- |                            |                       |
|----------------------------|-----------------------|
| 1. $\text{H}_2\text{CO}_3$ | 1. Hydrobromic acid   |
| 2. $\text{HClO}_2$         | 2. Acetic acid        |
| 3. $\text{HF}$             | 3. Hydrochloric acid  |
| 4. $\text{H}_3\text{PO}_4$ | 4. Bromous acid       |
| 5. $\text{HIO}_3$          | 5. Hydrosulfuric acid |