

# The Ultimate Nomenclature Review

## Part A — Simple binary ionic compounds

i. Provide names for the following binary compounds:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| 1. KBr                            | 2. ZnCl <sub>2</sub>              |
| 3. Al <sub>2</sub> N <sub>3</sub> | 4. Na <sub>2</sub> S              |
| 5. Ca <sub>3</sub> P <sub>2</sub> | 6. Be <sub>3</sub> N <sub>2</sub> |
| 7. RbCl                           | 8. FrCl                           |
| 9. BaSe                           | 10. AgCl                          |

11. General naming rule for simple binary ionic compounds:

\_\_\_\_\_ + \_\_\_\_\_

ii. Provide formulae for the following binary compounds:

- |                       |                       |
|-----------------------|-----------------------|
| 1. Calcium Fluoride   | 2. Aluminum Oxide     |
| 3. Potassium Chloride | 4. Zinc Sulphide      |
| 5. Sodium Fluoride    | 6. Silver Iodide      |
| 7. Magnesium Oxide    | 8. Strontium Chloride |
| 9. Calcium Phosphide  | 10. Strontium Oxide   |
| 11. Lithium Sulphide  | 12. Barium Chloride   |

13. State the general rule to find the formula of simple binary ionic compounds:

\_\_\_\_\_

## Part B — Simple binary ionic compounds: where the metal is multivalent

Provide names for the following binary compounds:

| Formula                           | 'STOCK' or IUPAC System | Classical System (if possible) |
|-----------------------------------|-------------------------|--------------------------------|
| 1. PbCl <sub>2</sub>              |                         |                                |
| 2. Fe <sub>2</sub> O <sub>3</sub> |                         |                                |
| 3. SnCl <sub>2</sub>              |                         |                                |
| 4. MnF <sub>3</sub>               |                         |                                |

| Formula | 'STOCK' or IUPAC System | Classical System (if possible) |
|---------|-------------------------|--------------------------------|
|---------|-------------------------|--------------------------------|

5. CuO

6. Cu<sub>2</sub>S

7. RhO

8. AuBr<sub>3</sub>

9. Sb<sub>2</sub>S<sub>5</sub>

10. HgO

11. How can you tell when to use the stock, classical, or both systems?

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iii. Provide formulae for the following binary ionic compounds:

1. Mercury (I) Oxide

2. Copper (II) Sulphide

3. Iron (III) Oxide

4. Manganese (IV) Fluoride

5. Gold (III) Oxide

6. Iron (II) Bromide

7. Cobalt (II) Nitride

8. Tin (IV) Oxide

9. Cupric Nitride

10. Mercurous Oxide

11. Stannic Chloride

12. Ferric Sulphide

13. Plumbous Bromide

14. Auric Phosphide

15. Stibinous Hydride

16. Cuprous Phosphide

### Part C — Simple Binary Covalent Compounds

i. Provide names for the following covalent compounds:

1. NF<sub>3</sub>

2. XeO<sub>3</sub>

3. OF<sub>2</sub>

4. N<sub>2</sub>O<sub>5</sub>

5. AsBr<sub>3</sub>

6. H<sub>2</sub>Te

7. CO<sub>2</sub>

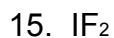
8. SF<sub>6</sub>

9. N<sub>2</sub>O

10. P<sub>4</sub>O<sub>10</sub>

11. CCl<sub>4</sub>

12. PH<sub>3</sub>



11. Name the first 10 prefixes for the covalent compound naming system:

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ii. Provide formulae for the following covalent compounds:

1. Radon Tetrafluoride

2. Carbon Disulphide

3. Nitrogen Triiodide

4. Dinitrogen Triiodide

5. Tetraphosphorus Pentoxide

6. Tricarbon Octahydride

7. Dihydrogen Monoxide

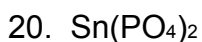
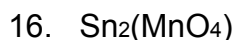
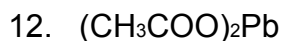
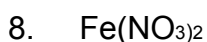
8. Sulphur Hexachloride

9. Silicon Dioxide

10. Silicon Dioxide

#### Part D — Compounds With Polyatomic Ions

i. Provide (all of the possible) names for the following binary compounds:



ii. Provide formulae for the following binary compounds:

1. Sodium Nitrate

2. Lead (II) Chlorate

3. Iron (II) Sulphate

4. Lead (II) Phosphate

- |                            |                              |
|----------------------------|------------------------------|
| 5. Copper (II) Acetate     | 6. Potassium Nitrate         |
| 7. Calcium Phosphate       | 8. Zinc Sulphate             |
| 9. Potassium Dichromate    | 10. Beryllium Nitrite        |
| 11. Potassium Permanganate | 12. Potassium Permanganate   |
| 13. Ammonium Cyanide       | 14. Stannous Bromide         |
| 15. Stannic Hydride        | 16. Stannic Oxide Trihydrate |
| 1.                         |                              |

**Part E — Binary acids and Oxyacids and their related Radicals**

i. Provide the correct name and related radicals for the following acids (if possible)

| Formula                                    | Acid Name | Radical Name |
|--|-----------|--------------|
| 1. $\text{HNO}_{2(\text{aq})}$             |           |              |
| 2. $\text{HAsO}_{4(\text{aq})}$            |           |              |
| 3. $\text{H}_2\text{Te}_{(\text{aq})}$     |           |              |
| 4. $\text{H}_2\text{SO}_{3(\text{aq})}$    |           |              |
| 5. $\text{HIO}_{(\text{aq})}$              |           |              |
| 6. $\text{H}_2\text{Se}_{(\text{aq})}$     |           |              |
| 7. $\text{HBrO}_{4(\text{aq})}$            |           |              |
| 8. $\text{HCl}_{(\text{aq})}$              |           |              |
| 9. $\text{H}_4\text{SiO}_{4(\text{aq})}$   |           |              |
| 10. $\text{CH}_3\text{COOH}_{(\text{aq})}$ |           |              |

11. Name the Famous Five Acids and write down their corresponding formulas:

\_\_\_\_\_

ii. Provide formulae for the following acids:

- |                      |                        |
|----------------------|------------------------|
| 1. Telluric Acid     | 2. Bromic Acid         |
| 3. Hydrofluoric Acid | 4. Hydrosulphuric Acid |
| 5. Nitric Acid       | 6. Perchloric Acid     |
| 7. Phosphorous acid  | 8. Hypoiodous Acid     |
| 9. Chlorous Acid     | 12. Selenous Acid      |

1.

### Part F — Molecular Covalent Compounds

i. Fill in the blanks in the table below:

| Formula     | Name   |
|-------------|--|
| 1.          | Dinitrogen diiodide  |
| 2. $P_2O_5$ |  |
| 3. $SF_6$   |  |
| 4.          | Carbon Monoxide  |
| 5.          | The general rule for naming molecular covalent compounds is: _____ - _____ + _____ - _____ |

### part E — Nomenclature PRACTICE quiz

The following practice quiz will consist of different compounds and acids, mixed-up.

1. Correctly name (Stock system, and Classical Name if possible) the following compounds:

| Formula                  | 'STOCK' or IUPAC System | Classical System |
|--------------------------|-------------------------|------------------|
| a. $Fe_2S_3$             |                         |                  |
| b. $Sn_2(MnO_4)_3$       |                         |                  |
| c. $XeO_3$               |                         |                  |
| d. $N_2O_5$              |                         |                  |
| e. $CuSO_4 \cdot 5 H_2O$ |                         |                  |
| f. $KClO_4$              |                         |                  |
| g. $HCl_{(aq)}$          |                         |                  |
| h. $HBrO_{4(aq)}$        |                         |                  |
| i. $NaHCO_3$             |                         |                  |
| j. $(NH_4)_2S$           |                         |                  |
| k. $CH_3CO_2H_{(aq)}$    |                         |                  |

2. Correctly write the formulas of the compounds:

- |                    |                       |
|--------------------|-----------------------|
| a. Lead (II) Oxide | b. Lithium Bisulphate |
| c. Hydroiodic Acid | d. Mercury (I) Iodide |

e. Plumbous Carbonate

g. Telluric Acid

i. Carbon Disulphide

k. Dihydrogen Monoxide

m. Phosphorus Acid

f. Diphosphorous Tetroxide

h. Cupric Nitride

j. Barium Hydroxide Octahydrate

l. Carbonic Acid

n. Perbromic Acid

Bonus: What are the chemical differences between ammonia and ammonium?

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