

G10 Science: Class 1 Homework

1. Draw the Bohr-Rutherford Diagrams for the following elements: **[3 marks]**

a) Nitrogen (N-14)

b) Aluminum (Al-27)

c) Chlorine (Cl-35)

2. Draw the Lewis Diagrams for the following elements: **[3 marks]**

a) Bromine

b) Oxygen

c) Lithium Ion (Li^+)

3. Compare and contrast:

a) Ion and Isotope **[3 marks]**

b) Physical and Chemical Property **[3 marks]**

c) Cation and Anion **[3 marks]**

4. Complete the following table for the following ions: **[5 marks]**

| Ion | Name | Number of Protons | Number of Neutrons | Number of Electrons |
|------------------|-------------|-------------------|--------------------|---------------------|
| Mg^{2+} | | | | |
| | Sulfide ion | | | |
| | | 26 | | 23 |
| Br^- | | | | |
| | Nitride ion | | | |

5. Draw the Lewis Dot Structure for magnesium and chlorine and show the transfer of electrons to make an ionic compound. **[5 marks]**

6. Decide if each pair will form an ionic compound. Write Yes or No in the space provided. **[5 marks]**

- a) Mg and O _____
- b) Zn and Cl _____
- c) C and F _____
- d) H and F _____
- e) Sr and I _____

7. Dissolved ions are surrounded by water molecules which are polar molecules. This means that the water molecule has a partial positive charge on the Hydrogen atoms and a partial negative charge on the Oxygen atoms. Explain how the water prevents the ions from forming a solid again. **[2 marks]**

8. Name each of the following compounds: **[20 marks]**

| Chemical Formula | Chemical Name |
|-----------------------------|---------------|
| CaF_2 | |
| K_2S | |
| Al_2O_3 | |
| LiBr | |
| Ca_3P_2 | |
| PbCl_2 | |
| Fe_2O_3 | |
| SnS | |
| Cu_3P_2 | |
| $\text{Ca}(\text{CrO}_4)_2$ | |
| CuF_2 | |
| K_3P | |
| Cu_3P | |
| TiBr_3 | |
| MnO | |
| KMnO_4 | |
| CaS | |
| CoN | |
| FeP | |
| BaCl_2 | |

9. Write the chemical formulas for the following compounds: **[20 marks]**

| Chemical Formula | Chemical Name |
|------------------|------------------------|
| | Calcium chloride |
| | Aluminum phosphate |
| | Magnesium sulfide |
| | Lithium nitride |
| | Calcium nitride |
| | Iron (II) bromide |
| | Manganese (IV) oxide |
| | Tin (IV) chloride |
| | Copper (I) sulfide |
| | Iron (III) nitride |
| | Copper (II) oxide |
| | Silver acetate |
| | Cobalt (III) oxide |
| | Lead (II) nitride |
| | Aluminum sulfide |
| | Calcium oxide |
| | Beryllium hydroxide |
| | Sodium phosphide |
| | Chromium (II) fluoride |
| | Iron (III) iodide |

10. Name the following compounds. **[10 marks]**

- a) KNO_3 _____
- b) Ca(OH)_2 _____
- c) CaCO_3 _____
- d) CuSO_4 _____
- e) $\text{Fe(NO}_3)_3$ _____
- f) $(\text{NH}_4)_3\text{PO}_4$ _____
- g) $\text{Cu(ClO}_3)_2$ _____
- h) KOH _____
- i) NaOCN _____
- j) NaSCN _____

11. Write the chemical formula for each of the following compounds: **[10 marks]**

- a) Potassium nitrate _____
- b) Barium sulfate _____
- c) Ammonium nitrate _____
- d) Aluminum sulfate _____
- e) Potassium chlorate _____
- f) Copper (II) nitrate _____
- g) Lead (II) sulphate _____
- h) Tin (II) phosphate _____
- i) Sodium chromate _____
- j) Calcium acetate _____