

Name:

Student Evaluation: How Can I Improve?:.....

KS5 Induction - Chemistry Summer Work

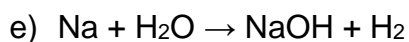
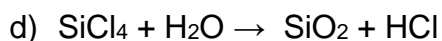
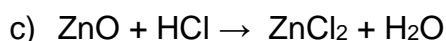
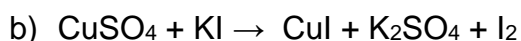
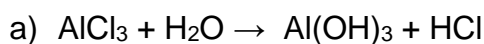
Formula & Equations, Acids, Bases and Alkalis

Formula & Equations

- Write the formulae of the following chemical compounds:
 - Calcium carbonate
 - Copper (I) hydroxide
 - Magnesium nitrate
 - Zinc phosphate
 - Aluminium dichromate
 - Lead(II) sulphate
 - Silver iodide
 - Sodium sulphide
 - Calcium hydrogencarbonate
 - Potassium oxide
- Name the following compounds, from their given chemical formula:
 - NaOH
 - CaO
 - NH₄OH
 - CaOH
 - KI
 - (NH₄)₂CO₃
 - NH₄Cl
 - CaSO₄
 - ZnO
 - MgCl₂
- Using your knowledge of charges of common ions and chemical formulae, decide whether or not the following chemical formulae are correct. If you decide they are incorrect then state the corrected formula for each compound.
 - Potassium chloride, KCl
 - Magnesium phosphate, Mg(PO₄)₂
 - Calcium carbonate, Ca₂CO₃
 - Sodium oxide, NaO
 - Copper(II) nitrate, CuNO₃

- f) Potassium manganate (VII), KMnO_4
- g) Iron sulfate, FeSO_4
- h) Aluminium nitrate, $\text{Al}(\text{NO}_3)_3$
- i) Copper carbonate, CuCO_3
- j) Zinc hydroxide, $\text{Zn}(\text{OH})_2$
- k) Silver sulfate, Ag_2SO_4
- l) Potassium hydrogencarbonate, KHCO_3
- m) Ammonium sulfide, $(\text{NH}_4)_2\text{S}$
- n) Magnesium phosphate, $\text{Mg}_3(\text{PO}_4)_2$

1. **Balance** the following chemical equations:



2. Write a fully **balanced** chemical equation, with **state symbols**, for the following chemical reactions:



Acids, Bases and Alkalis

1. Write the **chemical formula** of the following compounds:

a) aluminium dichromate

.....

b) calcium hydrogencarbonate

.....

c) magnesium manganate (VII)

.....

d) ammonium sulfide

.....[4]



2. **Balance** the following chemical equations:

a) $\text{AlCl}_3 + \text{H}_2\text{O} \rightarrow \text{Al}(\text{OH})_3 + \text{HCl}$

b) $\text{CuSO}_4 + \text{KI} \rightarrow \text{CuI} + \text{K}_2\text{SO}_4 + \text{I}_2$

c) $\text{SiCl}_4 + \text{H}_2\text{O} \rightarrow \text{SiO}_2 + \text{HCl}$ [3]

3. Write a fully **balanced** chemical equation, with **state symbols**, for the following chemical reactions:

a) hydrochloric acid + magnesium carbonate \rightarrow magnesium chloride + water + carbon dioxide

.....[2]

i) What would you observe during this reaction?

.....[1]

b) Calcium carbonate reacting with carbon dioxide and water to give calcium hydrogencarbonate.

.....[2]



4. Explain, in terms of **protons**, what is meant by:
- a) **An acid**:.....
- b) **A base**:.....[2]
5. A salt is a compound produced when a H^+ ion from an acid is replaced by a metal or another positive ion. Which acid would be required to make the following salts:
- a) Calcium sulfate.....
- b) Magnesium phosphate.....
- c) Copper nitrate.....
- d) Potassium chloride.....[4]
6. Ammonium chloride, in its pure form, is a white, water soluble, crystalline solid.
- a) Write a **balanced** chemical equation, with **state symbols**, for the formation of the salt ammonium chloride from ammonia solution.
.....[2]
- b) Name the **two ions** present in the aqueous solution of the product.
.....[2]
7. Sodium hydroxide reacts with hydrochloric acid to produce sodium chloride and water.
- a) Write a **balanced** chemical equation, with **state symbols**, for this reaction.
.....[2]
- b) To help you answer this question, consider how an acid and a base react together.
Write an **ionic equation** to show how any acid reacts with a base.
.....
.....[1]

