

C5.4 Acids, Bases & Salts ANSWERS

Circle the correct word
 OH^- ions make an acid/alkali
 H^+ ions make an acid/alkali

<p>Match these 3 names of acid to the correct formula:</p> <p>Hydrochloric acid HCl Nitric acid HNO_3 Sulphuric acid H_2SO_4</p>	<p>These are the state symbols.</p> <p>What do the letters in symbols mean?</p> <p>(s) solid (l) liquid (g) gas (aq) in solution</p>	<p>I will know something is an alkali (a soluble base) because: The name ends in '... hydroxide' (OH^-)</p> <p>I will know something is an insoluble base because: The name ends in '... oxide'</p>
<p>Which acid turns to</p> <p>hydrochloric acid -> chloride sulphuric acid -> sulphate nitric acid -> nitrate</p>	<p>Naming a salt. The name starts with the metal</p> <p>The second part to the name depends on the acid</p>	<p>The half equation for neutralisation is:</p> <p>$\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$</p>

There are 3 **types of reaction** you are expected to know. Use these to fill in the gaps in the e.gs:

Acid + alkali \rightarrow salt + water
 Acid + metal \rightarrow salt + hydrogen
 Acid + carbonate \rightarrow salt + water + carbon dioxide

iron oxide + nitric acid \rightarrow **iron nitrate + water**
 Magnesium + hydrochloric acid \rightarrow **magnesium chloride + hydrogen**
calcium hydroxide + **sulphuric** acid \rightarrow Calcium sulphate + **water**

The rules of electrons

O **xidation**
I **s**
L **oss**
R **eduction**
I **s**
G **ain**

The names of the electrodes

P **ositive**
A **node**
N **egative**
I **s**
C **athode**

Electrolysis breaks ionic compounds into individual elements.

These elements have a charge and are called **ions**

C5.4 Electrolysis ANSWERS

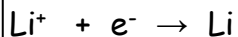
To remove aluminium from aluminium oxide it is mixed with **cryolite** to lower the **melting point** to make the electrolyte. The cathode will be coated in **aluminium** and the anode is made of **carbon** so reacts with the oxygen and makes **carbon dioxide**.

In your own words and in as much detail as possible, describe what happens during the electrolysis of NaCl (remember 2 gases are made because water breaks into ions H^+ and OH^-)

- Na^+ and H^+ are attracted to the cathode.
- Hydrogen is reduced and hydrogen gas is made
- Cl^- and OH^- are attracted to the anode
- Chlorine is reduced and chlorine gas is made
- Sodium hydroxide is left in solution
- HIGHER: $Na^+ + e^- \rightarrow Na$, $2Cl^- - 2e^- \rightarrow Cl_2$

HIGHER: can you complete these half equations to show what happens at the electrodes? (remember, gases travel in pairs!)

Examples

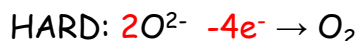


(reduction)



(oxidation)

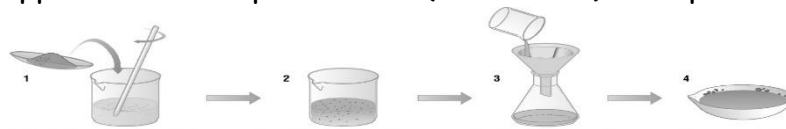
finish these



Circle the correct words in the brackets:

- When a metal becomes an ion it is always (**positive**)
- To become uncharged it will (**gain**) an electron at the (**cathode**)
- This is called (**reduction**)
- When a non-metal becomes an ion it is always (**negative**)
- To become uncharged it will (**lose**) an electron at the (**anode**)
- This is called (**oxidation**)

Describe and explain the process to make copper sulphate crystals from copper oxide + sulphuric acid (do on back). Use pics to help.



- 1) Heat the acid using a Bunsen burner then add the copper oxide in excess
- 2) Filter out the unreacted copper oxide to leave a copper sulphate solution
- 3) Heat the solution using a Bunsen burner to evaporate most of the water.
- 4) As the water evaporates the concentration of the copper sulphate crystals increases.
- 5) Leave the crystals to cool overnight and then dry the crystals in the morning to get pure crystals of copper sulphate