

Chemistry Topic 4: Chemical changes

1. Keywords	
Metal oxide	A compound formed when a metal ionically bonds to oxygen
Reactivity series	The order of elements in terms of their reactivity
Acid	A substance that releases H ⁺ ions and has a pH below 7
Base	A substance that neutralises an Acid and has a pH above 7
Alkali	A type of soluble base. A metal hydroxide. Releases OH ⁻ ions
Neutralisation	When an acid reacts with a base to produce a salt and water
Carbonates	Ionic compounds containing Carbon and oxygen
Salt	Ionic compound formed when acid and base react
Soluble	A substance that dissolves
Insoluble	A substance that does not dissolve
Indicator	A substance that changes colour when pH changes
Electrolysis	Splitting up an ionic substance using electricity
Molten	Turned to a liquid
Solution	Dissolved in water

2. REDOX			
Change	In terms of oxygen	In terms of hydrogen	In terms of electrons (HT ONLY)
Oxidation	Gaining oxygen	Losing hydrogen	Loss of electrons (OIL)
Reduction	Losing oxygen	Gaining hydrogen	Gain of electrons (RIG)

3. The reactivity series		
	Category	Extracted by
1	Highly reactive metals	Electrolysis
2	Base metals	Smelting: heating with carbon
3	Native metals	Found as nuggets of pure metal

Potassium
Sodium
Calcium
Magnesium
Aluminium
Carbon

1

Zinc
Iron
Tin
Lead
Hydrogen
Copper

2

Silver
Gold
Platinum

3

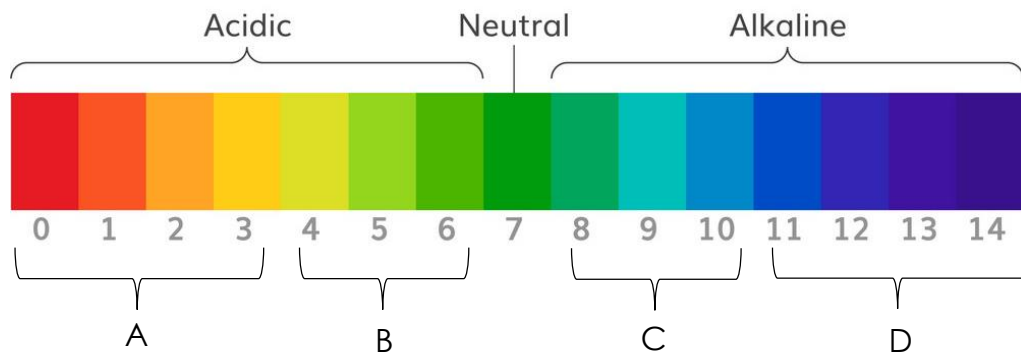
most reactive
↑
↓
least reactive

NOTE: Hydrogen is not a metal and used to extract some other metals not on this list

4. Naming salts

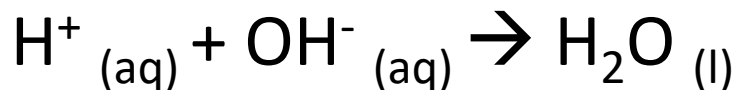
Acid used	Second part of salt's name
Hydrochloric acid	chloride
Sulfuric acid	sulfate
Nitric acid	nitrate

5. pH scale



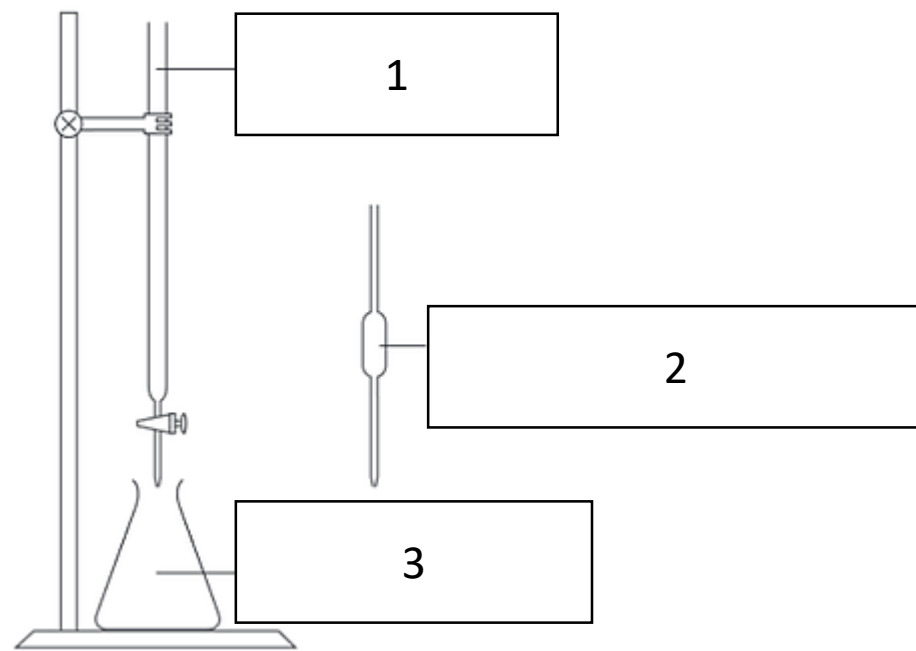
	Name	Level of ionisation in water
A	Strong acid	Fully
B	Weak acid	Partially
C	Weak base	Partially
D	Strong base	Fully

6. Equation for all neutralisations



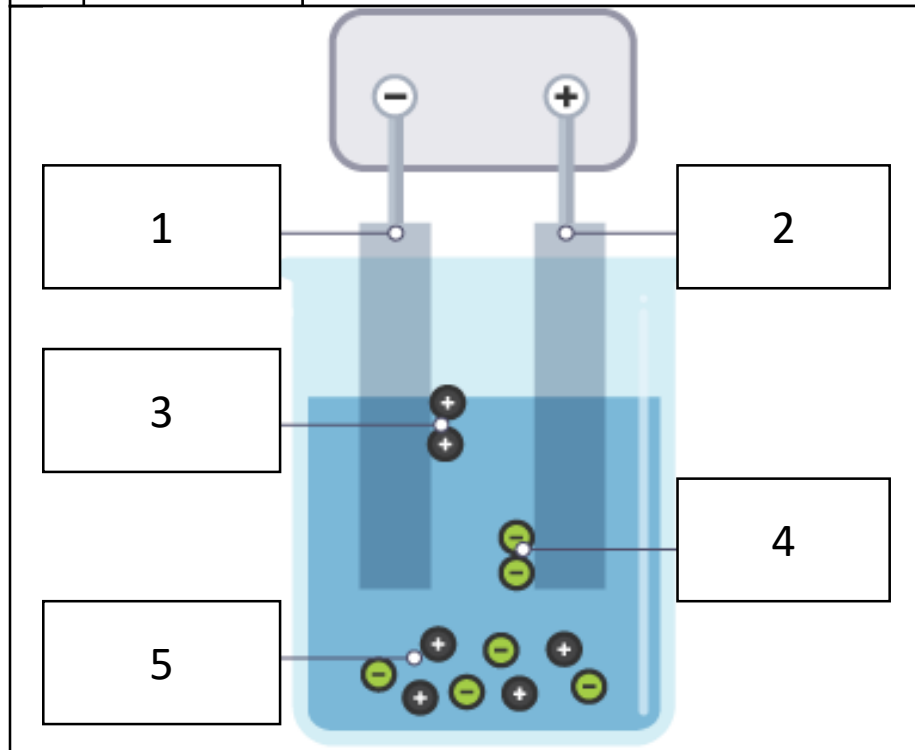
7. Titrations (TRIPLE ONLY)

No.	Name	Function
1	Burette	Measures amount of acid or base delivered to conical flask
2	Pipette	Accurately measures the acid or base into the conical flask
3	Conical flask	Holds the acid or base to be titrated and an indicator



7. Electrolysis

1	Cathode	The negative electrode
2	Anode	The positive electrode
3	Positive ion	Move to cathode
4	Negative ion	Move to anode
5	Electrolyte	The ions that are being electrolysed



Don't **PANIC** - **P**ositive is **A**node, **N**egative is **C**athode.

8. Electrolysis of aqueous solutions

Place in reactivity series	Product of electrolysis
Metal more reactive than hydrogen	Hydrogen is produced at the cathode
If the negative ion is not a halide ion (group 7)	Oxygen is produced at the anode