

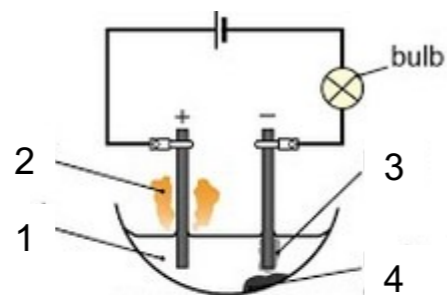
CHEMISTRY – YEAR 10 – Chemical Changes Part II HIGHER

A	CHEMICAL CHANGES	
1	Electrolysis	Breaking down substance using electricity
2	Electrolyte	Chemical broken down in electrolysis Ions that are molten or dissolved in water
3	Anode	Positive electrode attracts negative ions Negative ions are oxidised
4	Cathode	Negative electrode attracts positive ions Positive ions are reduced
5	Electrode material	Inert (unreactive) substance Graphite or Palladium
6	Oxidation	Losing Electrons
7	Reduction	Gaining Electrons
8	Water Ionising	Water \rightarrow Hydrogen ion + hydroxide ion
9	Product at electrode	Least reactive element
10	Anode Produces	Oxygen unless halide present (halogen produced)
11	Bauxite	Aluminium ore (Source of Al_2O_3)
12	Cryolite	Mixed with aluminium oxide to reduce melting temperature
13	Carbon Anode replaced	Oxygen reacts with anode producing CO_2

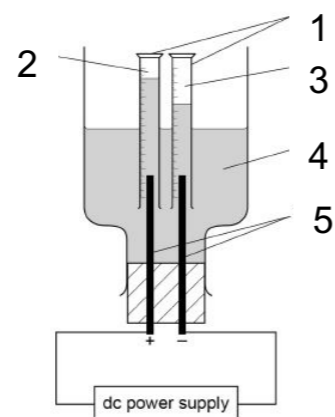
B	ELECTRODE EQUATIONS	
1	Cathode (Molten ion)	Positive Ion + electrons \rightarrow Atom
2	Cathode Example (Molten Pb^{2+})	$\text{Pb}^{2+} + 2\text{e}^- \rightarrow \text{Pb}$
3	Anode (Molten ion)	Negative Ion \rightarrow Atom + Electrons
4	Anode Example (Molten Br)	$2\text{Br}^- \rightarrow 2\text{Br} + 2\text{e}^-$
5	Water Ionising Equation	$\text{H}_2\text{O} \rightarrow \text{H}^+ (\text{aq}) + \text{OH}^- (\text{aq})$
6	Cathode (Aq ion)	Hydrogen ion + electron \rightarrow hydrogen (g)
7	Cathode Example (Aq H)	$2\text{H}^+ (\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2 (\text{g})$
8	Anode (Aq halide ion)	Halide ion \rightarrow halogen (g) + electron
9	Anode Example (Aq Cl ion)	$2\text{Cl}^- (\text{aq}) \rightarrow \text{Cl}_2 (\text{g}) + 2\text{e}^-$
10	Anode (aq non-halide ion)	Hydroxide \rightarrow water + oxygen + electrons
11	Anode Example (aq non-halide ion)	$4\text{OH}^- (\text{aq}) \rightarrow 2\text{H}_2\text{O} (\text{l}) + \text{O}_2 (\text{g}) + 4\text{e}^-$
12	Aluminium extraction	$2\text{Al}_2\text{O}_3 (\text{l}) \rightarrow 4\text{Al} (\text{l}) + 3\text{O}_2 (\text{g})$
13	Aluminium extraction cathode	$\text{Al}^{3+} (\text{l}) + 3\text{e}^- \rightarrow \text{Al} (\text{l})$
14	Aluminium extraction anode	$2\text{O}^{2-} (\text{l}) \rightarrow \text{O}_2 (\text{g}) + 4\text{e}^-$

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C LEAD BROMIDE ELECTROLYSIS	
1	Molten Lead Bromide
2	Bromine Vapour
3	Lead
4	Molten Lead



D AQUEOUS ELECTROLYSIS	
1	Measuring Cylinders
2	Chlorine
3	Hydrogen
4	Sodium Chloride Solution
5	Graphite Electrodes



E ALUMINIUM OXIDE ELECTROLYSIS	
1	Anodes
2	Cathode
3	Molten Aluminium
4	Molten Aluminium Oxide

