Definitions and Concepts for OCR (A) Chemistry GCSE

Topic 3 - Chemical Reactions

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*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Definitions have been taken, or modified from the OCR (A) Specification for GCSE Chemistry, J248, Version 3.3 May 2020

Acid: Produces hydrogen ions (H^+) in aqueous solutions with a pH range between 0 and 7.

Activation energy: The energy required for a reaction to occur.

Alkali: Produces hydroxide ions (OH^-) in aqueous solutions with a pH range between 7 and 14.

Anion: A negatively charged ion.

Anode: The positive electrode. It is where negatively charged ions lose electrons in oxidation reactions. It is the electrode where oxygen is produced unless the solution contains halide ions - then the halogen is produced.

Avogadro's constant: **The number of atoms, molecules or ions in a mole of a given substance.**

Cathode: The negative electrode. It is where positively charged ions gain electrons in reduction reactions. It is the electrode where hydrogen is produced if the metal in the electrolyte is more reactive than hydrogen.

Cation: A positively charged ion.

Conservation of mass: A law which states that no atoms are lost or made during a chemical reaction so the mass of the products equals the mass of the reactants.

Electrode: A solid conductive material through which electricity can flow. They are used in electrolysis to conduct electricity.

Electrolysis: The splitting up of an ionic compound using electricity. The electric current is passed through a substance causing chemical reactions at the electrodes which lead to the decomposition of the materials.

Electrolyte: A solution containing free ions from the molten or aqueous ionic substance. The ions are free to move to carry charge.

Endothermic reaction: A reaction in which energy is taken in from the surroundings so the temperature of the surroundings decreases. **Bond breaking is an endothermic process.**

Exothermic reaction: A reaction in which energy is transferred to the surroundings so the temperature of the surroundings increases. **Bond making is an exothermic process.**

Inert: Unreactive. The electrodes in electrolysis are usually chosen to be inert so that they do not interfere with the reaction.

Limiting reactant: **The reactant that is completely used up since it limits the amount of products formed.**

Mole: **Unit of measurement for chemical amounts. The mole is the unit for amount of substance and the symbol for the unit mole is mol.**

Neutralisation: The reaction in which an acid and a base react to form a salt and water.

Overall energy change of the reaction: **The difference between the sum of the energy needed to break bonds in the reactants and the sum of the energy released when bonds in the products are formed.**

Oxidation: A reaction involving the gain of oxygen. **Oxidation is the loss of electrons.**

Oxidising agent: A species which brings about oxidation by gaining electrons. The oxidising agent is itself reduced.

pH scale: A measure of the acidity or alkalinity of a solution ranging from 0 to 14. pH can be measured using universal indicator or a pH probe.

Reaction profile: Graph used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction.

Reducing agent: A species which brings about reduction by losing electrons. The reducing agent is itself oxidised.

Reduction: A reaction involving the loss of oxygen. **Reduction is the gain of electrons.**

State symbols: The symbols used in chemical equations to denote the states of the chemicals reacting: (s) - solid, (l) - liquid, (g) - gas, (aq) - aqueous solution.

Strong acid: **An acid which is completely ionised in an aqueous solution so that nearly all the H^+ ions are released. Examples of strong acids include hydrochloric, nitric and sulfuric acids.**

Titration: A technique used where a solution of known concentration is used to determine the concentration of an unknown solution.

Weak acid: **An acid which is only partially ionised in an aqueous solution. This means only a small number of the H^+ ions are released. Examples of weak acids include ethanoic, citric and carbonic acids.**