SL and HL IB Chemistry Definitions

SL- only learn black terms HL – learn all terms

You must learn these. You must be able to recall them word for word!

Relative atomic mass (A_r) - The relative atomic mass of an element is the weighted average of the masses of the isotopes relative to 1/12 of the mass of a carbon-12 atom.

Relative molecular mass (M_r) - The relative molecular mass of a substance is the mass of one molecule of that substance relative to 1/12 of the mass of carbon – 12 atom.

Mass Number - The sum of the protons and neutrons in the nucleus of the atom or ion.

Atomic Number - is equal to the number of protons in the nucleus of an atom.

Isotope - are atoms of the same element with different numbers of neutrons.

1st Ionisation Energy - The minimum energy required to remove one mole of electrons from an atom in its gaseous state.

Electronegativity - Electronegativity is a measure of the tendency of an atom in a molecule to attract a bonding pair of electrons towards itself.

Ligand - An atom, ion or molecule that can donate a pair of electrons to a central metal ion to form a dative covalent (coordinate) bond. (Ligands are Lewis bases)

Exothermic Reaction - An exothermic reaction is one that releases heat to the surroundings. (As a result of forming products with stronger bonds than the reactants. Exothermic reactions have negative ΔH values.)

Endothermic Reaction - An endothermic reaction is one that absorbs heat from its surroundings. (As a result of forming products with weaker bonds than the reactants. Endothermic reactions have positive ΔH values.)

Standard state The standard state of an element or compound is its most stable state under the specified conditions.

Standard Conditions - Temperature = 298K, Pressure = 1atm & solutions 1 mol dm^{-3}.

Standard enthalpy change of a reaction - The standard enthalpy change (ΔH^{θ}) is the heat energy transferred under **standard conditions** (pressure 101.3 kPa, temperature 298 K) for a reaction.

Average Bond Enthalpy - This is the energy required to break one mole of the same type of bond in the gaseous state averaged over a variety of similar compounds.

Standard enthalpy change of Formation - The enthalpy change when 1 mole of a substance is formed from its elements in their standard states, under standard conditions.

Standard enthalpy change of Combustion - the enthalpy change when 1 mole of a substance in its standard states burns completely in excess oxygen under standard conditions.

Lattice Enthalpy - the amount of energy required to separate one mole of ionic compound into isolated gaseous ions under standard conditions.

Electron Affinity - the energy change when 1 mole of gaseous atom gains 1 mole of electron to form a gaseous ion, under standard conditions (technically, this should be called the 1^{st} electron affinity)

Rate of Reaction - The increase in concentration of products or the decrease in concentration of reactants per unit time.

Activation Energy - The minimum energy needed (by reactants) to start/initiate a reaction.

Bronsted Lowry Acid - An acid is a proton (hydrogen ion) donor.

Bronsted Lowry Base - A base is a proton (hydrogen ion) acceptor.

Lewis Acid - An acid is an electron pair acceptor.

Lewis Base - A base is an electron pair donor.

Oxidation - The loss of electrons from a species during a chemical reaction.

Reduction - The gain of electrons by a species during a chemical reaction.

Oxidising Agent - A species that brings about oxidation by removing electrons from another reactant. During the reaction the oxidizing agent gains electrons and so is reduced.

Reducing Agent - A species that brings about reduction by giving electrons to another reactant. During the reaction the reducing agent loses electrons and so is oxidized.

Standard Electrode Potential - This is the electrode potential of a half-cell relative to the hydrogen half-cell, which is assigned a value of zero. It is measured at standard conditions. (Also known as standard reduction potential)