**AS CHEMISTRY DEFINITIONS**

**CHAPTER 1: ATOMS, MOLECULES AND STOICHEMISTRY**

1. Relative atomic mass

- the ratio of the average mass of one atom of the element to 1/12 the mass of a carbon-12 atom.

2. Relative isotopic mass

- the ratio of the average mass of one atom of the isotope to 1/12 the mass of a carbon-12 atom.

3. Relative molecular mass

- the ratio of the average mass of one molecule of a substance to 1/12 the mass of a carbon-12 atom.

4. Relative formula mass

- the ratio of the average mass of one formula unit of the compound to 1/12 the mass of a carbon-12 atom.

5. Mole

- the amount of substance containing a number of particles equal to the Avagadro constant.

6. Empirical formula

- the simplest formula which shows the simplest ratio of the atoms of the different elements in the compound

7. Molecular formula

- shows the actual number of atoms of each element present in one molecule of a compound.

**CHAPTER 2: ATOMIC STRUCTURE**

1. Isotopes

- atoms of the same element with the same proton number but different nucleon number.

2. First Ionisation Energy

- the energy required to remove 1 mole of electrons from 1 mole of gaseous atoms to form 1 mole of gaseous cations.

**CHAPTER 3: CHEMICAL BONDING**

1. Ionic bond

-Electrostatic force of attraction between two oppositely charged ions.

2. Covalent bond

-Electrostatic force of attraction that two neighbouring nuclei have for a pair of electrons shared between them.

3. Metallic bond

- Electrostatic force of attraction between the delocalised electron cloud and the metal ions.

4. Bond length

-The distance between the nuclei of the 2 atoms joined by a covalent bond.

5. Bond energy/ Bond dissociation enthalpy

- Energy required to break 1 mole of a covalent bond between 2 atoms in its gaseous state.

**CHAPTER 4: STATES OF MATTER**

Kinetic Theory of Gases

- Gas particles have negligible volume compared to volume of gas.

- No forces of attraction between gas particles.

- All collisions between the molecules are perfectly elastic.

- Particles are continuously moving in a random motion.

**CHAPTER 5: CHEMICAL ENERGETICS**

1. Standard enthalpy change of formation

- Enthalpy change when 1 mole of a compound is formed from its elements in their standard states under standard conditions (25◦C, 1 atm).

2. Standard enthalpy change of combustion

- Enthalpy change when 1 mole of a substance is burnt in excess of oxygen under standard conditions (25◦C, 1 atm).

3. Standard enthalpy change for atomization

- Enthalpy change to form 1 mole of gaseous atom from an element or molecule under standard conditions (25◦C, 1 atm).

4. Standard enthalpy change for hydration

- Enthalpy change when 1 mole of the gaseous ions are dissolved in a large amount of water under standard conditions (25◦C, 1 atm).

5. Standard enthalpy change for solution

- Enthalpy change when 1 mole of a substance dissolves in a large volume of solvent that addition of more solvent produces no further heat change under standard conditions (25◦C, 1 atm).

6. Standard enthalpy change of neutralization

- Enthalpy change when 1 mole of water is formed from 1 mole of H+ ion and 1 mole of OH- ion under standard conditions (25◦C, 1 atm).

7. Hess Law

- The enthalpy change for a reaction from reactants to products is constant regardless of the path taken, provided final and initial conditions are the same

**CHAPTER 7: EQUILIBRIA**

1. Reversible reactions

- a reaction that can proceed in both forward and backward directions.

2. Dynamic equilibrium

- rate of forward reaction equal to rate of reverse reaction and equilibrium concentration remain constant

3. Le Chatelier Principle

- whatever is done to a system in equilibrium, the system does the opposite.

4. Degree of dissociation

- the fraction or percentage of molecules that dissociate into ions.

**CHAPTER 8: REACTION KINETICS**

1. Rate of reaction

- the change in concentration of reactants or products per unit time.

2. Activation energy

- the minimum energy required for a reaction to take place when the molecules collide.

3. Homogenous Catalysis

- both the catalyst and reactants used are in the same physical state.

4. Heterogenous catalysis

- the catalyst and reactants are in different physical state.

5. Autocatalysis

- when a product acts as a catalyst in the reaction, the catalyst is said to be an autocatalyst.