SN1 Equations

STOICHIOMETRY

number of mole (n)	$n = \dfrac{m}{\text{molar mass}}$
number of particle = mole x Avogadro number (mol^{-1})	number particle = $n \times N_A$ ($N_A = 6.022 \times 10^{23}$ mol^{-1})
mass%	$\text{mass\%(A)} = 100\% \times \dfrac{\text{mass of A in the sample}}{\text{total mass of the sample}}$

GASES

Ideal gas law	$PV = nRT$

TYPES OF CHEMICAL REACTIONS and Solution Stoichiometry

molarity (M in mol.L^{-1})	$M = \dfrac{n_{\text{solute}}}{V_{\text{solution}}}$
att: FOR DILUTION ONLY (the number of mole is constant)	$c_1 V_1 = c_2 V_2$

ATOMIC STRUCTURE AND PERIODICITY

Relation between the speed of light c, the wavelength λ and the frequency ν	$c = \lambda \nu$
The quantum of energy absorbed or emitted by an atom (h = Planck constant)	$\Delta E_{\text{atom}} = E_{\text{photon}}$ ΔE_{atom} can either be positive or negative
Energy of a photon	$E_{\text{photon}} = h\nu$ $E_{\text{photon}} > 0$ (always)
The photoelectric effect (Einstein)	$E_{\text{kinetic}} = \frac{1}{2} m_e v^2 = h\nu - h\nu_o$ m_e: mass of the electron, v: speed of the electron, ν_o: threshold frequency to extract the electron from the surface.
de Broglie wavelength (wavelength of a moving particle)	$\lambda_{\text{particle}} = \dfrac{h}{mv}$ m: mass, v: speed of the moving particle
The Bohr model of an atom	$E_{\text{atom}} = (-2.178 \times 10^{-18} \text{ J}) \dfrac{Z^2}{n^2}$ Z atomic number (number of protons) n main quantum number (energy level)
Change of energy of an atom	$\Delta E_{\text{atom}} = E_{\text{final}} - E_{\text{initial}}$
Heisenberg uncertainty principle	$\Delta x \cdot \Delta(mv) \geq \dfrac{h}{4\pi}$ Δx: uncertainty on the position, $\Delta(mv)$: uncertainty on the momentum (mass × speed)

BONDING GENERAL CONCEPTS

Coulomb's law: Energy of interaction between a pair of ions	$E = (2.31 \times 10^{-19} \text{ J·nm}) \dfrac{Q_1 Q_2}{r}$ (no need to memorize this equation, just understand.)
Bond energy and enthalpy	$\Delta H_{\text{reaction}} = \Sigma_n D_{\text{bonds broken}} - \Sigma_n D_{\text{bonds formed}}$
Lewis formal charge (FC) calculation	$FC = n_{\text{valence electron in the free atom}} - n_{\text{electron in lone pair}} - \dfrac{n_{\text{electron shared}}}{2}$

COVALENT BONDING

Bond order (BO) calculation	$BO = \dfrac{n_{\text{bonding electron}} - n_{\text{antibonding electrons}}}{2}$

THERMOCHEMISTRY

Enthalpy 'H' of a reaction	$\Delta H_{\text{reaction}} = \Sigma \Delta H_{\text{products}} - \Sigma \Delta H_{\text{reactants}}$
Specific Heat capacity c	$c = \dfrac{\text{heat absorbed}}{\Delta T \times \text{mass (g)}}$ where: $\Delta T = T_{\text{final}} - T_{\text{initial}}$
Heat q transfered by a reaction	$q = m \times c \times \Delta T$
Conservation of the energy	$q_{\text{system}} + q_{\text{surrounding}} = 0$