SN1 Equations

STOICHIOMETRY	
number of mole (n)	$n = \frac{m}{\text{molar mass}}$
number of particle = mole x Avogadro number (mol^{-1})	number particle = n x N_A ($N_A = 6.022 \times 10^{23}\ mol^{-1}$)
mass%	mass%(A) = $100\% \times \frac{\text{mass of A in the sample}}{\text{total mass of the sample}}$
GASES	
Ideal gas law	$P\,V = n\,R\,T$
TYPES OF CHEMICAL REACTIONS and Solution Stoichiometry	
molarity (M in $mol.L^{-1}$)	$M = \frac{n_{solute}}{V_{solution}}$
att: FOR DILUTION ONLY (the number of mole is constant)	$c_1V_1 = c_2V_2$
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)	$\Delta E_{atom} = h\,\nu$ ΔE can either be positive or negative
Energy of a photon	$E_{photon} = h\,\nu$ $\Delta E_{photon} > 0$ (always)
The photoelectric effect (Einstein)	$E_{kinetic} = ½\, m_e v^2 = h\,\nu - h\,\nu_o$ 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)	$\lambda_{particle} = \frac{h}{m\,v}$ m: mass, v: speed of the moving particle
The Bohr model of an atom	$E_{atom} = (-2.178\times10^{-18}\,J)\,\frac{Z^2}{n^2}$ Z atomic number (number of protons) n main quantum number (energy level)
Change of energy of an atom	$\Delta E_{atom} = E_{final} - E_{initial}$
Heisenberg uncertainty principle	$\Delta x \cdot \Delta(m\,v) \geq \frac{h}{4\,\pi}$ Δx: uncertainty on the position, $\Delta(m\,v)$: uncertainty on the impulsion (mass × speed)
BONDING GENERAL CONCEPTS	
Coulomb's law: Energy of interaction between a pair of ions	$E = (2.31\times10^{-19}\,J{\cdot}nm)\,\frac{Q_1Q_2}{r}$ (no need to memorize this equation, just understand.)
Bond energy and enthalpy	$\Delta H_{reaction} = \Sigma_n D_{bonds\ broken} - \Sigma_n D_{bonds\ formed}$
Lewis formal charge (FC) calculation	$FC = n_{valence\ electron\ in\ the\ free\ atom} - n_{electron\ in\ lone\ pair} - \frac{n_{electron\ shared}}{2}$
COVALENT BONDING	
Bond order (BO) calculation	$BO = \frac{n_{bonding\ electron} - n_{antibonding\ electrons}}{2}$
THERMOCHEMISTRY	
Enthalpy 'H' of a reaction	$\Delta H_{reaction} = \Sigma\Delta H_{products} - \Sigma\Delta H_{reactants}$
Specific Heat capacity c	$c = \frac{\text{heat absorbed}}{\Delta T \times \text{mass (g)}}$ where: $\Delta T = T_{final} - T_{initial}$
Heat q transfered by a reaction	$q = m \times c \times \Delta T$
Conservation of the energy	$q_{system} + q_{surrounding} = 0$