
Equations and Constants for Quiz #2

Below are the equations and constants you will be given for quiz #2. If an equation or constant is missing from this list, then that is one that you should commit to memory. If you feel that there is an equation or constant missing from this list, please ask. I may have omitted an equation by mistake.

Equations:

$$\Delta H_{\text{rxn}}^{\circ} = \sum n_p \Delta H_f^{\circ}(\text{products}) - \sum n_R \Delta H_f^{\circ}(\text{reactants})$$

$$\Delta S_{\text{rxn}}^{\circ} = \sum n_p S_m^{\circ}(\text{products}) - \sum n_R S_m^{\circ}(\text{reactants})$$

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta G^{\circ} = \Delta H^{\circ} - T\Delta S^{\circ}$$

$$\Delta G_{\text{rxn}}^{\circ} = \sum n_p \Delta G_f^{\circ}(\text{products}) - \sum n_R \Delta G_f^{\circ}(\text{reactants})$$

$$E_{\text{photon}} = \phi + \text{KE}$$

$$\lambda = \frac{h}{mv}$$

$$\text{KE} = \frac{1}{2} mv^2$$

$$\Delta x \cdot m\Delta v \geq \frac{h}{4\pi}$$

$$\Delta E = -2.18 \times 10^{-18} \text{ J} \left(\frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

$$\frac{1}{\lambda} = R \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right) \quad n_2 \geq n_1$$

Constants:

Planck's constant (h) = 6.626×10^{-34} J·s

Speed of light (c) = 3.00×10^8 m s⁻¹

Avogadro's number (N_A) = 6.022×10^{23} mole⁻¹

Mass of electron (m_e) = 9.11×10^{-31} kg

Rydberg's constant (R) = 1.0967×10^7 m⁻¹

Any needed ΔH_f° , S° and ΔG_f° values.

Any needed ΔH values for phase changes or reactions.