

# Equation sheet 3

$$PV = nRT$$

$$P_{tot} = \frac{RT}{V} \sum_{i=1}^N n_i$$

$$x_i = \frac{n_i}{n}$$

$$P_i = x_i P_{tot}$$

$$\Delta U = q + w$$

$$w = -P\Delta V$$

$$\Delta H = \Delta U + P\Delta V$$

$$\Delta H = \Delta U + \Delta nRT$$

$$C_p = \frac{\Delta H}{\Delta T}$$

$$E = h\nu = \frac{hc}{\lambda} \rightarrow \frac{1.19 \times 10^5 \text{ kJ mol}^{-1}}{\lambda \leftarrow \text{nm}}$$

$$\Delta S = \frac{q_{rev}}{T}$$

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

$$\Delta G = \Delta G^\circ + RT \ln Q$$

$$\Delta G^\circ = -RT \ln K$$

$$\ln K = -\frac{\Delta H^\circ}{RT} + \frac{\Delta S^\circ}{R}$$

$$[A] = [A]_0 - kt$$

$$\ln [A] = \ln [A]_0 - kt$$

$$t_{1/2} = \frac{0.693}{k}$$

$$\frac{1}{[A]} = \frac{1}{[A]_0} + kt$$

$$t_{1/2} = \frac{1}{k[A]_0}$$

$$\frac{k_1}{k_{-1}} = K$$

$$k = A e^{-E_a/RT}$$

$$\gamma = \frac{1}{\sum k'}$$

~~XXXXXXXXXX~~ C

$$\text{Settling rate} = \frac{gd^2(\Delta\rho)}{18\eta}$$

$$c \times t = \text{constant}$$

$$\text{Dose} = c \times \text{breathing rate} \times \text{exposure time}$$

$$c(\text{inside}) = c(\text{outside}) + \frac{R}{kV}$$

$$c(\text{inside}) \approx \frac{R}{kV}$$

$$C_x = K_H \cdot p_x$$

$$I = \frac{1}{2} \sum m_i z_i^2$$

$$a = my$$

$$\Delta T = K_f \cdot m$$

$$\pi = CRT$$

$$V(\text{reactor}) = \text{flow rate} \times \text{residence time.}$$

$$K_{part} = \frac{\text{concn. of solute in solvent 1}}{\text{concn. of solute in solvent 2}}$$

$$BCF = \frac{k_1}{k_2 + k_3}$$

$$TEQ = \sum (c_i \times TEF_i)$$

(1)

(3)

(2)