FINAL EXAM

McCord Classes · Spring 2016

(uniques: 49330 and 49335)

$R = 8.314$ J/mol·K

$R = 62.36$ L·torr/mol·K

1 L·atm = 101.325 J

1 eV = 1.602×10^{-19} J

$c = 3.00 \times 10^{8}$ m/s

$K_{\mathrm{w}} = 1.0 \times 10^{-14}$ at 25°C

$F = 96485$ C/mol e^-

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

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

$$K_{\mathrm{p}} = K_{\mathrm{c}}(RT)^{\Delta n}$$

$$C_{\mathrm{gas}} = k_{\mathrm{H}}\, P_{\mathrm{gas}}$$

$$\Delta T_{\mathrm{f}} = i \cdot k_{\mathrm{f}} \cdot m \qquad \Delta T_{\mathrm{b}} = i \cdot k_{\mathrm{b}} \cdot m$$

$$P_{\mathrm{A}} = x_{\mathrm{A}} \cdot P_{\mathrm{A,pure}} \qquad \Pi = i \cdot cRT$$

$$\ln\left(\frac{P_2}{P_1}\right) = \frac{\Delta H_{\mathrm{vap}}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\ln\left(\frac{K_2}{K_1}\right) = \frac{\Delta H_{\mathrm{rxn}}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\ln\left(\frac{k_2}{k_1}\right) = \frac{E_{\mathrm{a}}}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$k = Ae^{-E_a/RT}$$

pH = -log[H^+] $\qquad K_{\mathrm{w}} = [\mathrm{H}^+][\mathrm{OH}^-]$

$$\mathrm{pH} = \mathrm{p}K_{\mathrm{a}} + \log\frac{[\mathrm{A}^-]}{[\mathrm{HA}]}$$

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

anode | solution || solution | cathode

$$E = E^\circ - \frac{RT}{nF}\ln Q \qquad E = E^\circ - \frac{0.05916}{n}\log Q$$

$$\frac{I \cdot t}{n \cdot F} = \text{moles}$$

$$\ln\left(\frac{[\mathrm{A}]_0}{[\mathrm{A}]}\right) = kt \qquad t_{1/2} = \frac{\ln 2}{k}$$

$$\frac{1}{[\mathrm{A}]} - \frac{1}{[\mathrm{A}]_0} = kt \qquad t_{1/2} = \frac{1}{k[\mathrm{A}]_0}$$

$$[\mathrm{A}]_0 - [\mathrm{A}] = kt \qquad t_{1/2} = \frac{[\mathrm{A}]_0}{2k}$$