

signature: _____

Student Name (uteid)

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version number

FINAL

$$R = 8.314 \text{ J/mol}\cdot\text{K}$$

$$R = 62.36 \text{ L}\cdot\text{torr/mol}\cdot\text{K}$$

$$1 \text{ L}\cdot\text{atm} = 101.325 \text{ J}$$

$$1 \text{ eV} = 1.602 \times 10^{-19} \text{ J}$$

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

$$K_w = 1.0 \times 10^{-14} \text{ at } 25^\circ\text{C}$$

$$F = 96485 \text{ C/mol } e^-$$

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

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

$$K_p = K_c(RT)^{\Delta n}$$

$$C_{\text{gas}} = k_H P_{\text{gas}}$$

$$\Delta T_f = i \cdot k_f \cdot m \quad \Delta T_b = i \cdot k_b \cdot m$$

$$P_A = x_A \cdot P_{A,\text{pure}} \quad \Pi = i \cdot cRT$$

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

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

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

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

$$\text{pH} = -\log[\text{H}^+] \quad K_w = [\text{H}^+][\text{OH}^-]$$

$$\text{pH} = \text{p}K_a + \log\frac{[\text{A}^-]}{[\text{HA}]}$$

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

anode | solution || solution | cathode

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

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

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

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

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