This print-out should have 0 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

/* DCH test buffer calculation

$$\exp x = e^x$$

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

$$\Delta H = mc\Delta T$$
$$\Delta H = mC$$

$$\Delta P = P^0 \chi\, i$$
$$\Delta T_b = K_b m\, i$$
$$\Delta T_f = K_f m\, i$$
$$\pi = MRT\, i$$

$$Q = \frac{(C_{\mathrm{C}})^c (C_{\mathrm{D}})^d}{(C_{\mathrm{A}})^a (C_{\mathrm{B}})^b}$$
$$K = \frac{[\mathrm{C}]^c [\mathrm{D}]^d}{[\mathrm{A}]^a [\mathrm{B}]^b}$$

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

$$\mathrm{pH} = -\log [\mathrm{H}^+] \qquad K_w = 10^{-14}$$
$$\mathrm{pOH} = -\log [\mathrm{OH}^-] \qquad [\mathrm{H}^+][\mathrm{OH}^-] = K_w$$
$$\mathrm{p}K_a = -\log K_a \qquad K_a K_b = K_w$$

$$[\mathrm{H}^+] = C_a$$
$$[\mathrm{OH}^-] = C_b$$

$$[\mathrm{H}^+] = (K_a C_a)^{1/2}$$
$$[\mathrm{OH}^-] = (K_b C_b)^{1/2}$$

$$[\mathrm{H}^+] = K_a (C_a/C_b)$$
$$\mathrm{pH} = \mathrm{p}K_a + \log(C_b/C_a)$$
$$[\mathrm{OH}^-] = K_b (C_b/C_a)$$
$$\mathrm{pOH} = \mathrm{p}K_b + \log(C_a/C_b)$$

$$[\mathrm{H}^+] = (K_{ax} K_{ay})^{1/2}$$
$$\mathrm{pH} = 0.5(\mathrm{p}K_{ax} + \mathrm{p}K_{ay})$$

$$\Delta G = -RT \ln K$$
$$= -nFE$$

$$K_s p = [\mathrm{A}]^x [\mathrm{B}]^y$$

$$E^o_{\mathrm{cell}} = E^o_{\mathrm{cathode}} - E^o_{\mathrm{anode}}$$

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

$$F = 9.649 \times 10^4\ \mathrm{C \cdot mol^{-1}} \qquad q = nF$$
$$\mathrm{A} = 1\ \mathrm{C \cdot s^{-1}} \qquad = It$$

$$\mathrm{rate} = k[\mathrm{A}]^x[\mathrm{B}]^y[\mathrm{C}]^z[\mathrm{D}]^w$$
$$= -\frac{1}{a}\frac{d[\mathrm{A}]}{dt} = -\frac{1}{b}\frac{d[\mathrm{B}]}{dt}$$
$$= \frac{1}{c}\frac{d[\mathrm{C}]}{dt} = \frac{1}{d}\frac{d[\mathrm{D}]}{dt}$$

$$-\frac{1}{a}\frac{d[\mathrm{A}]}{dt} = k$$
$$[\mathrm{A}] = [\mathrm{A}]_0 - akt$$
$$t_{1/2} = \frac{[\mathrm{A}]_0}{2ak}$$

$$-\frac{d[\mathrm{A}]}{a\,dt} = k[\mathrm{A}]$$
$$\ln [\mathrm{A}] = \ln [\mathrm{A}]_0 - akt$$
$$t_{1/2} = \frac{\ln 2}{ak}$$

$$-\frac{d[\mathrm{A}]}{a\,dt} = k[\mathrm{A}]^2$$
$$\frac{1}{[\mathrm{A}]} = \frac{1}{[\mathrm{A}]_0} + akt$$
$$t_{1/2} = \frac{1}{ak[\mathrm{A}]_0}$$

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