E3 2015

(12) $\Delta G^\circ = -RT\ln K$

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

$= -103.8 - [298(-0.029)]$

$\Delta G = -95.158\ KJ$

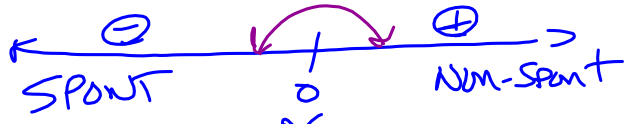
$-95.158\ KJ = -(8.314\times10^{-3}\ KJ)(298)\ln K$

$\ln K = 38.4077$

$K = 4.28938610813\times10^{16}$

Apr 13-7:37 AM

(13)



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

$0 = \Delta H - T\Delta S$

$\Delta H = T\Delta S$

$573 = T(1.64)$

$T = 349.39\ K$

-273

$76.39^\circ C$

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

(−) BIG

$T > 76.39^\circ C$

Apr 13-7:53 AM

(14) $\Delta G = \Delta H - T\Delta S$

$-242 = \Delta H - 298(-0.233)$ kJ

$\Delta H = -311.434$ kJ

$\Delta G = n\Sigma\Delta G_{prod} - n\Sigma\Delta G_{react}$

$= (-33 - (209 + 0))$

$= -242$ kJ

$\Delta S = n\Sigma\Delta S_{prod} - n\Sigma\Delta S_{react}$

$(230) - [20 + 2(131)] = -233$ J

Apr 13-7:56 AM

(25) $^{4}As + {}^{3}ClO_3^- \rightarrow {}^{4}H_3AsO_3 + {}^{3}HClO$

$4(3H_2O + As \rightarrow H_3AsO_3 + 3H^+ + 3e^-)$

$3(4e^- + 5H^+ + ClO_3^- \rightarrow HClO + 2H_2O)$

Apr 13-8:04 AM

(26) $X_{2(s)} + Y^{+2}_{(aq)} \rightarrow X_2^{+2}{}_{(aq)} + Y_{(s)}$ $K = 3.9 \times 10^{-6}$

J → $E^\circ = \frac{RT}{nF} \ln K$ J/C

$E^\circ = \frac{(8.314)(298)}{2(96500)} \ln(3.9 \times 10^{-6})$

$= -0.1598\,V$

$V = \frac{J}{Coul}$

R = 8.314 J

8.314×10^{-3} kJ

F = 96500 J/Mole e-

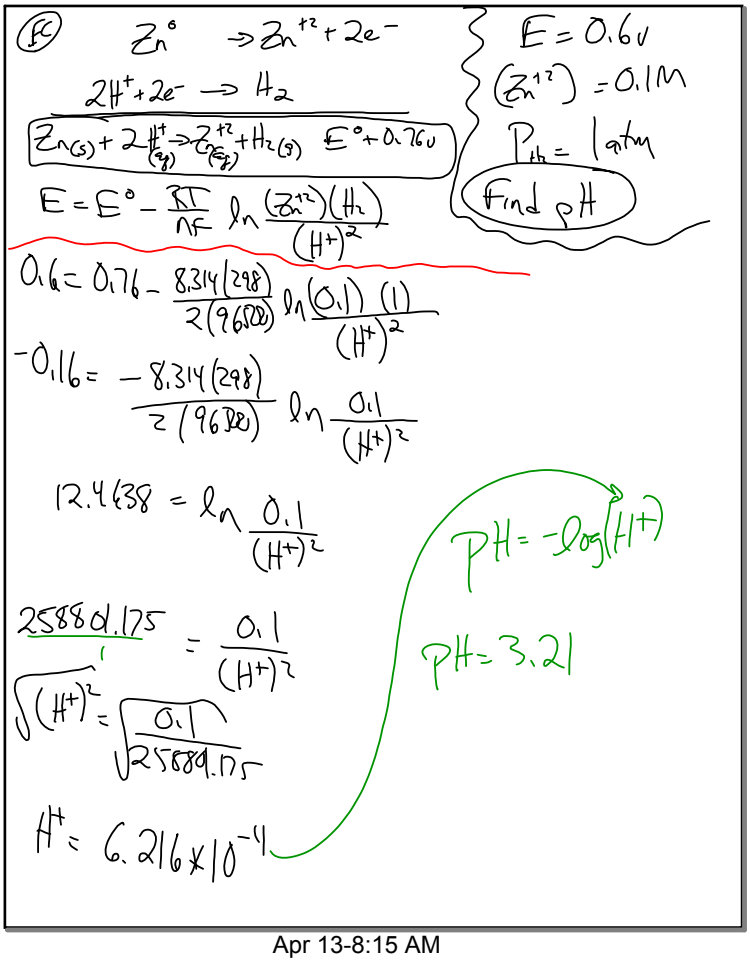
96.5 kJ

Apr 13-8:08 AM

(27) $E = E^\circ - \frac{RT}{nF} \ln Q$ $Q = \frac{[C^{+3}]}{[Ag^{+}]^3}$

$1.5 = E^\circ - \frac{8.314(298)}{3(96500)} \ln \frac{(0.3)}{(0.1)^3}$

Apr 13-8:13 AM


(FC)
$Zn^0 \rightarrow Zn^{+2} + 2e^-$
$2H^+ + 2e^- \rightarrow H_2$
$Zn_{(s)} + 2H^+_{(aq)} \rightarrow Zn^{+2}_{(aq)} + H_{2(g)}$ $E^\circ = +0.76v$
$E = E^\circ - \frac{RT}{nF} \ln \frac{(Zn^{+2})(H_2)}{(H^+)^2}$
$E = 0.6v$
$(Zn^{+2}) = 0.1M$
$P_{atm} = 1 atm$
Find pH
$0.6 = 0.76 - \frac{8.314(298)}{2(96500)} \ln \frac{(0.1)(1)}{(H^+)^2}$
$-0.16 = -\frac{8.314(298)}{2(96500)} \ln \frac{0.1}{(H^+)^2}$
$12.4638 = \ln \frac{0.1}{(H^+)^2}$
$25881.175 = \frac{0.1}{(H^+)^2}$
$\sqrt{(H^+)^2} = \sqrt{\frac{0.1}{25881.175}}$
$H^+ = 6.216 \times 10^{-4}$
$pH = -\log(H^+)$
$pH = 3.21$

Apr 13-8:15 AM