

2) $\text{Sn}(\text{s}) \rightarrow \text{Sn}^{+2}$ (1M) $\text{Ni} \rightarrow \text{Ni}^{+2}$ (?M)

$\text{Sn}^{+2} + 2\text{e}^- \rightarrow \text{Sn}^0 \quad -0.14\text{V}$
 $\text{Ni} \rightarrow \text{Ni}^{+2} + 2\text{e}^- \quad +0.23\text{V}$

$\text{Sn}^{+2} + \text{Ni}(\text{s}) \rightarrow \text{Sn}^0 + \text{Ni}^{+2} \quad E^\circ = +0.09\text{V}$

$E^\circ = \frac{RT}{nF} \ln K$

$0.09 = \frac{(8.314)(298)}{2(96485)} \ln \frac{[\text{Ni}^{+2}]}{1}$

$K = \frac{[\text{Ni}^{+2}]}{[\text{Sn}^{+2}]}$

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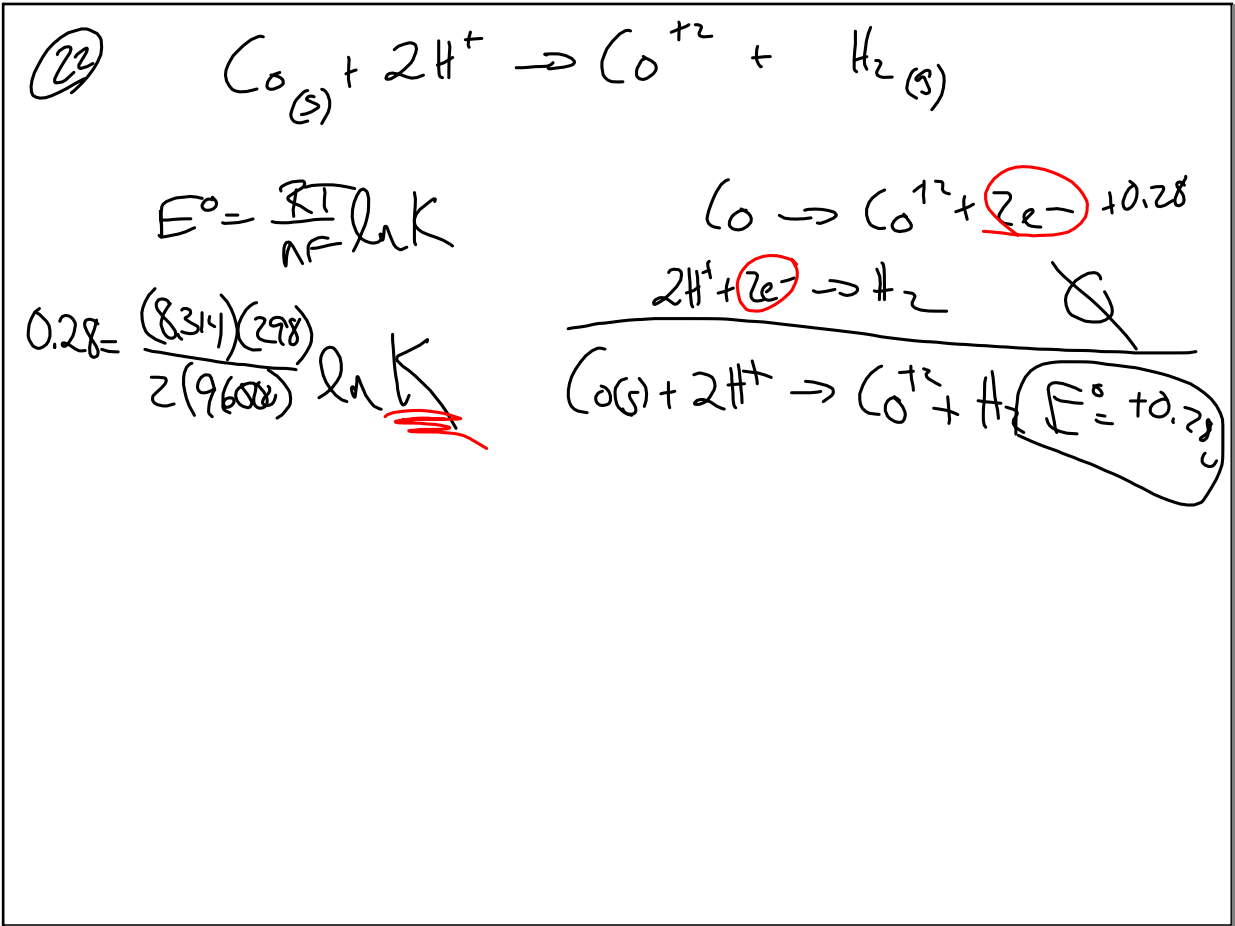
$\text{Cu} + \text{HNO}_3 \rightarrow 3\text{Cu}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$

LEO: $\text{Cu} \rightarrow \text{Cu}^{+2}$ (oxidation)
GER: $\text{HNO}_3 \rightarrow \text{NO}$ (reduction)

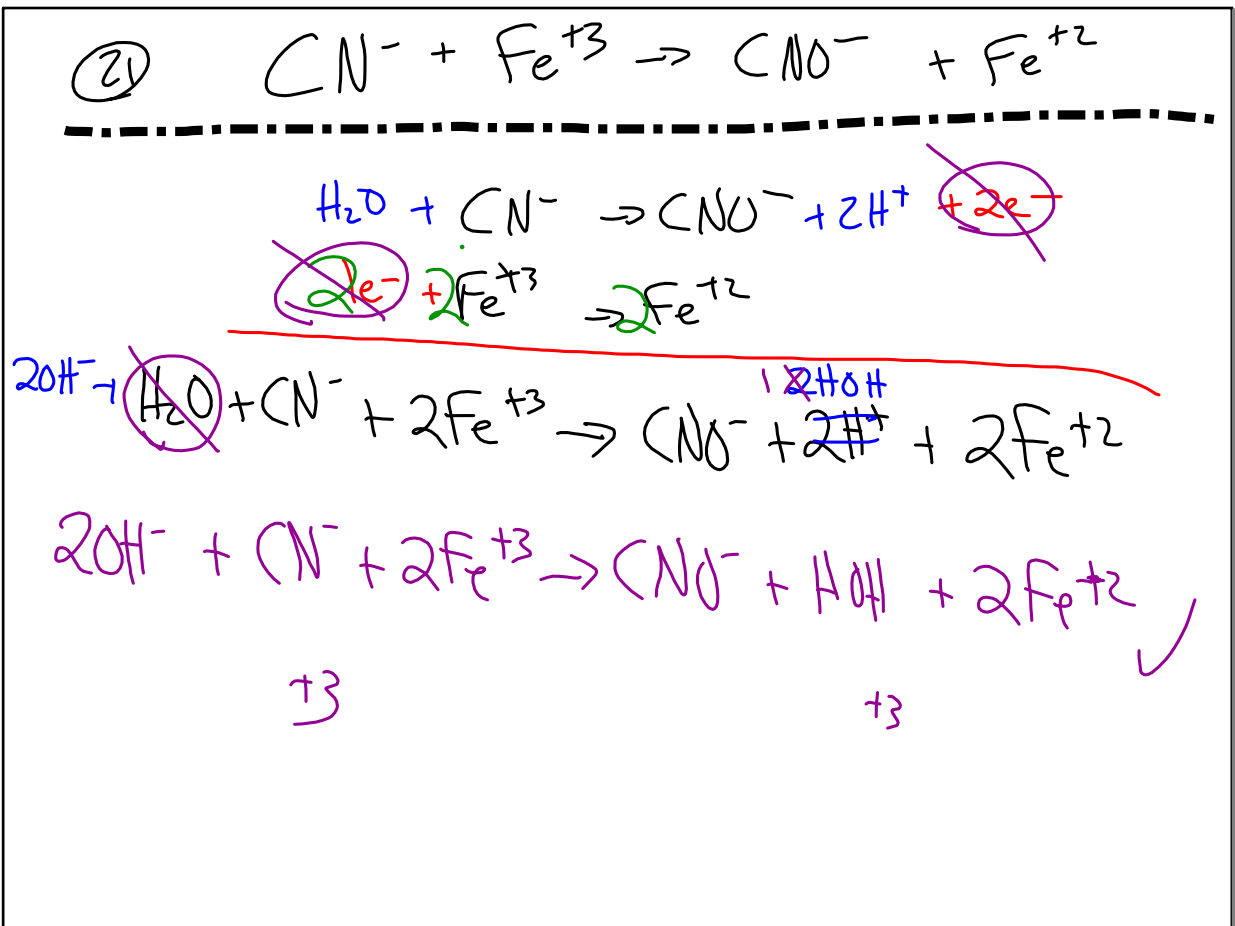
Redox analysis:
 HNO_3 : $+1$ (H), $+5$ (N), -2 (O)
 NO_3^- : $+5$ (N), -2 (O)
 NO : $+2$ (N), -2 (O)
 H_2O : $+1$ (H), -2 (O)

Charge balance:
 $+1(0) - 6 = -6$
 $+5 - 6 = -1$

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23 $N: \xrightarrow{+2} NiSO_4$ ~~5 coul~~ / ~~sec~~ 100g Ni: ? time

~~1 mole Ni:~~
~~Zn²⁺ee-~~

1 sec	96500 coul	Zn ²⁺ ee-	1 mole Ni:	100g Ni:	= 65758.09 sec = 1095.9682 min = 18.266 hr = 0.761 days
5 coul	1 mole Ni:	1 mole Ni:	59g Ni:		

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$$2Al(s) + 3I_2(s) \rightarrow 2Al^{3+} + 6I^{-}$$

$E^{\circ} = +2.20V$

$$E = E^{\circ} - \frac{RT}{nF} \ln \frac{(Al^{3+})^2 (I^{-})^6}{(1)(1)}$$

Find E
 $[Al^{3+}] = 4.5 \times 10^{-3} M$
 $[I^{-}] = 0.15 M$

$$E = 2.20 - \frac{(8.314)(298)}{(6)(96500)} \ln \frac{(4.5 \times 10^{-3})^2 (0.15)^6}{1}$$

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