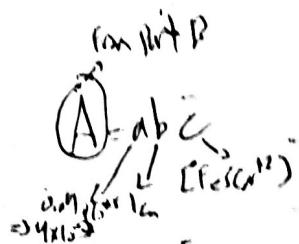CALCULATIONS:

Determination of K_c
Solutions

1. [FeSCN^{2+}], from calibration curve 4.95×10^{5} 7.425×10^{5} 1.11×10^{-4} 1.5×10^{-4} 1.82×10^{-4}

2. [Fe^{3+}]

a. Moles FeSCN^{2+} in solution at equilibrium 4.95×10^{-7} 7.425×10^{-7} 1.11×10^{-6} 1.5×10^{-6} 1.82×10^{-6}

b. Moles Fe^{3+} complexed 4.95×10^{-7} 7.425×10^{-7} 1.11×10^{-6} 1.5×10^{-6} 1.82×10^{-6}

c. Moles Fe^{3+} uncomplexed 9.51×10^{-6} 9.26×10^{-6} 8.89×10^{-6} 8.5×10^{-6} 8.2×10^{-6}

d. [Fe^{3+}] equilibrium, uncomplexed (mole/liter) 9.5×10^{-4} 9.26×10^{-4} 8.84×10^{-4} 8.5×10^{-4} 8.2×10^{-4}

3. [SCN$^-$]

a. Moles SCN$^-$ complexed 4.95×10^{-7} 7.425×10^{-7} 1.11×10^{-6} 1.5×10^{-6} 1.82×10^{-6}

b. Moles SCN$^-$ uncomplexed $(\times10^{-6})$ 1.505×10^{-6} 3.26×10^{-6} 4.89×10^{-6} 6.5×10^{-6} 8.2×10^{-6}

c. [SCN$^-$] at equilibrium, uncomplexed 1.505×10^{-4} 3.26×10^{-4} 4.89×10^{-4} 6.5×10^{-4} 8.2×10^{-4}

4. $K_c = \dfrac{[FeSCN^{2+}]}{[Fe^{3+}][SCN^-]}$ 346.214 245.962 255.34 271.50 270.67

5. Average K_c ___[278]___

Average deviation. Sum all of the absolute differences between each K_c and the average K_c and divide by 5 (the number of measurements).

4) $\dfrac{4.95\times10^{-5}}{9.5\times10^{-4}\cdot1.505\times10^{-4}}$
= 346.214

$\dfrac{7.425\times10^{-5}}{9.26\times10^{-4}\cdot3.26\times10^{-4}}$
= 245.962

$\dfrac{1.11\times10^{-4}}{8.89\times10^{-4}\cdot4.89\times10^{-4}}$
= 255.34

$\dfrac{1.5\times10^{-4}}{8.5\times10^{-4}\cdot6.5\times10^{-4}}$
= 271.50

$\dfrac{1.82\times10^{-4}}{8.2\times10^{-4}\cdot8.2\times10^{-4}}$
= 270.67