Post-Lab Questions

1. Does your calculated average value of Kc indicate that the equilibrium of the reaction is reactant-favored or product-favored?

since Kc = 952.518, it is very product favored as concentrations of products is greater than reactants.

2. A student does an experiment to determine the equilibrium constant for the same reaction that you will studied, but at a higher temperature.

$$Fe^{3+} (aq) + SCN^{-} (aq) \rightleftharpoons FeSCN^{2+} (aq)$$

The student mixes 5.00 mL of 2.00×10^{-3} M $Fe(NO_3)_3$ solution with 5.00 mL of 2.00×10^{-3} M KSCN solution, heats the mixture, and finds that the equilibrium concentration of $FeSCN^{2+}$ in the mixture is 5.00×10^{-5} M. Calculate the equilibrium constant for the reaction under the conditions in this experiment

3. Using your average calculate value of K_c, calculate the concentration of $FeSCN^{2+}$ that will form if 15 mL of 0.00150 *M* $Fe(NO_3)_3$ is mixed with 22 mL of 0.00100 *M* KSCN.

$2.00 \times 10^{-3} - 5.00 \times 10^{-5} = 1.95 \times 10^{-3}$

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$$Kc = \frac{[FeSCN^{2+}]}{[Fe^{3+}][SCN^{-}]}$$

$$Kc = \frac{5.00 \times 10^{-5}}{(1.95 \times 10^{-3})(1.95 \times 10^{-3})} = \frac{5.00 \times 10^{-5}}{3.8025 \times 10^{-6}}$$

$Kc = 13.15$

$$952.518 = \frac{x}{(0.00150)(0.00100)}$$

$x = 0.001428$