Quiz 13.4 – ICE Tables

Name: _____

Question 1

Consider the reaction: $C(s) + H_2O(g) \rightleftharpoons CO(g) + H_2(g)$ $\quad K_C = 5.63 \times 10^{-4}$

Give the equilibrium concentrations of all species if excess C(s) is places in a chamber with $[H_2O(g)] = 0.250\ M$

Question 2

Consider the reaction: $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$ $\quad K_C = 0.0160$

An amount of pure $PCl_5(g)$ is placed in an empty chamber. After equilibrium is reached, the product concentrations are measured as: $\left[PCl_3\right] = [Cl_2] = 0.0134\ M$
What are the initial and equilibrium concentrations of PCl_5?

Question 3

Consider the reaction: $Cl_2(g) + Br_2(g) \rightleftharpoons 2\,BrCl(g)$ $\quad K_C = 7.20$

Find the equilibrium concentrations if a chamber is charged with $0.500\ mol$ $Br_2(g)$ and $0.0500\ mol$ BrCl and the reaction is allowed to reach equilibrium

游子吟 (***Song of a Traveling Son***)

By 孟郊 (Meng Jiao)

慈母手中线，游子身上衣。
临行密密缝，意恐迟迟归。
谁言寸草心，报得三春晖。

Thread in the hands of a loving mother
Turns to clothes on the traveling son.
She adds stitch after tight stitch until he leaves
and worries about his return.
A grass blade is bathed in spring sun;
how can its inch-sized heart return such love?