Quiz 15.1 – Equilibrium Constants

Name: Key

For questions 1–4, consider the reaction: $N_2(g) + 2\,O_2(g) \rightleftharpoons 2\,NO_2(g)$

Question 1

Give the equilibrium expression K_c

$$K_c = \frac{[NO_2]^2}{[N_2][O_2]^2}$$

Problem 2

Give the equilibrium expression K_p

$$K_p = \frac{P_{NO_2}^2}{P_{N_2} \cdot P_{O_2}^2}$$

Problem 3

Give the relation between K_c and K_p for this reaction

$K_p = K_c (RT)^{\Delta n}$ $\quad \Delta n = -1$ $\quad K_p = \frac{K_c}{RT}$

Problem 4

If $K_c = 6.4 \times 10^9$, would you expect to find more reactant or product at equilibrium?

More Product

Problem 5

Give the equilibrium expression K_c for the solvation of $Ca(NO_3)_2(s)$

$Ca(NO_3)_2(s) \rightleftharpoons Ca^{2+}(aq) + 2\,NO_3^-(aq)$ $\quad K_c = [Ca^{2+}][NO_3^-]^2$

Problem 6

Give the equilibrium expression K_c for the reaction of HCl with water

$HCl(aq) + H_2O(l) \rightleftharpoons H_3O^+(aq) + Cl^-(aq)$

$$K_c = \frac{[H_3O^+][Cl^-]}{[HCl]}$$