

Answers to Practice Problems B in page 506

Homework

GENERAL

Additional Practice

- a. Determine the equilibrium concentrations of H_3O^+ and HCO_3^- in a solution of carbonic acid at 25°C in which $[\text{H}_2\text{CO}_3] = 0.027$, $K_{eq} = 4.3 \times 10^{-7}$, and $\text{H}_2\text{CO}_3(aq) + \text{H}_2\text{O}(l) \rightleftharpoons \text{H}_3\text{O}^+(aq) + \text{HCO}_3^-(aq)$ **Ans.** $1.1 \times 10^{-4} \text{ M}$ ($[\text{H}_3\text{O}^+] = [\text{HCO}_3^-]$)
- b. Determine $[\text{H}_2]$ equilibrium at 700 K when $[\text{CH}_3\text{OH}] = 0.25$, $[\text{CO}] = 0.0098$, $K_{eq} = 290$, and $\text{CO}(g) + 2\text{H}_2(g) \rightleftharpoons \text{CH}_3\text{OH}(g)$ **Ans.** $[\text{H}_2] = 0.30$

 Intrapersonal

Answers to Practice Problems B

1. $[\text{NO}]^2 = K_{eq} [\text{N}_2] [\text{O}_2]$; $[\text{NO}]^2 = (1.65 \times 10^{-3})(1.8 \times 10^{-3})^2(4.2 \times 10^{-4})$; $[\text{NO}] = 3.5 \times 10^{-5}$
2. $[\text{SO}_2]^2 = \frac{[\text{SO}_3]^2}{K_{eq}[\text{O}_2]}$
 $= (0.260)^2 / (4.32)(0.045) = 0.59$