

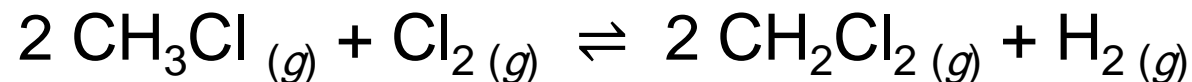
Assessment

Chemistry: Lesson 16



Question 1

Express the equilibrium constant for the following reaction.



A) $K = \frac{[\text{CH}_2\text{Cl}_2] \cdot [\text{H}_2]}{[\text{CH}_3\text{Cl}] \cdot [\text{Cl}_2]}$

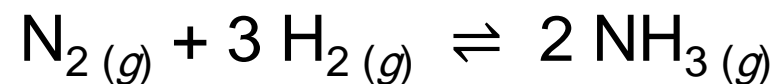
B) $K = \frac{[\text{CH}_2\text{Cl}_2]^2 [\text{H}_2]}{[\text{CH}_3\text{Cl}]^2 [\text{Cl}_2]}$

C) $K = \frac{[\text{CH}_3\text{Cl}]^2 [\text{Cl}_2]}{[\text{CH}_2\text{Cl}_2]^2 [\text{H}_2]}$

D) $K = \frac{[\text{CH}_2\text{Cl}_2]^2 [\text{H}_2]}{[\text{CH}_3\text{Cl}] [\text{Cl}_2]}$

Question 2

Express the equilibrium constant for the following reaction.



A) $K = \frac{[\text{NH}_3]^{1/2}}{[\text{N}_2] \cdot [\text{H}_2]^{1/3}}$

B) $K = \frac{[\text{NH}_3]}{[\text{N}_2] \cdot [\text{H}_2]}$

C) $K = \frac{[\text{NH}_3]^2}{[\text{N}_2] \cdot [\text{H}_2]^3}$

D) $K = \frac{[\text{N}_2] \cdot [\text{H}_2]^3}{[\text{NH}_3]^2}$

Question 3

Which of the following is the correct expression for the equilibrium constant?

A) $K_c = \frac{[\text{Reactants}]}{[\text{Products}]}$

B) $K_c = [\text{Reactants}] \cdot [\text{Products}]$

C) $K_c = \frac{[\text{Products}]}{[\text{Reactants}]}$

D) $K_c = [\text{Reactants}] + [\text{Products}]$

Question 4

If $K_c \ll 1$, the reverse reaction is favored.

A) True

B) False

Question 5

If $K_c \gg 1$, the forward reaction is favored.

A) True

B) False

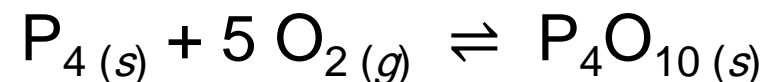
Question 6

A chemical system is considered to have reached dynamic equilibrium when _____.

- A)** the amount of the products equals the amount of the reactants
- B)** all of reactants have been converted to products
- C)** the sum of the concentrations of each of the reactant species is equal to the sum of the
- D)** the rate of the forward reaction is equal to the rate of the reverse reaction.

Question 7

Express the equilibrium constant for the following reaction.



A) $K = \frac{[\text{P}_4] \cdot [\text{O}_2]^5}{[\text{P}_4\text{O}_{10}]}$

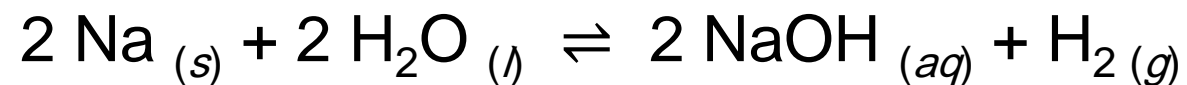
B) $K = \frac{[\text{P}_4\text{O}_{10}]}{[\text{P}_4] \cdot [\text{O}_2]^5}$

C) $K = [\text{O}_2]^{-5}$

D) $K = [\text{O}_2]^5$

Question 8

Express the equilibrium constant for the following reaction.



A) $K = \frac{[\text{NaOH}]^2[\text{H}_2]}{[\text{Na}]^2[\text{H}_2\text{O}]^2}$

B) $K = [\text{H}_2][\text{NaOH}]^{-2}$

C) $K = \frac{[\text{Na}]^2[\text{H}_2\text{O}]^2}{[\text{NaOH}]^2[\text{H}_2]^2}$

D) $K = [\text{H}_2][\text{NaOH}]^2$

Question 9

Determine the value of K_c for the following reaction if the equilibrium concentrations are as follows:

$$[\text{N}_2]_{\text{eq}} = 3.6 \text{ M}$$

$$[\text{O}_2]_{\text{eq}} = 4.1 \text{ M}$$

$$[\text{N}_2\text{O}]_{\text{eq}} = 3.3 \times 10^{-18} \text{ M}$$



A) 2.2×10^{-19}

B) 4.5×10^{18}

C) 2.0×10^{-37}

D) 5.0×10^{36}

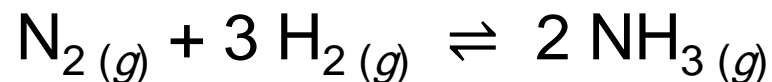
Question 10

Determine the value of K_c for the following reaction if the equilibrium concentrations are as follows:

$$[\text{N}_2]_{\text{eq}} = 1.5 \text{ M}$$

$$[\text{H}_2]_{\text{eq}} = 1.1 \text{ M}$$

$$[\text{NH}_3]_{\text{eq}} = 0.47 \text{ M}$$



A) 3.5

B) 0.28

C) 9.1

D) 0.11