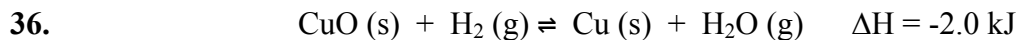


**AP MULTIPLE CHOICE QUESTIONS
CH. 15, SET 1**

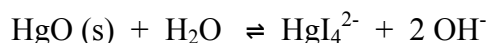
1984



When the substances in the equation above are at equilibrium, at pressure P and temperature T, the equilibrium can be shifted to favor products by

- (A) increasing the pressure by means of a moving piston at constant T.
- (B) increasing the pressure by adding an inert gas such as nitrogen.
- (C) decreasing the temperature.
- (D) allowing some gases to escape at constant P and T.
- (E) adding a catalyst.

76.



Consider the equilibrium above. Which of the following changes will increase the concentration of HgI_4^{2-} ?

- (A) increasing the concentration of OH^-
- (B) adding 6M HNO_3
- (C) increasing the mass of HgO present.
- (D) increasing the temperature.
- (E) adding a catalyst.

1989

29. In which of the following systems would the number of moles of the substances present at equilibrium NOT be shifted by a change in volume of the system at constant temperature?

- (A) $\text{CO (g)} + \text{NO (g)} \rightleftharpoons \text{CO}_2 \text{(g)} + \frac{1}{2}\text{N}_2 \text{(g)}$
- (B) $\text{N}_2 \text{(g)} + 3\text{H}_2 \text{(g)} \rightleftharpoons 2\text{NH}_3 \text{(g)}$
- (C) $\text{N}_2 \text{(g)} + 2\text{O}_2 \text{(g)} \rightleftharpoons 2\text{NO}_2 \text{(g)}$
- (D) $\text{N}_2\text{O}_4 \text{(g)} \rightleftharpoons 2\text{NO}_2 \text{(g)}$
- (E) $\text{NO (g)} + \text{O}_3 \text{(g)} \rightleftharpoons \text{NO}_2 \text{(g)} + \text{O}_2 \text{(g)}$

54. Which of the following is the correct equilibrium expression for the hydrolysis of CO_3^{2-} ?

- (A) $k = \frac{[\text{HCO}_3^-]}{[\text{CO}_3^{2-}][\text{H}_3\text{O}^+]}$
- (B) $k = \frac{[\text{CO}_3^{2-}]}{[\text{CO}_2][\text{OH}^-]^2}$
- (C) $k = \frac{[\text{HCO}_3^-][\text{OH}^-]}{[\text{CO}_3^{2-}]}$
- (D) $k = \frac{[\text{CO}_3^{2-}][\text{H}_3\text{O}^+]}{[\text{HCO}_3^-]}$
- (E) $k = \frac{[\text{CO}_3^{2-}][\text{OH}^-]}{[\text{HCO}_3^-]}$