9. The K_c value for the dissociation of iodine molecules into iodine atoms is 5.00×10^{-4} at TK.

$$I_2(g) \rightleftharpoons 2I(g)$$
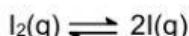
An analysis was carried out on sample of iodine at TK and the following concentration were obtained $[I_2] = 0.02M$ and $[I] = 0.001M$. which of the following is **TRUE**?

A. $Q_c < K_c$, reaction is moving forward

B. $Q_c < K_c$, reaction is moving backward

C. $Q_c > K_c$, reaction is moving backward

D. $Q_c = K_c$, reaction is at equilibrium

10. At $25^{\circ}C$, the decomposition of N_2O_4 has a Kp value of 0.14.

$$N_2O_4(g) \rightleftharpoons 2NO_2(g)$$

If the partial pressure of NO at equilibrium is 0.15 atm, what is the partial pressure of N_2O_4 in the mixture?

A. 0.0032 atm   C. 0.16 atm

B. 0.15 atm   D. 1.07 atm

11. At $25^{\circ}C$, the value of Kp for the reaction

$$2NO_2(g) \rightleftharpoons N_2O_4(g)$$

is 7.13. At equilibrium, the partial pressure of NO_2 in a container is 0.15atm. what is the partial pressure of N_2O_4 in the mixture?

A. 7.13   C. 0.16

B. 0.15   D. 0.17

12. At $44^{\circ}C$, the value of Kc for the equilibrium

$$2HI(g) \rightleftharpoons H_2(g) + I_2(g)$$
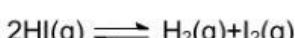
is 50. If at equilibrium, $[HI] = 0.5moldm^{-3}$, what is $[I_2]$?

A. 0.0025   C. 0.0045

B. 3.5355   D. 0.0055

13. For the equilibrium

$$2HI(g) \rightleftharpoons H_2(g) + I_2(g)$$
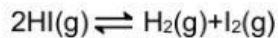
the value of Kc is 50 at $445^{\circ}C$. If 0.75 mol each of H_2 and I_2 gas are placed in a $1.00dm^{-3}$ flask at $445^{\circ}C$, what are the concentrations of HI, H_2 and I_2 after equilibrium is established?

A. 0.7, 0.7, 0.0992

B. 0.8, 0.08, 0.0992

C. 0.6, 0.7, 0.0992

D. 0.7, 0.7, 0.7

14. For the Haber process

$$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$$
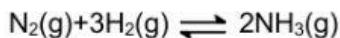
$Kp = 1.45 \times 10^{-5}$ atm at $500^{\circ}C$
In an equilibrium mixture of the three gasses, the partial pressure of H_2 is 0.928 atm and that of N_2 is 0.432 atm. What is the partial pressure of NH_3?

A. 0.432   C. 1.45×10^{-5}

B. 0.928   D. 2.24×10^{-3}

15. Hydrogen iodide decompose according to the reaction

$$2HI(g) \rightleftharpoons H_2(g) + I_2(g)$$
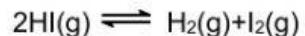
If a certain temperature, 30% of HI has dissociated to achieve equilibrium and the total pressure is 2.0 atm, calculate the equilibrium constant, Kp.

A. 0.15   C. 2.0×10^{-2}

B. 0.3   D. 4.6×10^{-2}