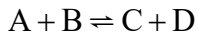


CHEMISTRY

21. (4)

$$[\text{HI}] = \frac{64 \text{ gm}}{128 \times 2 \text{ L}} = 0.25$$

22. (3)



Initial conc. 4 4 0 0

After T time conc. (4-2) (4-2) 2 2

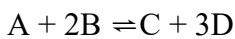
Equilibrium constant =

$$\frac{[\text{C}][\text{D}]}{[\text{A}][\text{B}]} = \frac{2 \times 2}{2 \times 2} = 1$$

23. (3)

Equilibrium constant is independent of original concentration of reactant.

24. (2)

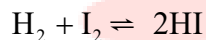


$$K = \frac{[\text{pC}][\text{pD}]^3}{[\text{pA}][\text{pB}]^2}$$

$$= \frac{0.30 \times 0.50 \times 0.50 \times 0.50}{0.20 \times 0.10 \times 0.10} = 18.75$$

25. (3)

26. (1)



| | | | |
|---------------|-----|-----|----|
| Initial conc. | 4.5 | 4.5 | 0 |
| | x | x | 2x |

from question $2x = 3$

$$x = \frac{3}{2} = 1.5$$

So conc. at eqm. $4.5 - 1.5$ of H_2 $= 4.5 - 1.5$ of I_2 and 3 of HI

$$K = \frac{[\text{HI}]^2}{[\text{I}_2][\text{H}_2]} = \frac{3 \times 3}{3 \times 3} = 1.$$

27. (1)

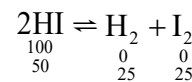
$$K_p = \frac{[\text{P}_{\text{CO}}]^2 [\text{P}_{\text{O}_2}]}{[\text{P}_{\text{CO}_2}]^2} = \frac{[0.4]^2 \times [0.2]}{[0.6]^2} = 0.0888$$

28. (4)

$$K_f = 1.1 \times 10^{-2}; \quad K_b = 1.5 \times 10^{-3}$$

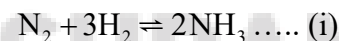
$$K_c = \frac{K_f}{K_b} = \frac{1.1 \times 10^{-2}}{1.5 \times 10^{-3}} = 7.33.$$

29. (1)



$$\frac{[\text{H}_2][\text{I}_2]}{[\text{HI}]^2} = \frac{25 \times 25}{50 \times 50} = 0.25.$$

30. (3)

at $t = 0$ 56 gm 8 gm 0 gm $= 2 \text{ mole } 4 \text{ mole } 0 \text{ mole}$

at equilibrium 2-1 4-3 34 gm

 $= 1 \text{ mole } = 1 \text{ mole } = 2 \text{ mole}$

According to eq. (i) 2 mole of ammonia are present and to produce 2 mole of NH_3 , we need 1 mole of N_2 and 3 mole of H_2 hence $2-1=1$ mole of N_2 and $4-3=1$ mole of H_2 are present at equilibrium in vessel.