



Arjuna NEET (2024)

Chemical Equilibrium

DPP-05

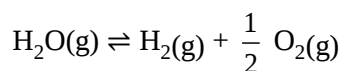
- In lime kiln, reversible reaction
 $\text{CaCO}_{3(s)} \rightleftharpoons \text{CaO}_{(s)} + \text{CO}_{2(g)}$
 Proceeds to completion because:
 (1) High temperature
 (2) CO_2 escapes
 (3) CaO removed
 (4) Low temperature
- An unknown compound A dissociates at 500°C to give products as follows:

$$\text{A}_{(g)} \rightleftharpoons \text{B}_{(g)} + \text{C}_{(g)} + \text{D}_{(g)}$$
 Vapour density of the equilibrium mixture is 50 when it dissociates to the extent to 10%. What will be the molecular weight of compound A:
 (1) 120 (2) 130
 (3) 134 (4) 140
- At 250°C and 1 atmospheric pressure, the vapour density of PCl_5 is 57.9. What will be the dissociation of PCl_5 ?
 (1) 1.00 (2) 0.90
 (3) 0.80 (4) 0.65
- N_2O_4 dissociates as $\text{N}_2\text{O}_{4(g)} \rightleftharpoons 2\text{NO}_{2(g)}$ at 273 K and 2 atm pressure. The equilibrium mixture has a density of 41. What will be the degree of dissociation:
 (1) 14.2% (2) 16.2%
 (3) 12.2% (4) None
- The vapour density of undecomposed N_2O_4 is 46. When heated, vapour density decreases to 24.5 due to its dissociation to NO_2 . The percent dissociation of N_2O_4 at the final temperature is:
 (1) 87 (2) 60
 (3) 40 (4) 70
- The active mass of 64 gm of HI in a two litre flask would be:
 (1) 2 (2) 1
 (3) 5 (4) 0.25
- One mole of $\text{N}_2\text{O}_4(g)$ at 100 K is kept in a closed container at 1.0 atm pressure. It is heated to 400 K, where 30% by mass of $\text{N}_2\text{O}_4(g)$ decomposes of $\text{NO}_2(g)$. The resultant pressure will be:
 (1) 4.2 (2) 5.2
 (3) 3.2 (4) 6.2
- At the equilibrium of the reaction,

$$\text{N}_2\text{O}_4(g) \rightleftharpoons 2\text{NO}_2(g),$$
 the observed molecular weight of N_2O_4 is 80 g mol^{-1} at 350 K. The percentage of dissociation of $\text{N}_2\text{O}_4(g)$ at 350 K is:
 (1) 10% (2) 15%
 (3) 20% (4) 18%
- The equilibrium constant for a reaction
 $\text{N}_{2(g)} + \text{O}_{2(g)} \rightleftharpoons 2\text{NO}_{(g)}$ is 4×10^{-4} at 2000 K. In the presence of catalyst, the equilibrium is attained 10 times faster. The equilibrium constant in the presence of catalyst, at 2000 K is:
 (1) 40×10^{-4}
 (2) 4×10^{-4}
 (3) 4×10^{-2}
 (4) Difficult to compute without more data
- At a certain temp. $2\text{HI} \rightleftharpoons \text{H}_2 + \text{I}_2$ Only 50% HI is dissociated at equilibrium. The equilibrium constant is:
 (1) 0.25 (2) 1.0
 (3) 3.0 (4) 0.50
- The reaction between N_2 and H_2 to form ammonia has $K_c = 6 \times 10^{-2}$ at the temperature 500°C . The numerical value of K_p for this reaction is:
 (1) 1.5×10^{-5}
 (2) 1.5×10^5
 (3) 1.5×10^{-6}
 (4) 1.5×10^6



12. The equilibrium constant (K_p) for the decomposition of gaseous H_2O



is related to degree of dissociation (α) at a total pressure p , given by:

$$(1) \quad K_p = \frac{\alpha^3 p^{1/2}}{(1+\alpha)(2+\alpha)^{1/2}}$$

$$(2) \quad K_p = \frac{\alpha^3 p^{3/2}}{(1-\alpha)(2+\alpha)^{1/2}}$$

$$(3) \quad K_p = \frac{\alpha^{3/2} p^2}{(1-\alpha)(2+\alpha)^{1/2}}$$

$$(4) \quad K_p = \frac{\alpha^{3/2} p^{1/2}}{(1-\alpha)(2+\alpha)^{1/2}}$$

13. If we take 1 mole $N_2O_{4(g)}$ in the reaction $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$, α is the part of N_2O_4 which dissociates then the total number of moles at equilibrium will be:

- (1) 3 (2) 1
(3) $(1-\alpha)^2$ (4) $(1+\alpha)$

14. The effect of temperature on equilibrium constant is expressed as ($T_2 > T_1$)

$$\log \frac{K_2}{K_1} = \frac{-\Delta H}{2.303R} \left[\frac{1}{T_2} - \frac{1}{T_1} \right]$$

For endothermic reaction false statement is:

- (1) $\left[\frac{1}{T_2} - \frac{1}{T_1} \right] = \text{Positive}$
(2) $\Delta H = \text{positive}$
(3) $\log K_2 > \log K_1$
(4) $K_2 > K_1$



Note: Kindly find the Video Solution of DPPs Questions in the DPPs Section.

Answer Key

1. (2)
2. (1)
3. (3)
4. (3)
5. (1)
6. (4)
7. (2)

8. (2)
9. (2)
10. (1)
11. (1)
12. (4)
13. (4)
14. (1)



PW Web/App - <https://smart.link/7wwosivoicgd4>

Library- <https://smart.link/sdfez8ejd80if>