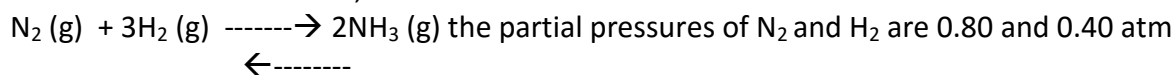


20. For the reaction at 127°C ,



respectively at equilibrium. The total pressure of the system is 2.80 atm. Calculate K_p and K_c for the reaction. (Ans; 50, 53.8×10^3)

21. 13.8 g of N_2O_4 was placed in 1L reaction vessel at 400 K and allowed to attain equilibrium. $\text{N}_2\text{O}_4 (\text{g}) \rightleftharpoons 2\text{NO}_2 (\text{g})$. The total pressure at equilibrium was found to

be 9.15 bar. Calculate K_c , K_p and partial pressure at equilibrium. (Ans, $K_c = 2.6$, $K_p = 85.87$)

22. 1.5 moles of $\text{PCl}_5(\text{g})$ are heated in constant temperature in a closed vessel of 4L capacity. At the equilibrium PCl_5 is found to be 35% dissociated into PCl_3 and Cl_2 . Calculate the equilibrium constant (Ans, $K_c = 0.071$)

23. The pH of a solution of lemon juice is 2.32 at 298 K. Calculate the $[\text{H}_3\text{O}^+]$ and $[\text{OH}^-]$
 Ans = 4.8×10^{-3} , 2.08×10^{-12}

24. Calculate the $[\text{H}_3\text{O}^+]$ and $[\text{OH}^-]$ concentration in 1) 0.01M HCl 2) 0.005M NaOH solution at 298 K
 Ans 1) $[\text{H}_3\text{O}^+] = 1 \times 10^{-2} \text{ M}$, Ans 2) $[\text{H}_3\text{O}^+] = 2 \times 10^{-2} \text{ M}$

25. Calculate the pH of a solution containing 2.0 g of NaOH per litre of the solution. (Ans = 12.7)

26. How many grams of NaOH must be dissolved in 1L of a solution to give its pH value of 10.6 at 25°C ?

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