

CHEMBUDDY CHAPTER 6
6.2 EQUILIBRIUM CONSTANT



CHOOSE THE CORRECT ANSWER

NO	QUESTION	NO	QUESTION
1	K_p for the reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g}) + \text{heat}$ at 400°C is 1.64×10^{-4}. Calculate K_c. A. 0.30 C. 0.50 B. 0.40 D. 0.60	2	One mole of SO₃ was placed in a one litre reaction flask at a given temperature. $2\text{SO}_3(\text{g}) \rightleftharpoons 2\text{SO}_2(\text{g}) + \text{O}_2(\text{g})$ When the reaction equilibrium was established in the reaction, the vessel was found to contain 0.6 mole of SO₂. The value of equilibrium constant is A. 0.360 C. 0.450 B. 0.675 D. 0.540
3	The value of K_c at 700°C for the equilibrium $\text{SO}_2(\text{g}) + \text{NO}_2(\text{g}) \rightleftharpoons \text{SO}_3(\text{g}) + \text{NO}(\text{g})$ is 9.01. Calculate the value of K_p at the same temperature. A. 10.0 C. 1.09 B. 0.19 D. 9.01	4	Calculate the value of K_p for the system $\text{CaCO}_3(\text{s}) \rightleftharpoons \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$ At 525°C, with the equilibrium pressure of CO₂ at 0.22atm. A. 3.36 C. 0.08 B. 0.22 D. 0.79
5	At a certain temperature, the equilibrium constant, K_c for the reaction $2\text{XY}(\text{g}) \rightleftharpoons \text{X}_2(\text{g}) + \text{Y}_2(\text{g})$ is 25. What is the equilibrium constant, K_c for the reaction below? $\frac{1}{2} \text{X}_2(\text{g}) + \frac{1}{2} \text{Y}_2(\text{g}) \rightleftharpoons \text{XY}(\text{g})$ A. 5 C. 12.5 B. 1/25 D. 1/5	6	Consider the following reaction at 400K. $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$ At equilibrium, the following concentration were obtained: [PCl₅]=0.042M, [PCl₃]=1.25M, and [Cl₂]=0.4M What is the value of K_p for the reaction? A. 0.084 C. 11.90 B. 0.363 D. 390.6



7	At 25°C, the decomposition of N_2O_4 has a K_p value of 0.14. $\text{N}_2\text{O}_4(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$ 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	8	At 25°C, the value of K_p for the reaction $2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}_4(\text{g})$ is 7.13. At equilibrium, the partial pressure of NO_2 in a container is 0.15 atm. what is the partial pressure of N_2O_4 in the mixture? A. 7.13 C. 0.16 B. 0.15 D. 0.17
9	For the Haber process $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ $K_p = 1.45 \times 10^{-5}$ atm at 500°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}	10	A mixture of gases is allowed to reach equilibrium at 700°C in a 12.0L flask. At equilibrium, the mixture contains 0.208M SO_2, 1.12×10^{-6} M O_2 and 0.725 M SO_3. $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$ What is equilibrium constant, K_c? A. 9.22×10^{-8} C. 1.08×10^7 B. 3.11×10^6 D. 4.56×10^8
11	The value of K_c for the reaction; $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$ is 50.2 at 450°C. If at the same temperature, $[\text{H}_2] = [\text{I}_2] = [\text{HI}] = 1.75 \times 10^{-3}$ M, which of the following statement is TRUE? A. The system is at equilibrium. B. HI concentration increases when the system re-establishes equilibrium. C. Concentration H_2 and I_2 increase as the system re-establishes equilibrium. D. Concentration HI and I_2 increase as the system re-establishes equilibrium.	12	Consider the following reaction $2\text{NaHCO}_3(\text{s}) \rightleftharpoons \text{Na}_2\text{CO}_3(\text{s}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{g})$ $K_p = 0.23$ A sample of NaHCO_3 is placed in an evacuated flask and is allowed to achieve equilibrium at 373K. What is the total gas pressure at equilibrium? A. 0.12 atm C. 0.48 atm B. 0.24 atm D. 0.96 atm