CHEMBUDDY CHAPTER 6
6.2 EQUILIBRIUM CONSTANT



CHOOSE THE CORRECT ANSWER

NO	QUESTION	NO	QUESTION
1	Kp for the reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ + heat at 400°C is 1.64×10^{-4}. Calculate Kc. A. 0.30 C. 0.50 B. 0.40 D. 0.60	2	One mole of SO_3 was placed in a one litre reaction flask at a given temperature. $2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$ When the reaction equilibrium was established in the reaction, the vessel was found to contain 0.6 mole of SO_2. The value of equilibrium constant is A. 0.360 C. 0.450 B. 0.675 D. 0.540
3	The value of Kc at 700°C for the equilibrium $SO_2(g)+NO_2(g) \rightleftharpoons SO_3(g)+NO(g)$ is 9.01. Calculate the value of Kp at the same temperature. A. 10.0 C. 1.09 B. 0.19 D. 9.01	4	Calculate the value of Kp for the system $CaCO_3(s) \rightleftharpoons CaO(s)+CO_2(g)$ At 525°C, with the equilibrium pressure of CO_2 at 0.22atm. A. 3.36 C. 0.08 B. 0.22 D. 0.79
5	At a certain temperature, the equilibrium constant, Kc for the reaction $2XY(g) \rightleftharpoons X_2(g)+Y_2(g)$ is 25. What is the equilibrium constant, Kc for the reaction below? $\frac{1}{2} X_2(g)+1/2Y_2(g) \rightleftharpoons XY(g)$ A. 5 C. 12.5 B. 1/25 D. 1/5	6	Consider the following reaction at 400K. $PCl_5(g) \rightleftharpoons PCl_3(g)+Cl_2(g)$ At equilibrium, the following concentration were obtained: $[PCl_5]=0.042M$, $[PCl_3]=1.25M$, and $[Cl_2]=0.4M$ What is the value of Kp for the reaction? A. 0.084 C. 11.90 B. 0.363 D. 390.6

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7	. At 25°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	8	At 25°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
9	For the Haber process $N_2(g)+3H_2(g) \rightleftharpoons 2NH_3(g)$ $Kp=1.45x10^{-5}$ 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. $1.45x10^{-5}$ B. 0.928 D. $2.24x10^{-3}$	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, $1.12x10^{-6}$ M O_2 and 0.725 M SO_3. $2SO_2(g)+O_2(g) \rightleftharpoons 2SO_3(g)$ What is equilibrium constant, Kc? A. $9.22x10^{-8}$ C. $1.08x10^{7}$ B. $3.11x10^{6}$ D. $4.56x10^{8}$
11	The value of Kc for the reaction; $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ is 50.2 at 450°C. If at the same temperature, $[H_2] = [I_2] = [HI] = 1.75X10^{-3}$ 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 $2NaHCO_3(s) \rightleftharpoons Na_2CO_3(s) + CO_2(g) + H_2O(g)$ Kp = 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

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