

CHEMBUDDY CHAPTER 6
6.3 LE CHATELIER'S PRINCIPLE



CHOOSE THE CORRECT ANSWER

NO	QUESTION	NO	QUESTION
1	Some inert gas is added at constant volume to the following reaction at equilibrium. $\text{NH}_4\text{HS(s)} \rightleftharpoons \text{NH}_3\text{(g)} + \text{H}_2\text{S(g)}$ Predict the effect of adding inert gas: A. The equilibrium position shift in the forward direction B. The equilibrium position shift in the backward direction C. The equilibrium remains unaffected D. The value of Kp is increased	2	Consider this gas phase equilibrium system $\text{PCl}_5\text{(g)} \rightleftharpoons \text{PCl}_3\text{(g)} + \text{Cl}_2\text{(g)}$ $\Delta H^\circ_{\text{rxn}} = +87.8 \text{ kJ/mol}$ Which of the following statements is FALSE? A. Increasing the system volume shifts the equilibrium to the right. B. Increasing the temperature shifts the equilibrium to the right. C. A catalyst speeds up the approach to equilibrium and shifts the position of equilibrium to the right. D. Increasing the temperature causes the equilibrium constant to increase
3	For the equilibrium system: $\text{N}_2\text{O}_4\text{(g)} + \text{heat} \rightleftharpoons 2\text{NO}_2\text{(g)}$ Which of the following factors would cause the value of the equilibrium constant to decrease? A. Decreasing the temperature. B. Removing some NO₂. C. Adding a catalyst. D. Adding some He gas at constant volume.	4	For the reaction $\text{N}_2\text{(g)} + 3\text{H}_2\text{(g)} \rightleftharpoons 2\text{NH}_3\text{(g)} + \text{heat}$ What conditions of pressure and temperature would be optimum for the synthesis? A. Low T and low P B. Low T and high P C. High T and low P D. High T and high P
5	Which of the following stresses would lead the exothermic reaction below to shift to the right? $\text{A(g)} + \text{B(g)} \rightleftharpoons 3\text{C(g)} + \text{D(aq)}$ A. Increasing [A] B. Increasing [C] C. Decreasing the volume D. Increasing the temperature	6	Which of the following does not affect the equilibrium of a reaction? A. Adding heat B. Increasing the concentration of reactants C. Removing heat D. Adding a catalyst



7	Consider the following reaction system, which has a K_{eq} of 1.35×10^4, taking place in a closed vessel at constant temperature. $AX_3(g) + X_2(g) \rightleftharpoons AX_5(g)$ Which of the following is NOT true about this system at equilibrium? A. Increasing the volume will produce more AX_3. B. AX_5 is the main compound present. C. The rate of formation of AX_5 equals the rate of formation of AX_3 and X_2. D. Increasing the pressure will produce more AX_5.	8	Ammonia gas form according to this equation; $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ Experimental data shows that the reaction shifts to the left at very cold temperatures. Using this information, what type of reaction occur? A. Exothermic B. Maxwell Boltzmann-like C. Endergonic D. Endothermic
9	Consider the following reaction: $N_2O_4(g) \rightleftharpoons 2NO_2(g)$ Which of the following changes would be expected to drive the reaction to the left? A. An increase in pressure. B. A decrease in pressure. C. Addition of water to the reaction mixture. D. Reducing the amount of NO_2 in the reaction vessel.	10	In the reaction: $2NO(g) + Cl_2(g) \rightleftharpoons 2NOCl(g)$ If the pressure exerted by the equilibrium mixture of NO, Cl_2, $NOCl$ gases is reduced at constant temperature, the system will re-establish equilibrium via A. an addition of moles of Cl_2. B. an increase of the $NOCl$ concentration. C. an addition of moles of $NOCl$. D. an increase of equilibrium constant K_c.