

CHEMBUDDY CHAPTER 6
6.3 LE CHATELIER'S PRINCIPLE



CHOOSE THE CORRECT ANSWER

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



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