Chapter 12 − Problems 26, 28, 50, 52

Michael Brodskiy

Instructor: Mr. Morgan

February 16, 2020

26.

	SO_3	SO_2	O_2
I	$.541[\text{ATM}]$	$0[\text{ATM}]$	$0[\text{ATM}]$
C	$-.432[\text{ATM}]$	$.432[\text{ATM}]$	$.216[\text{ATM}]$
E	$.109[\text{ATM}]$	$.432[\text{ATM}$	$.216[\text{ATM}]$

$$\begin{aligned} k &= \frac{[.216] \cdot [.432]^2}{[.109]^2} \\ &= 3.39 \end{aligned} \tag{1}$$

28. (a)

$$\begin{aligned} Q &= \frac{.33 \cdot .65}{.026} \\ &= 8.25 \\ Q &\neq k \end{aligned} \tag{2}$$

$\therefore$ It is not at equilibrium

(b) Because $Q < k$, more products need to be formed

50. (a)
   i. If $O_2(g)$ is removed, then there will be more reactants, and, therefore, more ammonia
   ii. If $N_2(g)$ is added, then there will be more reactants, and, therefore, more ammonia
   iii. If water is added, there is no effect on ammonia
   iv. Because there are more gas molecules on the left, and the volume is increased, then ammonia will increase
   v. Because the reaction is exothermic, and the temperature is increased, there will be more ammonia

   (b) k is decreased in 5, but left the same in all others

52. (a) The equilibrium will shift to the right because it has more gas molecules

   (b) The equilibrium will shift to the right because there are more gas molecules

   (c) The equilibrium will shift to the right because there are more gas molecules