Le Chatelier's Principle Problems

1. Explain how the given action affects the equilibrium for the following reaction.

$$SO_2(g) + NO_2(g) \rightleftharpoons SO_3(g) + NO(g) + heat$$

Action	Direction of shift	Effect on [SO ₂]	Effect on [NO ₂]	Effect on [SO ₃]	Effect on [NO]		
Remove NO ₂							
Add NO ₂							
Increase Pressure							
Lower Temperature							
Add SO ₃							
Given the reaction at equilibrium : $N_{-}(g) + O_{-}(g) \Rightarrow 2 \text{ NO}(g)$							

	Add SO ₃							
2.	Given the reacti	ion at equilibriu	m: N ₂ (g) +	O ₂ (g) ⇌ 2 NO (§	3)			
If the temperature remains constant and the pressure increases, the number of moles of $NO(g)$ will								
	(A) decrease		(B) increas	se	(C) rei	(C) remain the same		
	Ans:							
3.	Given the reacti	ion at equilibriu	$m: N_2(g) +$	O ₂ (g) + energy :	⇒ 2 NO(g)			
	Which change will result in a decrease in the amount of NO(g) formed?							
	(A) decreasing the pressure			(B) decreas	(B) decreasing the concentration of N_2 (g)			
	(C) increasing tl	he concentratio	n of O_2 (g)	(D) increasing the temperature				
	Ans:							
	What would ha _l the reaction be		ition of equilibr	ium when the f	ollowing change	es are made to		
		2	$2 \text{ Hg}_3\text{O (g)} \rightleftharpoons 6 \text{ H}$	$\log (g) + O_2(g)$	$\Delta H = -2$	25kJ/mol		
	(a) Hg₃O is adde	ed to the system	n _					
	(b) The volume	of the system d	ecreases _					
	(c) Temperature	e is increased						

ChemistryLearner.com

Le Chatelier's Principle Problems

1. Explain how the given action affects the equilibrium for the following reaction.

$$SO_2(g) + NO_2(g) \rightleftharpoons SO_3(g) + NO(g) + heat$$

Action	Direction of shift	Effect on [SO ₂]	Effect on [NO ₂]	Effect on [SO ₃]	Effect on [NO]
Remove NO ₂	←	↑	↑	•	\
Add NO ₂				↑	↑
Increase Pressure	No Change	No Change	No Change	No Change	No Change
Lower Temperature		\	\	1	1
Add SO ₃	←	↑	↑	1	\

2.	Given	the	reaction	at ec	nuilibriu	m:	N_2 (g
∠.	OIV CII	CIIC	I Caction	at ct	₁ umbina	111.	1 112 1	0

 $I_2(g) + O_2(g) \rightleftharpoons 2 \text{ NO } (g)$

If the temperature remains constant and the pressure increases, the number of moles of NO(g) will

(C) remain the same

Ans: ____C__

3. Given the reaction at equilibrium : $N_2(g) + O_2(g) + energy \rightleftharpoons 2 NO(g)$

$$N_2(g) + O_2(g) + energy \rightleftharpoons 2 NO(g)$$

Which change will result in a decrease in the amount of NO(g) formed?

(A) decreasing the pressure

- (B) decreasing the concentration of N_2 (g)
- (C) increasing the concentration of O_2 (g)
- (D) increasing the temperature

Ans: B

4. What would happen to the position of equilibrium when the following changes are made to the reaction below?

$$2 \text{ Hg}_3\text{O (g)} \rightleftharpoons 6 \text{ Hg (g)} + \text{O}_2 \text{ (g)}$$

$$\Delta H = -25kJ/mol$$

(a) Hg₃O is added to the system

Right

(b) The volume of the system decreases

Left

(c) Temperature is increased

Left

ChemistryLearner.com