

Equilibrium Practice Quiz

Le Chatelier's Principle

1) Consider the following reaction:



Which of the following will not shift the equilibrium to the right?

- A) Adding more O_2
- B) Adding a catalyst
- C) Increasing the pressure
- D) Lowering the temperature

2) Consider the following equilibrium system:



Which one of the following changes would cause the above system to shift left?

- A) Add more CaO
- B) Remove CaCO_3
- C) Decrease volume
- D) Increase surface area of CaO

3) Consider the following equilibrium:



When the temperature is decreased, the equilibrium shifts

- A) Left and $[\text{SO}_2\text{Cl}_2]$ increases
- B) Left and $[\text{SO}_2\text{Cl}_2]$ decreases
- C) Right and $[\text{SO}_2\text{Cl}_2]$ increases
- D) Right and $[\text{SO}_2\text{Cl}_2]$ increases

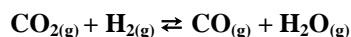
4) Consider the following equilibrium:



The volume of the system is decreased at a constant temperature. A new state of equilibrium is established by a shift of the original equilibrium to the

- A) Left and $[\text{SO}_3]$ increases
- B) Right and $[\text{SO}_3]$ decreases
- C) Left and $[\text{SO}_3]$ remains unchanged
- D) Right and $[\text{SO}_3]$ remains unchanged

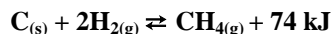
5) Consider the following equilibrium system:



Which of the following, when added to the system above, would result in a net decrease in $[\text{H}_2\text{O}]$?

- A) CO_2
- B) H_2
- C) CO
- D) H_2

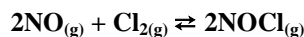
6) Consider the following equilibrium:



When a small amount of solid C is added to the system

- A) $[\text{H}_2]$ decreases
- B) $[\text{CH}_4]$ increases
- C) The temperature increases
- D) All concentrations remain constant

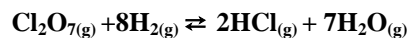
7) Consider the following equilibrium:



At constant temperature and volume, Cl_2 is added to the above equilibrium system. As equilibrium re-establishes,

- A) $[\text{NOCl}]$ will decrease
- B) The temperature increases
- C) $[\text{NO}]$ will increase
- D) $[\text{NOCl}]$ will increase

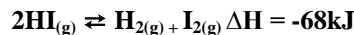
8) Consider the following equilibrium:



Which of the following would increase the number of moles of HCl ?

- A) Increase $[\text{H}_2\text{O}]$
- B) Increase $[\text{Cl}_2\text{O}_7]$
- C) Increase total pressure
- D) Increase volume of the system

9) Consider the following equilibrium:



Which of the following would cause the equilibrium to shift right?

- A) Increasing the volume
- B) Decreasing the volume
- C) Increasing the temperature
- D) Decreasing the temperature

10) A 1.00 L flask contains a gaseous equilibrium system.

The addition of reactants to this flask results in a

- A) Shift to the left and decrease in the of products
- B) Shift to the left and increase in the of products
- C) Shift to the right and decrease in the of products
- D) Shift to the right and increase in the of products

11) An equilibrium system shifts left when the

- A) Rate of the forward reaction is equal to the rate of the reverse reaction
- B) Rate of the forward reaction is less than the rate of the reverse reaction
- C) Rate of the forward reaction is greater than the rate of the reverse reaction
- A) Rate of the forward reaction and the rate of the reverse reaction are constant

12) Consider the following equilibrium:



There will be no shift in the equilibrium when

- A) More O_2 is added
- B) Catalyst is added
- C) The volume is increased
- D) The temperature is increased

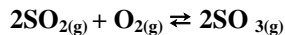
13) Consider the following equilibrium:



The equilibrium shifts right when

- A) NO_2 is added
- B) N_2O_4 is removed
- C) The temperature is decreased
- D) The volume of the system is increased

14) Consider the following equilibrium:

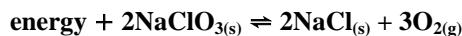


Which of the following will shift the equilibrium to the right?

I. Adding more O_2
II. Adding more SO_3
III. Adding a catalyst

- A) I only
- B) III only
- C) I and II only
- D) II and III only

15) Consider the following equilibrium:



Which of the following will cause a shift to the left?

- A) adding more O_2
- B) adding more NaCl
- C) removing some NaClO_3
- D) increasing the temperature

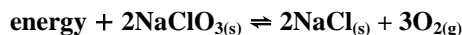
16) Consider the following equilibrium:



Which of the factors below would decrease the concentration of CH_3OH at equilibrium?

- A) an addition of CO
- B) an increase in H_2
- C) a decrease in the temperature
- D) an increase in the temperature

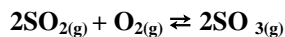
17) Consider the following equilibrium:



Which of the following will cause a shift to the right?

- A) adding more O_2
- B) adding more NaCl
- C) removing some $\text{NaCl}_{(s)}$
- D) increasing the temperature

18) Consider the following equilibrium:



Which of the following will shift the equilibrium to the left?

I. Removing O_2
II. Adding more SO_3
III. Adding a catalyst

- A) I only
- B) III only
- C) I and II only
- D) II and III only

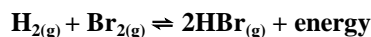
19) Consider the following equilibrium:



How are N_2O_4 and NO_2 affected by the addition of He into the container at constant volume.

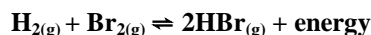
	<u>N_2O_4</u>	<u>NO_2</u>
A)	no change	no change
B)	no change	increases
C)	increases	decreases
D)	decreases	increases

20) Which of the following stresses will cause a shift to the reactants?



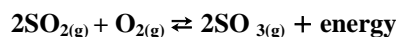
- A) increase $[\text{Br}_2]$
- B) increase $[\text{H}_2]$
- C) decrease temperature
- D) increase temperature

21) Which of the following stresses will cause a shift to the products?



- A) decrease $[\text{Br}_2]$
- B) decrease $[\text{H}_2]$
- C) decrease temperature
- D) increase temperature

22) Which of the following two stresses will each cause the system to shift to the left?



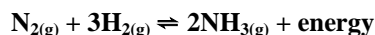
- A) decrease temperature and decrease $[\text{O}_2]$
- B) increase temperature and increase $[\text{SO}_3]$
- C) increase temperature and decrease $[\text{SO}_3]$
- D) decrease temperature and increase $[\text{SO}_2]$

23) $\text{SrCO}_{3(s)} + 215 \text{ kJ} \rightleftharpoons \text{SrO}_{(s)} + \text{CO}_{2(g)}$

Which of the following conditions would produce the greatest yield of $\text{SrO}_{(s)}$?

	Temperature	Pressure
A)	low	low
B)	low	high
C)	high	low
D)	high	high

24) The Haber Process is used to produce ammonia commercially according to the following equilibrium:



Which of the following conditions will produce the highest yield of ammonia?

- A) increase temperature and increase pressure
- B) increase temperature and decrease pressure
- C) decrease temperature and increase pressure
- D) decrease temperature and decrease pressure

25) Consider the following reaction:



If the volume is increased what happens to equilibrium?

- A) shifts to the right
- B) shifts to the left
- C) no shift
- D) shifts in the exothermic direction