CHEMISTRY

BOOKS - NEET PREVIOUS YEAR

(YEARWISE + CHAPTERWISE)

CHEMICAL EQUILIBRIUM

Others

1. The equilibrium constants of the following are

A. $K_1K_3^3/K_2$

B. $K_2K_3^3/K_1$

C. K_2K_3/K_1

D. $K_2^3K_3/K_1$

Answer: B

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2. If the value of equilibrium constant for a particular reaction is 1.6×10^{12} , then art equilibrium the system will contain

A. all reactants

B. mostly reactants

C. mostly products

D. similar amounts of reactants and products

Answer: C

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3. If the equilibrium constant for

$N_2(g) + O_2(g) \Leftrightarrow 2NO(g)$ is K , the

equilibrium

constant for $\frac{1}{2}N_2(g) + \frac{1}{2}O_2(g) \Leftrightarrow NO(g)$

will be

A. $K^{1/2}$

B. $\frac{1}{2}K$

C. K

D. K^2

Answer: A

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4. For the reversible reaction,

$N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$ + heat

The equilibrium shifts in forward direction

A. by increasing the concentration of $NH_3(g)$

B. by decreasing the pressure

C. by decreasing the concentrations of $N_2(g)$ and $H_2(g)$

D. by increasing pressure and decreasing temperature

Answer: D

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5. Using the Gibbs energy change, $\Delta G^{\circ} = +63.3kJ$, for the following reaction,

$Ag_2CO_3 \Leftrightarrow 2Ag^{+}(aq) + CO_3^{2-}$

the K_{sp} of $Ag_2CO_3(s)$ in water at $25^{\circ}C$ is

$\left(R = 8.314JK^{-1}mol^{-1}\right)$

A. 3.2×10^{-26}

B. 8.0×10^{-12}

C. 2.9×10^{-3}

D. 7.9×10^{-2}

Answer: B

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6. $KMnO_4$ can be prepared from K_2MnO_4 as per the reaction: 

The reaction can go the completion by removing $OH^{\ominus}$ ions by adding.

A. HCl

B. KOH

C. CO_2

D. SO_2

Answer: C

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7. The value of ΔH for the reaction $X_2(g) + 4Y_29g) \Leftrightarrow 2XY_4(g)$ is less than zero. Formation of $XY_4(g)$ will be favoured at :

A. low pressure and low temperature

B. high temperature and low pressure

C. high pressure and low temperature

D. high temperature and high pressure

Answer: C

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8. For the reaction $N_2(g) + O_2(g) \Leftrightarrow 2NO(g)$, the equilibrium constant is K_1. The equilibrium constant is K_2 for the reaction

$2NO(g) + O_2 \Leftrightarrow 2NO_2(g)$

What is K for the reaction

$NO_2(g) \Leftrightarrow \frac{1}{2}N_2(g) + O_2(g)$?

A. $1/(4K_1K_2)$

B. $[1/K_1K_2]^{1/2}$

C. $1/(K_1K_2)$

D. $1/(2K_1K_2)$

Answer: B

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9. In which of the following equilibrium K_c and K_p are not equal ?

A. $2NO(g) \Leftrightarrow N_2(g) + O_2(g)$

B. $SO_2(g) + NO_2(g) \Leftrightarrow SO_3(g) + NO(g)$

C. $H_2(g) + I_2(g) \Leftrightarrow 2HI(g)$

D. $2C(s) + O_2(g) \Leftrightarrow 2CO_2(g)$

Answer: D

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10. The dissociation constants for acetic acid and HCN at $25^{\circ}C$ are 1.5×10^{-5} and 4.5×10^{-10} , respectively. The equilibrium constant for the equilibirum $CN^{-} + CH_3COOH \Leftrightarrow HCN + CH_3COO^{-}$ would be

A. 3.0×10^{5}

B. 3.0×10^{-5}

C. 3.0×10^{-4}

D. 3.0×10^{4}

Answer: D

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11. If the concentration of OH^- ions in the reaction

$Fe(OH)_3(s) \Leftrightarrow Fe^{3+}(aq.) + 3OH^-(aq.)$

is decreased by $1/4$ times, then the equilibrium concentration of Fe^{3+} will increase by

A. 8 times

B. 16 times

C. 64 times

D. 4 times

Answer: C

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12. The value of equilibrium constant of the reaction. $HI(g) \Leftrightarrow \frac{1}{2}H_2(g) + \frac{1}{2}I_2(g) is 8.0$

The equilibrium constant of the reaction. $H_2(g) + I_2(g) \Leftrightarrow 2HI(g)$ will be

A. $\frac{1}{16}$

B. $\frac{1}{64}$

C. 16

D. $\frac{1}{8}$

Answer: B

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13. For the reaction $CH_{4(g)} + 2O_{2(g)} \Leftrightarrow CO_{2(g)} + 2H_2O_l$: $(\Delta H = -170.8kJmol^{-1})$. Which of the following statement is not true?

A. At equilibrium the concentrations of $CO_2(g)$ and $H_2O(I)$ are not equal.

B. The equilibrium constant for the reaction is given by $K_p = \frac{[CO_2]}{[CH_4][O_2]}$

C. Addition of $CH_4(g)$ or $O_2(g)$ at equilibrium will cause a shift to the right

D. The reaction is exothermic

Answer: B

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14. In the two gaseous reactions (i) and (ii) at $250^{\circ}C$

(i) $2NO(g) + \frac{1}{2}O_2(g) \Leftrightarrow NO_2(g) K_1$

(ii) $2NO_2(g) \Leftrightarrow 2NO(g) + O_2(g), K_2$ the equilibrium constants K_1 and K_2 are releated as

A. $K_2 = \frac{1}{K_1}$

B. $K_2 = K_1^{1/2}$

C. $K_2 = \frac{K_1}{K_1^2}$

D. $K_2 = K_1^2$

Answer: C

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15. The reaction quotient Q for :

$N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$ is given by $Q = \frac{[NH_3]^2}{[N_2][H_2]^3}$ The reaction will proceed in backward direction, when :

A. $Q > K_c$

B. $Q = 0$

C. $Q = K_c$

D. $Q < K_c$

Answer: A

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16. Reaction

$2BaO_2(s) \Leftrightarrow 2BaO(s) + O_2(g), \Delta H = +ve$

. At equilibrium condition, pressure of O_2 is depended on:

A. increased mass of BaO_2

B. increased mass of BaO

C. increased temperature of equilibrium

D. increased mass of BaO_2 and BaO both

Answer: C

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17. For the equilibrium

$MgCO_3(g) \overset{\Delta}{\Longleftrightarrow} MgO(s)CO_2(s)$ which of the following expressions is correct ?

A. $K_p = pco_2$

B. $K_p = \frac{[MgO][CO_2]}{[MgCO_3]}$

C. $K_p = \frac{p_{Mgo} \cdot p_{CO_2}}{p_{MgCO_3}}$

D. $K_p = \frac{p_{Mgo} + p_{CO_2}}{p_{MgCO_3}}$

Answer: A

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18. In a reversible chemical reaction having two reactants in equilibrium, if the concentration of the reactants are doubled then the equilibrium constant will :

A. one-fourth

B. halved

C. doubled

D. the same

Answer: D

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19. If K_1 and K_2 are respective equilibrium constants for two reactions :

$XeF_6(g) + H_2O \Leftrightarrow XeOF_4(g) + 2HF_g$

$XeO_4(g) + XeF_6(g) \Leftrightarrow XeOF_4(g) + XeO_3F_2(g)$

Then equilibrium constant for the reaction

$XeO_4(g) + 2HF(g) \Leftrightarrow XeO_3F_2(g) + H_2O(g)$

will be

A. $K_1 / (K_2)^2$

B. $K_1 . K_2$

C. K_1 / K_2

D. K_2 / K_1

Answer: D

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20. The equilibrium constants for the reaction, $A_2 \Leftrightarrow 2A$ A at $500K$ and $700K$ are 1×10^{-10} and 1×10^{-5}. The given reaction is

A. exothermic

B. slow

C. endothermic

D. fast

Answer: B

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21. If α is the fraction of HI dissociated at equilibrium in the reaction, $2HI(g) \Leftrightarrow H_2(g) + I_2(g)$ starting with the 2 moles of HI. Then the total number of moles of reactants and products at equilibrium are

A. $2 + 2\alpha$

B. 2

C. $1 + \alpha$

D. $2 - \alpha$

Answer: B

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22. The rate constant for forward and backward reactions of hydrolysis of ester are 1.1×10^{-2} and 1.5×10^{-3} per minute respectively. Equilibrium constant for the reaction is

A. 4.33

B. 5.33

C. 6.33

D. 7.33

Answer: D

23. According to le-Chatelier's principle, adding heat to a solid and liquid in equilibrium will cause the

A. temperature to increase.

B. temperature to decrease

C. amount of liquid to decrease

D. amount of solid to decrease

Answer: D

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24. Which one of the following information can be obtained on the basis of Le-chatelier's principle ?

A. Dissociation constant of a weak acid

B. entropy change in a raction

C. equilibrium constant of a chemical reaction

D. Shift in equilibrium postion on changing value of a constant.

Answer: D

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25. K_1 and K_2 are equilibrium constants for reaction (i) and (ii)

$N_2(g) + O_2(g) \Leftrightarrow 2NO(g)$ ...(i)

$NO(g) \Leftrightarrow 1/2N_2(g) + 1/2O_2(g)$ ...(ii)

then,

A. $K_1 = \left[\frac{1}{K_2}\right]^2$

B. $K_1 = K_2^2$

C. $K_1 = \frac{1}{K_2}$

D. $K_1 = (K_2)^0$

Answer: A

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