

Date Planned ://	Daily Tutorial Sheet-5	Expected Duration : 90 Min
Actual Date of Attempt : / /	Level-1	Exact Duration :

- **61.** The reaction $2SO_2 + O_2 \Longrightarrow 2SO_3 + \text{heat}$. The equilibrium reaction proceeds in forward direction by :
 - (A) Addition of O_2

- **(B)** Removal of O_2
- (C) Additional of inert gas
- (D) Cannot proceed
- **62.** $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) + heat$. What is the effect of the increase of temperature on the equilibrium of the reaction?
 - (A) Equilibrium is shifted to the left
- **(B)** Equilibrium is shifted to the right
- **(C)** Equilibrium is unaltered
- **(D)** Reactions rate does not change
- **63.** Formation of SO_3 from SO_2 and O_2 is favoured by :
 - (A) Increase in pressure

- **(B)** Decrease in pressure
- **(C)** Increase in temperature
- **(D)** Addition of SO₃
- 64. According to Le-Chatelier principle, adding heat to solid and liquid in equilibrium will cause the :
 - (A) Amount of solid to decrease
- **(B)** Amount of liquid to decrease

(C) Temperature to rise

- **(D)** Temperature to fall
- **65.** For the reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$, $\Delta H = -93.6 \text{ kJ mol}^{-1}$ the formation of NH_3 is expected to increase at:
 - (A) High pressure and low temperature
 - **(B)** Low pressure and low temperature
 - (C) High pressure and high temperature
 - **(D)** Low pressure and high temperature
- **66.** In the manufacture of ammonia by Haber's process, $N_2(g) + 3H_2 \rightleftharpoons 2NH_3(g) + 92.3$ kJ.

Which of the following condition is unfavourable?

- **(A)** Increasing the temperature
- **(B)** Increasing the pressure
- **(C)** Reducing the temperature
- **(D)** Removing ammonia as it is formed
- **67.** In a lime kiln, to get higher yield of CO₂, the measure that can be taken is :

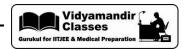
$$\left[\text{CaCO}_3(\mathbf{s}) \Longleftrightarrow \text{CO}_2(\mathbf{g}) + \text{CaO}(\mathbf{s}) \right]$$

(A) To remove CaCO₃

(B) To add more CaO

(C) To add CO_2

- **(D)** To pump out CO_2
- **68.** For the reaction, $PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g)$ the position of equilibrium can be shifted to the right by:
 - **(A)** Doubling the volume
 - **(B)** Increasing the temperature
 - (C) Addition of equimolar quantities of PCl₃ and PCl₅
 - **(D)** Addition of Cl₂ at constant volume



69.	What is the equilibrium	expression for the reaction.	$P_4(s) + 5O_2(g) \rightleftharpoons P_4O_{10}(s)$	2
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 $K_c = \frac{1}{[O_2]^5}$ **(B)** $K_c = [O_2]^5$ **(C)** $K_c = \frac{[P_4O_{10}]}{5[P_4][O_2]}$ **(D)** $K_c = \frac{[P_4O_{10}]}{[P_4][O_2]^5}$

70. For the reaction, $CO(g) + Cl_2(g) \rightleftharpoons COCl_2(g)$, the K_p/K_C is equal to :

> 1/RT (A)

(B) RT (C) \sqrt{RT} (D) 1.0

71. For the reaction $C_2H_4(g) + H_2(g) \Longrightarrow C_2H_6(g)$, which of the following expressions between K_p and K_c is true at 27°C?

(A)

 $K_p > K_c$

 $K_p < K_c$ **(B)**

(C) $K_p = K_c$

(D) Cannot be predicted

72. For the reaction, $PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g)$, the value of K_c at 250°C is 26. The value of K_p at this temperature will be:

(A)

0.41

(B) 0.51 (C) 0.61 (D) 0.71

73. Of the following which change will shift the reaction towards the product?

$$I_2(g) \rightleftharpoons 2I(g), \quad \Delta H_r^{\circ}(298 \text{ K}) = +150 \text{ kJ}$$

(A) Increase in temperature

(B) Increase in total pressure

(C) Increase in concentration of I (D) Decrease in concentration of I₂

74. In the following reversible reaction,

$$2SO_2(g) + O_2(g) \Longrightarrow 2SO_3(g) + Q$$
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Most suitable condition for the higher production of SO_3 is :

(A) Low temperature and high pressure

(B) Low temperature and low pressure

(C) High temperature and high pressure

(D) High temperature and low pressure

75. For the following equilibrium

 $N_2O_4(g) \Longrightarrow 2NO_2(g)$

 \boldsymbol{K}_p is found to be equal to \boldsymbol{K}_c . This is attained when

(A) T = 1K (B)

T = 12.18 K

(C)

 $T = 27.3 \, K$

(D)

 $T = 273 \, \text{K}$