

Date Planned ://	Daily Tutorial Sheet-2	Expected Duration : 90 Min		
Actual Date of Attempt : / /	Level-1	Exact Duration :		

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16.	For the reaction,	$2HI(g) \rightleftharpoons H_2$	(g) + 1	I <sub>2</sub> (g) -	- Q kJ ,	the equilibrium	constant de	pends upo	n:

**(A)** Temperature only

(B) Pressure

(C) Catalyst

(D) Volume

17. 1.6 moles of  $PCl_5$  (g) is placed in 4 dm<sup>3</sup> closed vessel. When the temperature is raised to 500 K, it decomposes and at equilibrium 1.2 moles of  $PCl_5$  (g) remains. What is the  $K_c$  value for the decomposition of  $PCl_5$  (g) to  $PCl_3$  (g) and  $Cl_2$  at 500 K

**(A)** 0.013

**(B)** 0.050

**(C)** 0.033

**(D)** 0.067

**18.** Ammonium carbamate decomposes as :

$$NH_2COONH_4(s) \rightleftharpoons 2NH_3(g) + CO_2(g)$$

For the reaction,  $K_p = 2.9 \times 10^{-5} atm^3$ . If we start with 1 mole of the compound, the total pressure at equilibrium would be:

**(A)** 0.766 atm

**(B)** 0.0582 atm

**(C)** 0.0388

**(D)** 0.0194 atm

4 moles each of SO<sub>2</sub> and O<sub>2</sub> gases are allowed to react to form SO<sub>3</sub> in a closed vessel. At equilibrium 25% of O<sub>2</sub> is used up. The total number of moles of all the gases at equilibrium is:

**(A)** 6.5

**(B)** 7.0

**(C)** 8

**(D)** 2.0

20. In chemical equilibrium, the value of  $\Delta n$  (number of molecules), is negative, then the relationship between  $K_p$  and  $K_c$  will be:

**(A)**  $K_p - K_c = 0$ 

**(B)**  $K_p = K_c \times (RT)^{+\Delta n}$ 

(C)  $K_p = K_c \times (RT)^{-\Delta n}$ 

**(D)**  $K_p = \frac{1}{K_c}$ 

**21.** For the reaction  $CO(g) + 0.5O_2(g) \Longrightarrow CO_2(g) \ K_p \ / \ K_c$  is equal to :

(A)  $\sqrt{RT}$ 

**(B)**  $\frac{1}{\sqrt{D^2}}$ 

**(C)** 1

**(D)** RT<sup>2</sup>

22. The equilibrium constant ( $K_c$ ) of the reaction  $A_2(g) + B_2(g) \rightleftharpoons 2AB(g)$  is 50. If 1 mol of  $A_2$  and 2 mol of  $B_2$  are mixed, the amount of AB at equilibrium would be:

(A) 0.934 mol

1

0.467 mol

(C) 1.866 mol

**(D)** 1.401 mol

23.  $A + B \rightleftharpoons C + D$ . If initially the concentration of A and B are both equal but at equilibrium, concentration of D will be twice of that of A, then what will be the equilibrium constant of reaction?

**(A)** 4/9

(B)

(B)

**(C)** 1/9

**(D)** 4

**24.** Which of the following is correct for the reaction?  $N_2(g) + 3H_2(g) \Longrightarrow 2NH_3(g)$ 

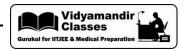
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(A)  $K_p = K_c$ 

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

(C)  $K_p > K_c$ 

**(D)** Pressure is required to predict the correlation



<b>25</b> .	The equilibrium constant of a reaction is 300. If the volume of reaction flask is tripled, the equilibrium	ın
	onstant is :	

**(A)** 300

**(B)** 600

**(C)** 900

**(D)** 100

**26.** Partial pressure of  $O_2$  in the reaction  $2Ag_2O\left(s\right) \Longrightarrow 4Ag\left(s\right) + O_2\left(g\right)$  is :

(A) K<sub>P</sub>

**(B)**  $\sqrt{K}$ 

(C) 3<sub>1</sub>K

**(D)** 2K<sub>P</sub>

**27.** The compounds A and B are mixed in equimolar proportion to form the products,  $A + B \rightleftharpoons C + D$ . At equilibrium, one third of A and B are consumed. The equilibrium constant for the reaction is :

**(A)** 0.5

**(B)** 4.0

**(C)** 2.5

**(D)** 0.25

**28.** In which of the following reactions, the concentration of product is higher than the concentration of reactant at equilibrium? (K = equilibrium constant)

(A)  $A \rightleftharpoons B; K = 0.001$ 

**(B)**  $M \rightleftharpoons N$ ; K = 10

(C)  $X \rightleftharpoons Y; K = 0.005$ 

**(D)**  $R \rightleftharpoons P; K = 0.01$ 

**29.** The equilibrium,  $P_4(s) + 6Cl_2(g) \rightleftharpoons 4PCl_3(g)$  attained by mixing equal moles of  $P_4$  and  $Cl_2$  in a evacuated vessel. Then at equilibrium.

(A)  $[Cl_2] > [PCl_3]$ 

(B)  $[Cl_2] > [P_4]$ 

(C)  $[P_4] > [Cl_2]$ 

**(D)**  $[PCl_3] > [P_4]$ 

**30.** Consider the following reaction equilibrium  $N_2(g) + 3H_2(g) \Longrightarrow 2NH_3(g)$ 

Initially, 1 mole  $N_2$ , 3 moles of  $H_2$  are taken in a 2L flask. At equilibrium state, if the number of moles of  $N_2$  is 0.6, what is the total number of moles of all gases present in the flask?

**(A)** 0.8

**(B)** 1.6

**(C)** 3.2

**(D)** 6.4