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

16. For the reaction, $2HI(g) \rightleftharpoons H_2(g) + I_2(g) - Q\ kJ$, the equilibrium constant depends upon :

(A) Temperature only **(B)** Pressure
(C) Catalyst **(D)** Volume

17. 1.6 moles of PCl_5 (g) is placed in 4 dm^3 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

19. 4 moles each of SO_2 and O_2 gases are allowed to react to form SO_3 in a closed vessel. At equilibrium 25% of O_2 is used up. The total number of moles of all the gases at equilibrium is :

(A) 6.5 **(B)** 7.0 **(C)** 8.0 **(D)** 2.0

20. In chemical equilibrium, the value of Δn (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 $CO(g) + 0.5O_2(g) \rightleftharpoons CO_2(g)$ K_p / K_c is equal to :

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

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 **(B)** 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)** 9/4 **(C)** 1/9 **(D)** 4

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

(A) $K_p = K_c$ **(B)** $K_p < K_c$
(C) $K_p > K_c$ **(D)** Pressure is required to predict the correlation

25. The equilibrium constant of a reaction is 300. If the volume of reaction flask is tripled, the equilibrium constant is :

(A) 300 **(B)** 600 **(C)** 900 **(D)** 100

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

(A) K_P **(B)** $\sqrt{K_p}$ **(C)** $3\sqrt{K_p}$ **(D)** $2K_P$

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 $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

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