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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

CHEMISTRY DPP DAILY PRACTICE PROBLEMS

DPP NO. 1

CHEMISTRY: Chemical Equilibrium

DPP No. : 1

1. For the reaction, A + 2B $\rightleftharpoons$ 2C, the rate constants for the forward and the backward reactions are 1×10^{-4} and 2.5×10^{-2} respectively. The value of equilibrium constant, K for the reaction would be :

(1) 1×10^{-4} (2) 2.5×10^{-2} (3) 4×10^{-3} (4) 2.5×10^{2}

2. For the reaction $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$, the equilibrium constant is K_1. The equilibrium constant is K_2 for the reaction $2NO(g) + O_2(g) \rightleftharpoons 2NO_2(g)$. What is K for the reaction $NO_2(g) \rightleftharpoons \frac{1}{2}N_2(g) + O_2(g)$?

(1) $1 / (2K_1K_2)$ (2) $1 / (4K_1K_2)$ (3) $1 / [K_1K_2]^{1/2}$ (4) $1 / (K_1K_2)$

3. A (g) + B (g) $\rightleftharpoons$ C (g) + D (g)

Above equilibrium is established by taking A & B in a closed container. Initial concentration of A is twice of the initial concentration of B. At equilibrium concentrations of B and C are equal. Then find the equilibrium constant for the reaction C (g) + D (g) $\rightleftharpoons$ A (g) + B (g).

(1) 3 (2) 2 (3) 1 (4) 4

4. For which of the following reactions, $K_p > K_c$ at 298 K :

(1) $PCl_3 + Cl_2$ (g) $\rightleftharpoons$ PCl_5(g) (2) N_2 (g) + O_2(g) $\rightleftharpoons$ 2NO (g)

(3) $\frac{1}{2}N_2$ (g) + $\frac{3}{2}H_2$ (g) $\rightleftharpoons$ NH_3 (g) (4) 2 NOBr (g) $\rightleftharpoons$ 2NO(g) + Br_2 (g)

5. For the reaction $CaCO_3$(s) $\rightleftharpoons$ CaO(s) + CO_2(g), the pressure of CO_2 depends on

(1) the mass of $CaCO_3$(s) (2) the mass of CaO(s)

(3) The masses of both $CaCO_3$(s) and CaO(s) (4) temperature of the system

6. For reaction $N_2O_4 \rightleftharpoons 2NO_2$ at given temperature if $K_p = \frac{8}{5}$ for 30% degree of dissociation at equilibrium then what will be new K_p for 50% dissociation of N_2O_4 at equilibrium at same temperature :

(1) $\frac{5}{8}$ (2) $\frac{8}{5}$ (3) $\frac{2}{5}$ (4) $\frac{12}{5}$

7. In the reaction C(s) + $CO_2(g) \rightleftharpoons 2CO(g)$, the equilibrium pressure is 12 atm. If 50% of CO_2 reacts then K_p will be

(1) 12 atm (2) 16 atm (3) 20 atm (4) 24 atm

8. By how many of the following ways, the concentration of CO_2 can be decreased at equilibrium ?

$CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$ ΔH = + ve

(1) By increasing temperature (V = constant)

(2) By increasing volume (T = constant)

(3) By adding more CO(g) (V, T = constant)

(4) By adding inert gas (V, T = constant)

9. Densities of diamond and graphite are 3.5 g/mL and 2.3 g/mL.

C (diamond) $\rightleftharpoons$ C (graphite) $\Delta_r H$ = – 1.9 kJ/mole

Favourable conditions for formation of diamond are :

(1) high pressure and low temperature

(2) low pressure and high temperature

(3) high pressure and high temperature

(4) low pressure and low temperature

10. Consider the reaction.

$A(s) \rightleftharpoons 2B(g)$ ΔH° = 160 KJ/mol.

ΔS° = 400 J/mol-K, at 400K,

which of the following is correct at 400 K?

(1) On adding more A(s), more B(g) is produced, when A(s) and B(g) were in equilibrium.

(2) The equilibrium constant at 400 K can't be found.

(3) The reaction is at equilibrium at 400 K and standard condition

(4) The ΔG of the reaction is greater than zero, at 400 K and standard condition.

Answer Key

1.	(3)	**2.**	(3)	**3.**	(1)	**4.**	(4)	**5.**	(4)	**6.**	(2)	**7.**	(2)
8.	(2)	**9.**	(3)	**10.**	(3)						