Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	Total Marks
Chemical Equilibrium	1	–	–	2	11

One mark questions

1. **What is a reversible reaction?**
   Answer: The reaction in which both forward and backward reaction takes place simultaneously is called as reversible reaction.
2. **What is an irreversible process?**
   Answer: It is a process in which the products obtained does not give back the reactants.
3. **Define equilibrium state.**
   Answer: It is a state in a reversible reaction at which both forward and backward reaction takes place in same rate.
4. **Write an example for solid-liquid equilibrium**

   Answer: $H_2O(s) \rightleftarrows H_2O(I)$
5. **What is equilibrium constant Kc?**

   Answer: $Kc = \dfrac{\text{Product of concentration of product at equilibrium}}{\text{Product of concentration of reactants at equilibrium}}$
6. **In a reversible reaction $Q_c > K$, predict the direction in which the reaction proceeds?**
   Answer: Net reaction goes from right to left i.e., towards backward direction.

Two marks questions

7. **Explain solid –liquid equilibrium with an example?**
   Answer: Solid –liquid equilibrium is a stage in a reversible reaction at which the rate of transfer of molecules from solid state to liquid state and rate of transfer of molecules from liquid state to solid state are equal at atmospheric pressure and at freezing point / melting point of the substance.

   Example: $H_2O(s) \rightleftarrows H_2O(I)$.
8. **Explain solid –vapour equilibrium with an example?**
   Answer: It is a stage at which rate of sublimation is equal to rate of condensation of a solid at given temperature

   Example: $I_2(\text{solid}) \rightleftarrows I_2(\text{vap})$
9. **What is heterogeneous equilibrium? given an example**
   Answer: It is an equilibrium in which reactants and products are in different phases.

   Example: $CaCO_3(s) \rightleftarrows CaO(s) + CO_2(g)$
10. **State le Chatelier's principle?**
    Answer: If a system under equilibrium is subjected to change in temperature, pressure or concentration then the equilibrium shifts itself in such a way so as to neutralize the effect of the change.
11. **What is the effect of a)addition of NH_3**

    b) addition of H_2 on the reaction $N_2(g) + 3H_2(g) \rightleftarrows 2NH_3(g)$?

    Answer: (a) The increase in concentration of ammonia increases the rate of backward reaction.
    (b) The increase in concentration of hydrogen increases the rate of forward reaction.
12. **Define solubility product.**
    Answer: The product of molar concentrations of constituent ions, each raised to the power of its stoichiometric co-efficient in the equilibrium equation of the electrolyte at given temperature, is called as solubility product.