

Board – CBSE

Class – 11th

Topic – Equilibrium

1. Mention the general characteristics of equilibria involving physical processes.
2. When the total number of moles of product and reactants are equal, K has no unit. Give reason.
3. What is the unit of equilibrium for the reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$.
4. Calculate the pH of a buffer solution containing 0.1 mole of acetic acid and 0.15 mole of sodium acetate. Ionisation constant for acetic acid is 1.75×10^{-5} .
5. Calculate the pH of the solution 0.002 M HBr.
6. The degree of dissociation of N_2O_4 , $\text{N}_2\text{O}_4(\text{g}) \rightleftharpoons 2\text{NO}_2(\text{g})$, at temperature T and total pressure is α . Find the expression for the equilibrium constant of this reaction at this temperature and pressure?
7. Justify the statement that water behaves like an acid and also like a base on the basis of protonic concept.
8. (i) In the reaction equilibrium $\text{A} + \text{B} \rightleftharpoons \text{C} + \text{D}$, What will happen to the concentrations of A, B and D if concentration of C is increased.
(ii) What will happen if concentration of A is increased?
9. The dissociation of HI is independent of pressure, while dissociation of PCl_5 depends upon the pressure applied. Why?
10. Give the generalizations concerning the composition of equilibrium mixtures.
11. Find the oxidation state of sulphur in the following compounds : H_2S , H_2SO_4 , $\text{S}_2\text{O}_4^{2-}$, $\text{S}_2\text{O}_8^{2-}$ and HSO_3^-
12. Write the equilibrium constant for the following equation : $a\text{A} + b\text{B} \rightleftharpoons c\text{C} + d\text{D}$
13. Write the conjugate acids for the following Bronsted bases: NH_2^- , NH_3 and HCOO^- .
14. Give the relation $K_p = K_c(\text{RT})^{\Delta n}$.
15. On what factors does the value of the equilibrium constant of a reaction depend?