CBSE Class 12 physics
Important Questions
Chapter 5
Surface Chemistry

1 Marks Questions

1. What do you mean by the term –Adsorption ?

Ans. The accumulation of molecular species at the surface rather than in bulk of a solid liquid is termed as Adsorption.

2. Explain the terms – Adsorbate and Adsorbent with examples

Ans. The molecular species which get concentrated or accumulated at the surface are adsorbate eg. O_2, H_2, CO, Cl_2, NH_3, etc. and the material on the surface of which the adsorption takes place is adsorbent. eg. Charcoal, silica gel, alumina gel, clay etc.

3. Why do finely divided solids act as good adsorbents ?

Ans. Powdering of solids increase its surface and therefore it can adsorb a greater amount of the adsorbate. Thus finely divided solids act as good adsorbents.

4. What is the sign of ΔH, ΔS and ΔG when a gas is adsorbed by an adsorbent and when ΔG becomes zero?

Ans. ΔH is negative, ΔS is negative and ΔG is negative. When $\Delta H = \Delta S$ the ΔG is zero. This state equilibrium is attained.

5. Name the factors which influence the extent of adsorption of a gas on solid.

Ans. Factors affecting extent of adsorption are –

(i) Nature of adsorbent and adsorbate.

(ii) Surface area of solid

(iii) Pressure of gas

(iv) Temperature

6. What is adsorption isotherm?

Ans. The variation in the amount of gas adsorbed by the adsorbent with pressure at constant temperature can be expressed by means of a curve known as adsorption isotherm.

7. ΔH for chemisorption is high. why?

Ans. In chemisorption, chemical bonds are formed that evolves a large amount of energy. Therefore ΔH for chemisorption is high.

8. Give an equation showing variation of extent of adsorption with concentration of a solution?

Ans. $x/m = K\ C^{1/n}\ (n\ >\ 1)$

Where x/m is the extent of adsorption - k &n are constants and c is the concentration of solution.

9. What are positive and negative catalysts? Explain.

Ans. A catalyst which increases the rate of a reaction is positive catalyst and which decrease the rate is a negative catalyst.

10. What do you mean by the term promoter? Give an example.

Ans. Promoters are substances that enhance the activity of a catalyst e.g. molybdenum acts as a promoter in Haber's process.

11. How do metal ions act as activators?

Ans. The metal ions like Na^+, Mn^{2+}, Co^{2+}, Cu^{2+} etc. can bind weakly to enzyme molecules. This increases their catalytic activity and therefore metal ions can act as activators.

12. What is the optimum temperature and pH for enzyme catalysed reactions?

Ans. The optimum temperature is 298K – 310K and optimum pH is 5 – 7 for enzyme –

catalysed reactions.

13. What are colloids?

Ans. A colloid is a heterogeneous system in which one substance is dispersed (dispersed phase) as very fine particles in another substance called dispersion medium.

14. What is the range of particle size in colloids?

Ans. The range of diameter of colloidal particles is 1 to 1000 nm.

15. Give two examples of solid Sol and Gel?

Ans. Solid sol – coloured glass, pumice stone.

Gel – Cheese, Butter.

16. Colloid is a state not a substance. Explain?

Ans. Every solute can be converted into the particle size of a colloid which is 1-1000 nm. Therefore every solute can act as a colloidal particle under suitable conditions.

17. Give two examples of substances that form: –

(a) Hydrophobic sol.

(b) Hydrophilic sol.

Ans. (a) hydrophobic sol: Gold, platinum

(b) hydrophilic sol: starch, proteins in water.

18. State Hardy- Schulze rule?

Ans. According to Hardy- Schulze rule-The greater the valence of the flocculating ion added, the greater is its power to cause precipitation.

19. What is a protective colloid?

Ans. A lyophillic colloid which is used to protect lyophobic colloid from electrolyte and from getting coagulated is called protective colloid.

20. What is flocculation?

Ans. When a colloid precipitates and floats on the solvent, it is called flocculation.

21. What is the role of desorption in the process of catalysis?

Ans. The role of desorption in the process of catalysis is to make the surface of the solid catalyst free for the fresh adsorption of the reactants on the surface.

22. What is demulsification? Name two demulsifiers.

Ans. The process of decomposition of an emulsion into its constituent liquids is called demulsification. Examples of demulsifiers are surfactants, ethylene oxide, etc.