

Surface Chemistry Multiple Choice Questions pdf

Que 1. What is the emulsifier in milk?

- (a) albumin (b) soap
(c) gelatin (d) casein

Ans: (d)

Reason: An emulsifier is an additive which helps two liquids mix.

Que 2. Which one of the following gases will be adsorbed most easily?

- (a) N₂ (b) H₂ (c) O₂ (d) CO₂

Ans: (d)

Reason: Higher is the critical temperature easier is to liquify the gas. CO₂ has higher critical temperature (304.25 K) so easier to liquify.

Que 3. Cottrell precipitator works on the principle of:

- (a) distribution law (b) addition of electrolyte
(c) Le-chattelier principle (d) Neutralization of charge on colloids

Ans: (d)

Reason: Smoke coming out of the chimney in industrial area is health hazard. It is a colloidal particles which are charged particles and thus they are removed from gases by electrical precipitation (Cottrell Precipitator) which involves neutralisation of charged colloidal particles present in the smoke.

Que 4. The formation of micelles takes place only above:

- (a) inversion temperature (b) Boyle temperature
(c) critical temperature (d) Kraft temperature

Ans: (d)

Reason: Kraft Temperature is the minimum temperature above which the formation of micelles takes place.

Que 5. A colloidal solutions show:

- (a) very high osmotic pressure (b) high osmotic pressure
(c) low osmotic pressure (d) no osmotic pressure

Ans: (c)

Reason: All colloidal solutions behave normally as electrolytes and the movement of solvent from solvent to colloidal solution is very less as the concentration gradient for solvent movement is not significant. hence, colloidal solutions show low osmotic pressure.

Que 6. Alums purify muddy water by:

- (a) dialysis (b) adsorption (c) absorption (d) coagulation

Ans: (d)

Reason: Stability of the lyophobic sols is due to presence of charge on colloidal particles. If charge is removed, particles come together and settle down. Spontaneous destabilization of solution is ageing and destabilization of solution by artificial means is called coagulation. Alums purify muddy water by coagulation.

Que 7. Which is an example of auto-catalysis?

- (A) Decomposition of $\text{KClO}_3 + \text{MnO}_2$ mixture
(B) The decomposition of nitroglycerine
(C) Breakdown of ${}^{14}_6\text{C}$
(D) Hydrogenation of vegetable oils using catalyst

Ans: (B) The decomposition of nitroglycerine

Reason: Decomposition of nitro glycerine is auto catalysis. So it's used in explosive, TNT.

Que 8. Colloids can be purified by

- (A) Condensation (B) Peptization (C) Coagulation (D) Dialysis

Ans: (D)

Reason: Colloids can be purified by dialysis.

Que 8. Milk is an example of

- (A) Emulsion (B) Suspension (C) Foam (D) Sol

Ans: (A)

Reason: Milk–Emulsion. (Oil in water)

Que 9. Given below are a few electrolytes, indicate which one among them will bring about the coagulation of a gold sol quickest and in the least of molar concentration?

- (A) NaCl (B) MgSO_4 (C) $\text{Al}_2(\text{SO}_4)_3$ (D) $\text{K}_4[\text{Fe}(\text{CN})_6]$

Ans: (C) $\text{Al}_2(\text{SO}_4)_3$

Reason: Gold sol is negative. So Al^{3+} will be the best coagulating agent.

Que 10. When a lyophobic colloidal solution is observed, we can see

- (A) Light scattered by colloidal particle (B) Size of the colloidal particle
(C) Shape of the colloidal particle (D) Relative size of the colloidal particle

Ans: (A)

Reason: We can observe scattering of light due to larger size of particles.

Que 11. The process which is catalysed by one of the products formed during the reaction is known

- (A) Auto-catalysis (B) Anti-catalysis
(C) Negative catalysis (D) Acid catalysis

Ans: (A) Auto-catalysis

Reason: Auto-catalysis as we need very less amount of catalyst but the reaction goes quickly.

Que 12. Which one of the following impurities present in colloidal solution cannot be removed by electro dialysis?

- (a) Sodium chloride (b) Potassium sulphate
(c) Urea (d) Calcium chloride

Ans: (c)

Reason: Electro dialysis involves movement of ions towards oppositely charged electrodes. Urea being a covalent compound does not dissociate to give ions and hence it cannot be removed by electro dialysis. However all the other given compounds are ionic which can undergo dissociation to give oppositely charged ions and thus can be separated.

Que 13. The migration of dispersion medium under the influence of an electric potential is called:

- (a) Cataphoresis (b) Electroosmosis
(c) Electrophoresis (d) Sedimentation

Ans: b)

Reason: The motion of a liquid through a membrane under the influence of an applied electric field is known as electroosmosis

Que 14. The movement of colloidal particles towards their respective electrodes in the presence of an electric field is known as:

- (a) electrolysis
- (b) Brownian movement
- (c) electro dialysis
- (d) electrophoresis

Ans: (d)

Que 15. Peptization denotes

- (a) Digestion of food
- (b) Hydrolysis of proteins
- (c) Breaking and dispersion into the colloidal state
- (d) Precipitation of solid from colloidal dispersion

Ans: (c)

Reason: Peptization comes under dispersion methods of preparation of colloids

Que 16. Colloidal gold is prepared by

- (a) Mechanical dispersion
- (b) Peptization
- (c) Bredig's Arc method
- (d) Hydrolysis

Ans: (c)

Reason: Colloidal gold is prepared by Bredig's arc method.

Que 17. Peptization involves

- (a) precipitation of colloidal particles
- (b) disintegration of colloidal aggregates
- (c) evaporation of dispersion medium
- (d) impact of molecules of the dispersion medium on the colloidal particles

Ans: (b)

Reason: Peptisation is disintegration of colloidal aggregate

Que 18. An example of an associated colloid is:

- (a) Vegetable oil
- (b) Rubber latex
- (c) Soap solution
- (d) Milk

Ans: (c)

Reason: Soap solution is an example of associated colloid.

Que 19. Colloidal solution of arsenious sulphide is prepared by:

- (a) Hydrolysis
- (b) Double decomposition

- (c) Electro dispersion method (d) Peptization

Ans: (b)

Reason: Arsenious sulphide is prepared by the double decomposition.

Que 20. The effect of pressure on adsorption is high if:

- (a) Temperature is high
(b) Temperature is low
(c) Temperature is neither very low nor very high
(d) Charcoal piece is taken in place of charcoal powder

Ans: (b)

Reason: The effect of pressure on adsorption is high when temperature is low

Que 21. Which of the following is the correct Freundlich's formula:

- (a) $w/m = kP^{1/n}$ (b) $w/m = kP^{2n}$ (c) $w/m = kP^n$ (d) $m/w = kP^{1/n}$

Ans: (a)

Reason: Freundlich proposed a mathematical equation $w/m = kP^{1/n}$.

Que 22. If the dispersed phase is a liquid and the dispersion medium is solid, the colloid is known as:

- (a) Foam (b) Sol (c) Emulsion (d) Gel

Ans: (d)

Reason: If the dispersed phase is a liquid and the dispersion medium is solid, the colloid is known as a gel. For example, jellies, cheese and butter

Que 23. The diameter of colloidal particle ranges from:

- (a) 10^{-9} m to 10^{-6} m (b) 10^{-6} m to 10^{-3} m
(c) 10^{-12} m to 10^{-9} m (d) 10^{-3} m to 10^{-6} m

Ans: (a)

Reason: The diameter of colloidal particle ranges from 10^{-9} to 10^{-6} m

Que 24. The capacity of an ion to coagulate a colloidal solution depends upon:

- (a) Nature of charge (b) Amount of charge
(c) Its shape (d) Both (a) and (b)

Ans: (d)

Reason: Coagulating value of an electrolyte is directly proportional to the valency of the active ions, that is, the magnitude of charge, so the capacity of an ion to coagulate a colloidal solution depends upon the nature and magnitude of charge it carries.

Que 25. Which of the following is used for the destruction of colloids:

- (a) Ultrafiltration
- (b) Adding electrolyte
- (c) Both (a) and (b)
- (d) Dialysis

Ans: (b)

Reason: Negative ions cause precipitation of a positively charged solute particles and vice versa. Therefore, addition of electrolyte disrupts the colloidal nature of a colloidal solution.

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