



INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF CHEMISTRY
CLASS XII
CHAPTER – SURFACE CHEMISTRY
OBJECTIVE TYPE QUESTIONS



Multiple choice type questions

- The correct ascending order of adsorption of the following gases on the same mass of charcoal at same temperature and pressure is
 - $\text{CH}_4 < \text{H}_2 < \text{SO}_2$
 - $\text{H}_2 < \text{CH}_4 < \text{SO}_2$
 - $\text{SO}_2 < \text{CH}_4 < \text{H}_2$
 - $\text{H}_2 < \text{SO}_2 < \text{CH}_4$
- The formation of micelles takes place only above
 - Inversion temperature
 - Boyle's temperature
 - Critical temperature
 - Kraft temperature
- Colloidion is 4% solution of which one of the following in alcohol-ether mixture.
 - Nitroglycerin
 - Cellulose acetate
 - Glycol dinitrate
 - Nitrocellulose
- If V is amount of adsorbate and ' n ' is amount of adsorbent, which of the following is related to adsorption
 - $\frac{x}{m} = f(P)$ at constant T
 - $\frac{x}{m} = f(T)$ at constant ' P '
 - $P = f(T)$ at constant $\frac{x}{m}$
 - $\frac{m}{x} = P \times T$
- A plot of $\log \frac{x}{m}$ vs $\log p$ for adsorption of gas on a solid gives in straight line with slope equal to
 - n

- (b) $\frac{1}{n}$
 (c) $\log k$
 (d) $-\log k$
6. The protective power of lyophilic colloidal sol is expressed in terms of
 (a) coagulation value
 (b) gold number
 (c) CMC (Critical Micelle Concentration)
 (d) oxidation numbers
7. According to Freundlich adsorption isotherm, which of the following is correct?
 (a) $\frac{x}{m} \propto p^1$
 (b) $\frac{x}{m} \propto p^{1/n}$
 (c) $\frac{x}{m} \propto p^0$
 (d) All are correct at different ranges of pressure
8. During the adsorption of gas on the surface of solid, which of the following is true?
 (a) $\Delta G < 0, \Delta H > 0, \Delta S < 0$ (b) $\Delta G > 0, \Delta H < 0, \Delta S < 0$
 (c) $\Delta G < 0, \Delta H < 0, \Delta S < 0$
 (d) $\Delta G < 0, \Delta H < 0, \Delta S > 0$
9. The best coagulant for the precipitation of $\text{Fe}(\text{OH})_3$ sol is
 (a) Na_2HPO_3
 (b) NaNO_3
 (c) Na_3PO_4
 (d) Na_2SO_4
10. Which is favourable for physical adsorption?
 (a) High T and high P
 (b) High T and low P
 (c) Low T and high P
 (d) T and P do not affect
11. Identify the positively charged colloid.
 (a) Haemoglobin
 (b) As_2S_3
 (c) Clay
 (d) Gold sol
12. The stability of lyophobic sols is due to
 (a) adsorption of covalent molecules on the colloid
 (b) the size of the particles
 (c) the charge on particles
 (d) Tyndall effect.

13. Gold sol can be prepared by
- Hydrolysis of AuCl_3
 - Oxidation of Gold by aqua-regia
 - Peptization
 - Reduction of AuCl_3 with HCHO solution.
14. The term 'sorption' stands for _____. [NCERT Exemplar]
- absorption
 - adsorption
 - both absorption and adsorption
 - desorption
15. Extent of adsorption of adsorbate from solution phase increases with _____. [NCERT Exemplar]
- increase in amount of adsorbate in solution.
 - decrease in surface area of adsorbent.
 - increase in temperature of solution.
 - decrease in amount of adsorbate in solution.
16. Physical adsorption of a gaseous species may change to chemical adsorption with _____.
- decrease in temperature
 - increase in temperature
 - increase in surface area of adsorbent
 - decrease in surface area of adsorbent
17. In Freundlich adsorption isotherm $x/m = Kp^{1/n}$, the value of 'n' at low pressure is
- more than one.
 - less than one.
 - equal to one.
 - from zero to one.
18. When a small amount of FeCl_3 is added to a freshly precipitated $\text{Fe}(\text{OH})_3$, a reddish brown colloidal solution is obtained. This phenomenon is known as
- dialysis
 - peptization
 - protection
 - dissolution
19. Lyophilic colloids are stable due to
- charge on the particles.
 - large size of the particles.
 - small size of the particles.
 - layer of dispersion of medium on the particles.

20. Cottrell precipitator is used to
- precipitate mud from muddy water.
 - precipitate carbon particles from smoke.
 - purify the ordinary drinking water.
 - precipitate salts in qualitative analysis.
21. Peptization is a process of
- precipitation of colloidal particles.
 - purification of colloids.
 - dispersing precipitate into colloidal solution.
 - movement of colloidal particles in the electric field.
22. An emulsifier is a substance which
- stabilises the emulsion.
 - homogenises the emulsion.
 - Coagulates the emulsion.
 - Accelerates the dispersion of liquid in liquid.

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

- Assertion and reason both are correct and reason is correct explanation of assertion.
 - Assertion and reason both are wrong statements.
 - Assertion is correct but reason is wrong statement.
 - Assertion is wrong but reason is correct statement.
 - Assertion and reason both are correct statements but reason is not correct explanation of assertion.
23. Assertion: An ordinary filter paper impregnated with collodion solution stops the flow of colloidal particles
Reason: Pore size of the filter paper becomes more than the size of colloidal particle.
24. Assertion: Chemisorption occurs at high temperature whereas physisorption occurs at low temperature.
Reason: Chemisorption is monolayered whereas physisorption is multi-layered.
25. Assertion: Silica gel is used for drying air
Reason: Silica gel adsorb moisture from air.
26. Assertion: Cloud is a type of aerosol
Reason: Cloud has air as dispersion medium

Fill in the blanks

27. Greater the valency of ion, more will be coagulating power is -----rule
28. -----of kidney separates waste products from blood.
29. Physisorption ----- with increase in temperature

State True or False

30. Electrokinetic potential is difference in potential of fixed layer and diffused layer which are oppositely charged.
31. Freundlich adsorption isotherm gives the variation of x/m with p .
32. Dialysis of kidney separates waste products from blood.
33. Van der Waals forces are responsible for the occurrence of physisorption.

34. Match the items given in Column I and Column II.

Column I

Column II

(a) Protective colloid

(i) $\text{FeCl}_3 + \text{NaOH}$

(b) Liquid – liquid colloid

(ii) Lyophilic colloids

(c) Positively charged colloid

(iii) Emulsion

(d) Negatively charged

(iv) $\text{FeCl}_3 + \text{hot water}$

35. Match the types of colloidal systems given in Column I with the name given in Column II.

Column I

Column II

(a) Solid in liquid

(i) Foam

(b) Liquid in solid

(ii) Sol

(c) Liquid in liquid

(iii) Gel

(d) Gas in liquid

(iv) Emulsion