Surface Chemistry

1. Butter is a colloid formed when
   a) fat is dispersed in water
   b) fat globules are dispersed in water
   c) water is dispersed in fat
   d) None of the these

Q.2. Point out the false statement
   a) Brownian movement and Tyndall effect are shown by colloidal systems
   b) Gold number is a measure of the protective power of a lyophillic colloid
   c) The colloidal solution of a liquid in liquid is called gel
   d) Hardy - Schulze rule is related with coagulation.

Q.3. The function of gum arabic in the preparation of an Indian ink is
   a) Coagulation
   b) Peptization
   c) Absorption
   d) Protective action

Q.4. The stablity of lyophillic colloids is due to which of the following?
   a) Charge on their particles
   b) Large size of their particles
   c) Small size of their particles
   d) A layer of dispersion medium

Q.5. Rate of physisorption increases with
   a) decrease in temperature
   b) increase in temperature
   c) decrease in pressure
   d) decrease in surface area

Q.6. How many layers are adsorbed in chemical adsorption ?
   a) one
   b) two
   c) zero
   d) many

Q.7. You are given 100 ml of CCl4 to extract iodine from 200 ml of its aqueous solution. For extracting the maximum amount of iodine, which one of the following process would you use
   a) Use 100 ml of CCl_4
   b) Use 50 ml of CCl_4 twice
   c) Use 10 ml of CCl_4 ten times
   d) Use 25 ml of CCl_4 4 times

Q.8. Gold numbers of protective colloids A, B, C and D are 0.50, 0.01, 0.10 and 0.005, respectively. The correct order of their protective powers is

a) D < A < C < B
b) C < B < D < A
c) A < C < B < D
d) B < D < A < C

Q.9. For the adsorption of a gas on a solid, the plot of log(x/m) versus log p is linear with slope equal to

a) k
b) logk
c) n
d) 1/n

Q.10. At low pressure, the fraction of the surface covered follows

a) zero-order reaction
b) second-order reaction
c) first-order reaction
d) fractional order

Q.11. **At 15oC out of H2, CH4, CO2, NH3, which gas will be adsorbed maximum by charcoal?**

a) H_2
b) CH_4
c) CO_2
d) NH_3

Q.12. **The process of separating a crystalloid, from a colloid by filtration is called**

a) emulsification
b) dialysis
c) coagulation
d) Peptization

Q.13. **The movement of colloidal particles towards the oppositely charged electrodes on passing electric current is known as**

a) Tyndall effect
b) Electrphoresis
c) Brownian movement
d) None of these

Q.14. **An emulsifier is a substance which**

a) stabilizes the emulsion
b) coagulates the emulsion
c) retards the dispersion of liquid in liquid
d) causes homogenesis of emulsion

Q.15. **Which of the following kinds of catalysis can be explained by the adsorption theory?**

a) enzyme catalysis
b) homogeneous catalysis
c) acid base catalysis
d) heterogeneous catalysis

Q.16. The formation of micelles takes place only above

a) Inversion temperature
b) Boyle's temperature
c) Critical temperature
d) Kraft temperature

Q.17. Colloidion is 4% solution of which one of the following in alcohol-ether mixture.

a) Nitroglycerin
b) Cellulose acetate
c) Glycol dinitrate
d) Nitrocellulose

Q.18. 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

Q.19. The coagulation values in millimoles per litre of the electrolyte for the coagulation of As_2S_3 sol are given

I. NaCl (52)

II. $BaCl_2$ (0.69)

III. $MgSO_4$ (0.22)

a) I > II > III
b) II > I > III
c) III > II > I
d) III > I > II

Q.20. The best coagulant for the precipitation of $Fe(OH)_3$ sol is

a) Na_2HPO_3
b) $NaNO_3$
c) Na_3PO_4
d) Na_2SO_4

Q.21. The stability of lyophobic sols is due to

a) adsorption of solvent molecules on the colloid
b) the size of the particles
c) the charge on particles
d) Tyndall effect.

Q.22. Gold sol can be prepared by

a) Hydrolysis of $AuCl_3$
b) Oxidation of Gold by aqua-regia
c) Peptization
d) Reduction of $AuCl_3$ with HCHO solution.

Q.23. The term 'sorption' stands for

a) absorption
b) adsorption
c) both absorption and adsorption
d) desorption

Q.24. Extent of adsorption of adsorbate from solution phase increases with

a) increase in amount of adsorbate in solution.
b) decrease in surface area of adsorbent.
c) increase in temperature of solution.
d) decrease in amount of adsorbate in solution.

Q.25. Physical adsorption of a gaseous species may change to chemical adsorption with

a) decrease in temperature
b) increase in temperature
c) increase in surface area of adsorbent
d) decrease in surface area of adsorbent