Shiksha Classes Bhandara

Subject : Chemistry **Topic : Surface Chemistry** **M.M. : 100**

Marking Scheme:

(i) Each question is allotted 4 (four) marks for each correct response.

(ii) ¼ (one fourth) marks will be deducted for indicating incorrect response of each question. No deduction from the total score will be made if no response is indicated for an item in the answer sheet.

Q.1 An emulsion is a colloidal system of –
(A) two solids
(B) two liquids
(C) one gas and one solid
(D) one gas and one liquid

Q.2 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 concentration?
(A) NaCl (B) $MgSO_4$
(C) $Al_2(SO_4)_3$ (D) $K_4[Fe(CN)_6]$

Q.3 Crystalloids differ from colloids mainly in respect of
(A) electrical behaviour
(B) particle nature
(C) particle size
(D) solubility

Q.4 The potential difference between the fixed charged layer and the diffused layer having opposite charge is called:
(A) Water potential (B) Zeta potential
(C) Electrode potential (D) None of these

Q.5 Which one is not the characteristic of chemisorption:
(A) Multilayer adsorption
(B) Exothermic nature
(C) Strong adsorption by adsorption sites
(D) Irreversible

Q.6 A liquid is found to scatter a beam of light but leaves no residue when passed through the filter paper. The liquid can be described as
(A) a suspension (B) oil
(C) a colloidal sol. (D) a true solution

Q.7 Which of the following is a lyophobic colloid ?
(A) Gelatin (B) Sulphur
(C) Starch (D) Gum arabic

Q.8 The Brownian movement of colloidal particles is because of –
(A) Convection currents in the fluid
(B) Unequal bombardments by the molecules of the dispersion medium on colloidal particles.
(C) Setting of dispersed phase under gravity
(D) Thermal gradient in the medium

Q.9 Liquid-liquid sol is known as
(A) aerosol (B) foam
(C) emulsion (D) gel

Q.10 The colloidal system consisting of a liquid adsorbate in a solid adsorbent is termed as
(A) aerosol (B) foam
(C) emulsion (D) gel

Q.11 Emulsifier is an agent which –
(A) accelerates the dispersion
(B) homogenizes an emulsion
(C) stabilizes an emulsion
(D) aids the flocculation of an emulsion

Q.12 Reversible adsorption is
(A) chemical adsorption
(B) physical adsorption
(C) both of these
(D) none of these

Q.13 Which of the following represents a macromolecular colloidal particles?
(A) Solution of gold (B) Cellulose
(C) Soaps (D) Synthetic detergents

Q.14 When $FeCl_3$ solution is added to NaOH a negatively charged sol is obtained. It is due to
(A) Presence of basic group
(B) Preferential adsorption of OH^- ions
(C) Self dissociation
(D) Electron capture by sol particles

Q.15 Which is not a purely surface phenomena:
(A) surface tension (B) adsorption
(C) absorption (D) none of these

Q.16 Which of the following anions will have minimum flocculation value for the ferric oxide solution?
(A) Cl^- (B) Br^-
(C) SO_4^{2-} (D) $[Fe(CN)_6]^{3-}$

Q.17 The Tyndall effect associated with colloidal particles is due to
(A) presence of electrical charges
(B) scattering of light
(C) absorption of light
(D) reflection of light

Q.18 Silver iodide is used for producing artificial rains because silver iodide –
(A) is easy to to spray at high altitude.
(B) is insoluble in water.
(C) has crystal structure similar to ice.
(D) is easy to synthesize.

Q.19 Which of the following colloid can be prepared by electrical dispersion as well as reduction method
(A) Sulphur (B) Ferric hydroxide
(C) Arsenious sulphide (D) Gold

Q.20 Compared to common colloidal sols, micelles have:
(A) higher colligative properties
(B) lower colligative properties
(C) same colligative properties
(D) none of these

For Q.21-Q.25 :
The answer to each question is a NUMERICAL VALUE.

Q.21 Number of correct statements-
(i) Sulphur dioxide are adsorbed more than the hydrogen under same condition.
(ii) Haber's process is an example of Homogeneous catalysis reactions.
(iii) Sulphur in water is an example of Lyophobic colloids.
(iv) Gelatin is an example of Lyophobic colloids.

Q.22 Number of correct statements-
(i) Silver chloride can be converted into a sol by adding hydrochloric acid .
(ii) Butter is an example of oil dispersed in water emulsion.
(iii) Latex is a colloidal solution of rubber particles which are postiively charged.

Q.23 Number of correct statements-
(i) Arsenius sulphide sol and gold sol is Negatively charged.
(ii) Ferric hydroxide sol and aluminium hydroxide sol is Positively charged .
(iii) Soaps and detergents are associated colloids

Q.24 Number of correct statements-
(i) The colligative properties of colloidal solution is very high.
(ii) Enthalpy of chemisorption is high as it involves chemical bond formation.
(iii) It is necessary to remove CO when ammonia is obtained by Haber's process

Q.25 Number of INCORRECT statements-
(i) **P**hysiosorption increases with the increase of temperature
(ii) During adsorption there is decrease in enthalpy and decrease in the entropy of a system but adsorption is a spontaneous process and thus ΔG must be negative. Rate of physisorption increase with increase in pressure.
(iii) Decrease of temperature and increase of pressure both tend to cause increase in the magnitude of adsorption of a gas on a solid.
(iv) **T**he ester hydrolysis slow in the beginning and becomes faster after some time.