**Time :** 07:46:00 **CHEMISTRY**

**Marks :** 1864

5.SURFACE CHEMISTRY

**Single Correct Answer Type**

1. For adsorption of gas on solid surface, the plots of log log is linear with a slope equal to :

a) b) c) d) ( being integer)

2. Which is not correct for catalyst? It :

a) Enhances the rate of reaction in both directions

b) Changes enthalpy of reaction

c) Reduces activation energy of reaction

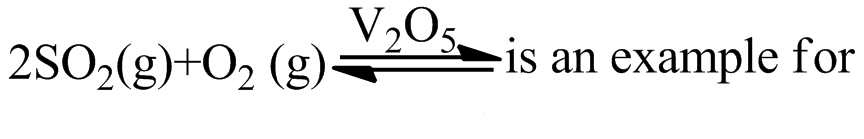
d) Specific in nature

3. The magnitude of colligative properties in all colloidal dispersions is …..than solution :

a) Higher b) Lower c) Both (a) and (b) d) None of these

4. Which one is hydrophobic in nature?

a) Gelatin b) Sulphur c) Starch d) Protein

5. 

a) Neutralization reaction b) Homogeneous catalysis

c) Heterogeneous catalysis d) Irreversible reaction

6. Decomposition of urea into and is followed by the action of enzyme :

a) Urease b) Pepsin c) Trypsin d) None of these

7. Adsorption is accompanied by the evolution of heat. So, according to Le-Chatelier principle the amount of substance adsorbed should

a) Increase with decrease in temperature b) Increase with increase in temperature

c) Decrease with decrease in temperature d) Decrease with increase in temperature

8. Which one of the following equation represents Freundlich adsorption isotherm?

a) b) c) d)

9. The number of moles of lead nitrate needed to coagulate 2 moles of colloidal [AgI] is

a) 2 b) 1 c) 1/2 d) 2/3

10. Surfactant molecules or ions cluster together as micelles which

a) Due to their hydrophilic tails tend to congregate

b) Due to their hydrophobic heads provide protection

c) Are colloid sized clusters of molecules

d) None of the above

11. The temperature above which micelle formation occurs is :

a) Critical temperature

b) Charles’ temperature

c) Inversion temperature

d) Kraft’s temperature

12. By dividing the catalyst into fine powder there will be increase in

a) Surface area b) Free valancies c) Active centres d) All of these

13. Washing soap can be prepared by saponifying alkali with oil of :

a) Rose oil b) Paraffin oil c) Ground nut oil d) kerosene

14. Platinum is used as a catalyst in :

a) Oxidation of ammonia to form nitric acid

b) Hardening of oils

c) Production of synthetic rubber

d) Synthesis of methanol

15. A colloidal solution always has at least :

a) One phase

b) More than two phases

c) A true solution

d) Two phases

16. Milk can be preserved by adding a few drops of :

a) Formic acid solution

b) Formaldehyde solution

c) Acetic acid solution

d) Acetaldehyde solution

17. Addition of to in dilute and cold solution gives :

a) Prussian blue sol b) sol c) Positive sol d) All of these

18. Colloidal solution commonly used in treatment of skin diseases is :

a) Colloidal sulphur b) Colloidal silver c) Colloidal gold d) Colloidal antimony

19. The substance that gets adsorbed on the surface of solid is called

a) Adsorbate b) Adsorbent c) Micelle d) Absorbent

20. Which of the following is not correct?

a) Enthalpy of physical adsorption is less compared to enthalpy of chemical adsorption

b) Milk is an example of emulsion

c) Physical adsorption increases with the increase in temperature

d) Smoke is an aerosol

21. Which of the following characteristics is not correct for physical adsorption?

a) Adsorption on solids is reversible

b) Adsorption increases with increase in temperature

c) Adsorption is spontaneous

d) Both enthalpy and entropy of adsorption are negative

22. Which of the following statements is incorrect?

a) Physical adsorption occurs at very low temperature and chemisorptions occur at all temperature

b) The magnitude of chemisorption decreases with rise in temperature and physisorption increases with rise in temperature

c) Chemisorption is irreversible and physisorption is reversible

d) In physisorption, the activation energy of desorption is very low and in chemisorption, the activation energy of desorption is very high

23. Which of the following has maximum coagulation power with ferric hydroxide sol?

a) Cryolite b) c) d)

24. The critical micelle concentration (CMC) is

a) The concentration at which micellisation starts

b) The concentration at which the true solution is formed

c) The concentration at which one molar electrolyte is present per 1000 g of the solution

d) The concentration at which

25. A dilute solution of litmus becomes colourless on shaking with charcoal. This is due to :

a) Absorption b) Adsorption c) Chemical reaction d) Both (a) and (b)

26. Which of the following is an example for heterogeneous catalysis reaction?

a)

b) Hydrolysis of aqueous sucrose solution in the presence of aqueous mineral acid

c)

d) Hydrolysis of liquid in the presence of aqueous mineral acid

27. Which of the following is true in respect of adsorption?

a) b)

c) d)

28. Which is a homogeneous system?

a) A solution of sugar in water

b) Concrete

c) Muddy water

d) Bread

29. Which of the following is the most effective in the coagulation of gold sol?

a) b) c) d)

30. Which of the following is not a characteristic of chemisorption?

a) is the order of 400 kJ b) Adsorption is irreversible

c) Adsorption may be multimolecular layer d) Adsorption is specific

31. Select wrong statement.

a) If a very small amount of is added to gold sol, coagulation occurs, but if a large quantity of is added, there is no coagulation.

b) Organic ions are more strongly adsorbed on charged surfaces in comparison to inorganic ions.

c) Both emulsifier and peptising agents stabilise colloids but their actions are different.

d) Colloidal solutions are thermodynamically stable.

32. The size of colloidal particles is in between

a) cm b) cm c) cm d) cm

33. The Brownian movement occurs in :

a) Colloidal solution

b) True solution

c) Suspension having size < 500 m

d) All of the above

34. Dyeing of fibre involves the process of :

a) Adsorption b) Absorption c) Sorption d) All of these

35. Which adsorption takes place at low temperature?

a) Physical b) Chemical c) Both (a) and (b) d) None of these

36. Term catalyst was given by

a) Rutherford b) Berzilius c) Wohler d) Kolbe

37. The cotterells precipitator is used to :

a) Neutralize charge on carbon particles in air in smoke

b) Coagulate carbon atoms of smoke

c) Bring in cataphoresis in carbon particles

d) All of the above

38. A catalyst is a substance which

a) Is always in the same phase as in the reactions

b) Alters the equilibrium in a reaction

c) Does not participate in the reaction but alters the rate of reaction

d) Participates in the reaction and provide an easier pathway for the same

39. Multimolecular colloids are present in

a) Soap solution b) Sol of proteins c) Sol of gold d) All of these

40. The rate of a certain biochemical reaction catalysed by an enzyme in human body is times faster than when it carried out in the laboratory. The activation energy of this reaction :

a) Is zero

b) Is different in two cases

c) Is the same in both the cases

d) None of the above

41. At CMC (critical micelle concentration), the surfactant molecules undergo

a) Dissociation b) Micelle formation c) Both (a) and (b) d) None of these

42. Activated charcoal is used to remove colouring matter from pure substances. It works by

a) Oxidation b) Reduction c) Bleaching d) Adsorption

43. Lyophobic colloids are :

a) Reversible colloids b) Irreversible colloids c) Protective colloids d) Gum, proteins

44. The size of the colloid particles is :

a) > suspension particles

b) < suspension particles

c) < true solution particles

d) None of these

45. Emulsions can be destroyed by

a) The addition of an emulsifier which tend to form an emulsion of the same type

b) Freezing

c) Both (a) and (b)

d) None of the above

46. Which characteristic of adsorption is wrong?

a) Physical adsorption in general decreases with temperature

b) Physical adsorption in general increases with temperature

c) Physical adsorption is a reversible process

d) Adsorption is limited to the surface only

47. Gelatin is often used as an ingredient in the manufacture of ice-cream. The reason for this is :

a) To prevent the formation of a colloid

b) To stabilize the colloid and prevent crystal growth

c) To cause the mixture to solidify

d) To improve the flavour

48. Blood contains :

a) Positively charged particles

b) Negatively charged particles

c) Neutral particles

d) Negatively as well as positively charged particles

49. The curve showing the variation of pressure with temperature for a given amount of adsorption is called



a) Adsorption isobar b) Adsorption isotherm c) Adsorption isostere d) Adsorption isochore

50. When white light is passed through a colloidal solution containing fine suspended particles of gold, then the scattered light seen in a direction different from that of the incident light is :

a) Yellow coloured b) Blue coloured c) Green coloured d) Red coloured

51. Emulsions of polyvinylacetate are used in :

a) Polishes b) Latex paints c) Fire works d) Rayons

52. Peptization denotes

a) Digestion of food b) Hydrolysis of proteins

c) Breaking and dispersion into colloidal state d) Precipitation of solid from colloidal dispersion

53. Which characteristic is the most important factor in giving rise to peculiar properties of colloids?

a) Large size

b) Small size

c) High charge density

d) High ratio of surface are to the volume

54. Alum helps in purifying water by :

a) Forming Si complex with clay particles

b) Sulphate part which combines with the dirt and removes it

c) Aluminium which coagulates the mud particles

d) Making mud water soluble

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

a) A sol b) An emulsion c) A gel d) A foam

56. In physical adsorption gas molecules are bound on the solid surface by

a) Chemical forces b) Electrostatic forces c) Graphical forces d) Van der Waals’ forces

57. On adding 1 mL solution of 10% NaCl to 10 mL gold solution in the presence of 0.25 g of starch, the coagulation is just prevented. Starch has the gold number equal to :

a) 0.25 b) 2.5 c) 250 d) 0.025

58. Hardy-Schulze rule states that :

a) Non-electrolytes have better coagulating action on colloids than electrolytes

b) Sols are coagulated by effective ions whose charge is opposite to that of sol and the ions of higher charge are much more effective than the ions of lower charge

c) Charge of the ions has no effect on the coagulation of a sol

d) Sols are coagulated only by those ions whose charge is similar to that of the sol

59. In homogeneous catalytic reactions, the rate of reaction :

a) Depends upon the concentration of catalyst

b) Independent of the concentration of catalyst

c) Depends upon the free energy change

d) Depends upon physical state of the catalyst

60. Catalysts are generally used in finely divided state because

a) It avoids wastage of catalyst

b) We can see its reaction

c) It has more surface

d) It has no effect on reaction rate

61. Which among the following statements is false?

a) Adsorption may be monolayered or multilayered

b) Particle size of adsorbent will not effect the amount of adsorption

c) Increase of pressure increases the amount of adsorption

d) Increase of temperature may decrease the amount of adsorption

62. Which of the following processes does not involve a catalyst?

a) Ostwald process b) Contact process c) Thermite process d) None of these

63. Whipped cream is an example of :

a) Liquid gas

b) Gas liquid

c) Liquid liquid

d) Solid liquid

64. Alloy is an example of

a) Gel b) Solidified emulsion c) Solid solution d) Sol

65. Which of the following statements is correct about Langmuir’s adsorption isotherm?

a) It forms monolayer b) It is reversible in nature

c) It occurs at low temperature d) None of the above

66. Zeolites :

a) Are microporous aluminosilicates

b) Have general formula

c) Have pore sizes between 260 pm to 740 pm

d) All of the above

67. Which of the following does not contain hydrophobic structure?

a) Linseed oil b) Linolin c) Glycogen d) Rubber

68. An increase in the concentration of adsorbate at the surface relative to its concentration in bulk phase is called :

a) Adsorption b) Enthalpy c) Absorption d) None of these

69. Which will not form colloidal solution?

(Where DP = Dispersion phase and DM = Dispersion medium)

a) DP-gas, DM-liq. b) DP-liquid DM-solid c) DP-gas, DM-gas d) DP-solid, DM-solid

70. In Langmuir’s model of adsorption of a gas on a solid surface

a) The rate of dissociation of adsorbed molecules from the surface does not depend on the surface covered

b) The adsorption at a single site on the surface may involve multiple molecules at the same time

c) The mass of gas striking a given area of surface is proportional to the pressure of the gas

d) The mass of gas striking a given area of surface is independent of the pressure of the gas

71. The velocity of oxidation of oxalic acid by acidified increase as the reaction progress. It is an example of

a) Promoters b) Catalytic poisons c) Autocatalysis d) Inhibitors

72. Which electrolyte is least effective in causing coagulation of +ve ferric hydroxide sol?

a) b) c) d)

73. A colloidal system in which gas bubbles are dispersed in a liquid is known as

a) Foam b) Aerosol c) Sol d) Emulsion

74. The false statement for hydrophilic sols is :

a) They do not require electrolytes for stability

b) Coagulation is reversible

c) Viscosity is of the order of that of water

d) Surface tension is lower than that of dispersion medium

75. When a catalyst is added to a system the:

a) Equilibrium concentrations are increased

b) Equilibrium concentrations are unchanged

c) The rate of forward reaction is increased and that of backward reaction is decreased

d) Value of equilibrium constant is decreased

76. The simplest way, to check whether a system is a colloid, is by

a) Tyndall effect b) Brownian movement

c) Electrodialysis d) Finding out particle size

77. Micelles have

a) Same colligative property as that of common colloidal solution

b) Lower colligative property as that of common colloidal solution

c) Higher colligative property as that of common colloidal solution

d) None of the above

78. Which of the following represent homogeneous catalysis?

a) b)

c) d) All of the above

79. Detergent action of synthetic detergents is due to their :

a) Interfacial area

b) High molecular weight

c) Ionisation

d) Emulsifying properties

80. Ultramicroscope works on the principle of :

a) Light reflection b) Light absorption c) Light scattering d) Light polarization

81. The catalyst iron, employed in the Haber’s process, contains molybdenum, the function of which is :

a) To increase the rate of combination of gases

b) To counterbalance for the presence of impurities in the gases

c) To act as a catalyst promoter and increase activity of catalyst

d) To make up for the adverse temperature and pressure conditions

82. An emulsifier is a substance which

a) Stabilises the emulsion b) Homogenises the emulsion

c) Coagulates the emulsion d) Accelerates the dispersion of liquid in liquid

83. The example(s) of anionic surfactants is/are

a) b) c) d)

84. For adsorption of a gas on a solid, the plot of is linear with slope equal to

a) b) c) d)

85. A substance which promotes the activity of a catalyst is known as :

a) Initiator b) Catalyst c) Promoter d) Auto-catalyst

86. Adsorption of a gas on solid metal surface is spontaneous and exothermic, then :

a) increases b) increases c) increases d) decreases

87. Freundlich adsorption isotherm is

a) b) c) d) All of these

88. Which of the following forms cationic micelles above certain concentration?

a) Urea b) Sodium dodecyl sulphate

c) Sodium acetate d) Cetyltrimethylammonium bromide

89. Catalyst in a reaction

a) Lowers the activation energy b) Increase the rate of reaction

c) Both (a) and (b) d) Initiates the reaction

90. The average size of the colloids is of the order :

a) b) c) d)

91. If is the mass of adsorbate adsorbed per unit mass of adsorbent. *p*is the pressure of the adsorbate gas and and are constants, which of the following represents “Langmuir adsorption isotherm”?

a) b)

c) d)

92. Tanning of leather is :

a) Colouring of leather by chemicals

b) Drying process to make the leather hard

c) Polishing of leather to make it look attractive

d) Coagulative hardening of the leather by chemicals

93. In a chemical reaction, catalyst

a) Decrease the energy of activation b) Increases the energy of activation

c) Does not change energy of activation d) None of the above

94. Which one of the following methods is commonly used for destruction of colloid?

a) Dialysis

b) Condensation

c) Filtration by animal membrane

d) By adding electrolyte

95. In multimolecular colloidal solutions, atoms or molecules are held together by :

a) H-bonding b) van der waals’ forces c) Ionic bonding d) Covalent bonding

96. In autocatalysis

a) Reactant act as catalyst b) One of the product acts as catalyst

c) Vessel acts as catalyst d) All of the above are incorrect

97. One of the reasons for greater reactivity of finely divided platinum catalyst is that it has :

a) Particles which are almost atomic in dimensions

b) Particle size which can spread easily through whole reactants

c) Much larger surface area

d) A physical state only in which it can react quickly

98. The potential difference between the fixed charged layer and the diffused layer having opposite charge is called :

a) Zeta potential b) Streaming potential c) Dorn potential d) Colloidal potential

99. The protecting power of lyophilic colloidal sol is expressed in terms of :

a) Critical miscelle concentration

b) Oxidation number

c) Coagulation value

d) Gold number

100. Rate of physical adsorption increase with

a) Decrease in surface area b) Decrease in temperature

c) Decrease in pressure d) Increase in temperature

101. Size of colloidal particles is in the range

a) 0.05 m-0.1 b) c) d)

102. Brownian motion of sol particle is the …..property of sol :

a) Electrical b) Optical c) Kinetic d) Colligative

103. Which of the following statements is correct for Tyndall effect?

a) Scattering and polarizing of light by small suspended particles is called Tyndall effect

b) Tyndall effect of colloidal particles is due to dispersion of light

c) Tyndall effect is due to refraction of light

d) motion of suspended particles

104. Which is an emulsion?

a) Boot polish b) Lipstic c) Shampoo d) All of these

105. The process which is catalysed by one of the products formed during the reaction is known as :

a) Autocatalysis b) Anticatalysis c) Negative catalysis d) Acid catalysis

106. Lyophilic sols are more stable than lyophobic sols because the particles

a) Are positively charged b) Are negatively charged

c) Are solvated d) Repel each other

107. Which is the property of hydrophilic sols?

a) High concentration of dispersed phase can be easily attained

b) Coagulation is reversible

c) The charge on particles depends on the pH of the medium and it may be positive, negative

d) All of the above

108. Which is not a colloidal solution of a liquid in another liquid?

a) Photographic emulsions

b) Soap in water

c) Homogenised milk

d) Latex

109. Gold numbers is associated with

a) Electrophoresis b) Protective colloids c) Tyndall effects d) Isotonic solutions

110. Which of the following will be the most effective in the coagulation of sol?

a) KCN b) c) NaCl d)

111. Which of the following statement(s) is/are true?

a) Gelatin molecules (hydrophilic sol) are attracted to water molecules by London forces and hydrogen bonding

b) In hydrophobia sols, there is a lack of attraction between the dispersed phase and the continuous phase

c) Hydrophobia sols are basically unstable

d) All of the above

112. Which can adsorb larger volume of hydrogen gas?

a) Colloidal solution of palladium

b) Finely divided nickel

c) Finely divide platinum

d) Colloidal

113. Which graph is correct for critical micelle concentration (CMC)?

a) b)  c)  d) 



114. A colloidion solution is one which contains :

a) Cellulose nitrate in a alcohol-ether

b) Cellulose in water

c) Sucrose in water

d) None of the above

115. Which explains the effect of a catalyst on the rate of reversible reaction?

a) It provides a new reaction pathway with a lower activation energy

b) It moves the equilibrium position to the right

c) It increases the kinetic energy of the reacting molecules

d) It decreases the rate of the reverse reaction

116. Solvent loving colloids are :

a) Lyophobic colloid b) Lyophilic colloid c) Hydrophobic colloid d) None of these

117. Pd can adsorb 900 times its volume of hydrogen. This is called :

a) Absorption b) Adsorption c) Occlusion d) Both (a) and (c)

118. Which of the following is a wrong statements for physisorption?

a) It is a reversible reaction b) Reaction requires an energy of activation

c) The value of adsorption enthalpy is low d) It generally occurs at a low temperature

119. The function of negative catalyst is :

a) To remove the active intermediate from the reaction

b) To terminate the chain reaction

c) Both (a) and (b)

d) None of the above

120. A liquid which markedly scatters a beam of light (visible in dark room) but leaves no residue when passed through a filter paper is best described as :

a) A suspension b) Sol c) True solution d) None of these

121. Modern theory of heterogeneous catalysis is :

a) Intermediate compound formation theory

b) Adsorption theory

c) A combination of two theories, intermediate compound formation and adsorption theory

d) None of the above

122. Which of the following acts as a catalyst?

a) Metals with variable valency b) Metals with non-variable valency

c) Non-metals with fixed valency d) Inert gases

123. Silver iodide is used for producing artificial rain because AgI :

a) Is easy to spray at high altitudes

b) Is easy to synthesize

c) Has crystal structure similar to ice

d) Is insoluble in water

124. Shape selective catalysts are so called because of

a) The shape of the catalyst

b) The specificity of the catalyst

c) The size of the pores of catalyst which can trap selective molecules only

d) Their use for only some selected reaction

125. Which one of the following is a property of physisorption?

a) None-specific nature b) High specificity c) Irreversibility d) All of these

126. Medicines are more effective if they are used in :

a) Colloidal state b) Solid state c) Solution state d) None of these

127. Catalyst used in Friedel-Craft’s reaction is

a) Iron b) Finally divided nickel

c) d) Anhydrous

128. Milk contains a protein that is very good for health. The protein is :

a) Caffeine b) Calciferol c) Keratin d) Casein

129. Which statement is not correct?

a) Physical adsorption is due to van der Waals’ forces

b) Physical adsorption decreases at high temperature and low pressure

c) Physical adsorption is reversible

d) Adsorption energy for a chemical adsorption is generally lesser than that of physical adsorption

130. Identify the gas which is readily adsorbed by activated charcoal

a) b) c) d)

131. Which one of the following will have highest coagulating power for colloid?

a) b) c) d)

132. The separation of colloidal particles (or purification of sol) from particles of molecular dimensions is known as :

a) Photolysis b) Dialysis c) Pyrolysis d) Peptization

133. Dust storm is :

a) Dispersion of solid in gas

b) Dispersion of a gas in solid

c) Dispersion of solid in solid

d) Dispersion of a gas in liquid

134. The catalyst used in the manufacture of nitric acid by Ostwald’s process is :

a) Mo b) Pt c) d) Fe

135. Tyndall effect would be observed in

a) Solvent b) Solution c) Colloidal solution d) Precipitate

136. Plot of against log *p* is a straight line inclined at an angle of . When the pressure is 0.5 atm and Freundlich parameter, *k* is 10, the amount of solute adsorbed per gram of adsorbent will be (log 5=0.6990)

a) 1 g b) 2 g c) 3 g d) 5 g

137. On adding few drops of dil HCl to freshly precipitated ferric hydroxide, a red coloured solution is obtained. This phenomenon is known as

a) Peptisation b) Dialysis c) Protective action d) Dissolution

138. At CMC, the surfactant molecules undergoes :

a) Association b) Aggregation c) Micelle formation d) All of these

139. A biological catalyst is

a) An amino acid b) A carbohydrate

c) The nitrogen molecule d) An enzyme

140. An example of dispersion of a liquid in a gas is

a) Milk b) Vegetable oil c) Foam d) Mist

141. Which of the following is not correct?

a) Milk is a naturally occurring emulsion b) Gold sol is a lyophilic sol

c) Physical adsorption decreases with rise in temperature d) Chemical adsorption is unilayered

142. In contact process of manufacture of , the catalyst used is

a) Iron b) c) Chromium d) Oxides of nitrogen

143. The catalyst used in the chamber process of sulphuric acid is :

a) Platinum b) Nitric oxide c) Nickel d) Vanadium pentoxide

144. Isoelectric point refers to the ion concentration at which the colloidal particles :

a) Coagulate

b) Become electrically neutral

c) Can move to either electrode when subjected to an electric field

d) Reverse their electrical charge

145. The Langmuir adsorption isotherm is deduced using the assumption :

a) The adsorption sites are equivalent in their ability to adsorb the particles

b) The heat of adsorption varies with coverage

c) The adsorbed molecules interact with each other

d) The adsorption takes place in multilayers

146. Sedimentation potential is the reverse of

a) Electroosmosis b) Electrophoresis

c) Electrokinetic potential d) Dorn potential

147. During the adsorption of krypton on activated charcoal at low temperature

a) b)

c) d)

148. A catalyst in finely divided state is more efficient because in this state

a) In has larger activation energy

b) It can react with one of the reactants more efficiently

c) It has large surface area

d) All of the above

149. Cow milk, an example of natural emulsion is stabilised by

a) Fat b) Water c) Casein d)

150. Identify the correct statements regarding enzymes.

a) Enzymes are specific biological catalysts that can normally function at very high temperatures (*T*1000 K)

b) Enzymes are normally heterogeneous catalysts that are very specific in their action.

c) Enzyme are specific biological catalysts that cannot be poisoned

d) Enzyme are specific biological catalysts that possess well defined active sites

151. acts as …..for Pd in Rosenmund’s reaction:

a) Promoter b) Poison c) Autocatalyst d) None of these

152. Which is not shown by sols?

a) Adsorption b) Tyndall effect c) Flocculation d) Paramagnetism

153. Bredig arc method cannot be used to prepare colloidal solution of :

a) Pt b) Fe c) Ag d) Au

154. The reaction between alkali and fat is called :

a) Saponification b) Hydrolysis c) Distillation d) dehydration

155. A colloidal system involves :

a) A state of dissolution b) A state of dispersion c) A state of suspension d) None of these

156. Conversion of milk into curd is made by the enzyme :

a) Diastase b) Invertase c) Micoderma bacilli d) Lactic bacilli

157. Identify the gas which is readily adsorbed by activated charcoal

a) b) c) d)

158. Which is not correct for heterogeneous catalysis?

a) The catalyst decreases the energy of activation

b) The surface of catalyst plays an important role

c) The catalyst actually forms a compound with reactants

d) There is no change in the energy of activation

159. The phenomenon observed when a beam of light is passed through a colloidal solution is

a) Cataphoresis b) Delectrophoresis c) Coagulation d) Tyndall effect

160. Isoelectric point is the pH at which colloidal particles

a) Become electrically charged b) Can move towards respective electrodes

c) Coagulate d) None of the above

161. In homogeneous catalysis

a) The reactant, catalyst and products are in the same phase

b) The catalyst and reactants are in the same phase

c) The catalyst and products are in the same phase

d) The reactants and products are in the same phase

162. The enzyme which can catalyse the conversion of glucose of ethanol is :

a) Zymase b) Invertase c) Maltase d) diastase

163. The addition of alcohol to a saturated aqueous solution of calcium acetate first forms a sol and then sets to a gelatinous mass called solid alcohol which is a :

a) Solid sol b) Aerosol c) Solid form d) gel

164. Colloidal solution commonly used in treatment of eye disease is :

a) Colloidal sulphur b) Colloidal silver c) Colloidal gold d) Colloidal antimony

165. In Zeigler-Natta polymerisation of ethylene, the active species is :

a) b) c) d)

166. If liquid is dispersed in solid medium, this is called

a) Sol b) Emulsion c) Liquid aerosol d) gel

167. In which of these processes platinum is used as a catalyst?

a) Oxidation of ammonia to form b) Hardening of oils

c) Protection of synthetic rubber d) Synthesis of methanol

168. Which is the characteristic of catalyst?

a) It changes equilibrium point b) It initiates the reaction

c) It alters the rate of reaction d) It increases average KE of molecules

169. Which one of the following graphs represents Freundlich adsorption isotherm?

a) b)



c) d)



170. ZSM-5 is used to convert :

a) Alcohol to petrol b) Benzene to toluene c) Toluene to benzene d) Heptane to toluene

171. Which acts as inhibitor for knocking in combustion of petrol?

a) b) c) Both (a) and (b) d) None of these

172. Which of the following electrolytes is least effective in coagulation ferric hydroxide solution?

a) b) c) d)

173. Mark the correct statement about given graph :



a) is threshold energy level

b) are energy of activation for forward and backward reaction respectively.

c) is heat of reaction and reaction is exothermic

d) All of the above

174. From the following which is not an emulsifier?

a) Agar b) Milk c) Gum d) Soap

175. According to Langmuir adsorption isotherm the amount of gas adsorbed at very high pressure :

a) Reaches a constant limiting value

b) Goes on increasing with pressure

c) Goes on decreasing with pressure

d) Increases first and decreases later with pressure

176. The enzyme ptyalin used for digestion of food is present in :

a) Saliva b) Blood c) Intestine d) Adrenal glands

177. Flocculation value is expressed in terms of :

a) Millimole per litre b) Mole per litre c) Gram per litre d) Mole per millilitre

178. Formation of ammonia from and by Haber’s process using Fe is an example of

a) Heterogeneous catalysis b) Homogeneous catalysis

c) Enzyme catalysis d) Non-catalytic process

179. Identify the correct statement for the adsorption of a real gas on charcoal at 1 atm and 15

a) Gases which are small in molecular size are adsorbed more

b) Decrease in pressure increases the extent of adsorption

c) Gases which are easily liquefiable are adsorbed more in quantity

d) Gas which has a behaviour similar to an inert gas is adsorbed more

180. Which statement about enzymes is not correct?

a) Enzymes are in colloidal state

b) Enzymes are catalysts

c) Enzymes can catalyse any reacion

d) Urease is an enzyme

181. Gold number is the index for :

a) Protective power of lyophilic colloid

b) Purity of gold

c) Metallic gold

d) Electroplated gold

182. Emulsions are normally prepared by shaking vigorously the two components together with same kind of emulsifying agent to stabilize the product. The emulsifying agent may be

a) Soap b) Surfactant c) Lyophilic solution d) All of these

183. Choose the incorrect statement

a) Non-ionic surfactant molecules cluster together in clumps

b) Ionic surfactants tend to disrupt by electrostatic repulsions between head groups

c) Micelles look like flattered spherical structure at CMC

d) None of the above

184. The cementation process is :

a) Gel formation b) Emulsion formation c) Either of them d) None of them

185. In which of the following, Tyndall effect is not observed?

a) Smoke b) Emulsion c) Sugar solution d) Gold sol

186. Enzymes are

a) Microorganism b) Proteins

c) Inorganic compounds d) Moulds

187. Adsorption is multilayer in the case of

a) Physical adsorption b) Chemisorption c) Both (a) and (b) d) None of these

188. There is formation of an electrical double layer of opposite charges on the surface of colloidal particles, so a potential develops which is known as

a) Electrokinetic potential b) Zeta potential

c) Streaming potential d) Colloidal potential

189. Which of the following is wrong?

a) A catalyst remain unchanged at the end of chemical reaction

b) A catalyst is specific in action

c) A catalyst does not changes the state of equilibrium in a chemical reaction

d) A catalyst can start a reaction

190. Which requires catalyst :

a) b) c) d) All of these

191. Which of the following impurities present in colloidal solution cannot be remove by electrodialysis?

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

192. The minimum energy level necessary to permit a reaction to occur is :

a) Internal energy b) Threshold energy c) Activation energy d) Free energy

193. The movement of sol particles under an applied electric field is called :

a) Electrodeposition b) Electrodialysis c) Electroosmosis d) Electrophoresis

194. The arsenious sulphide sol has negative charge. The maximum coagulating power for precipitating it is of :

a) b) c) d)

195. Among the electrolytes the most effective coagulation agent for sol is

a) b) c) d)

196. An example of solid-solid system is :

a) Smoke b) Cake c) Synthetic gems d) Pumice stone

197. The volume of a colloidal particle, as compared to the volume of a solute particle in a true solution could be

a) b) c) d)

198. The volume of colloidal particles as compared to the volume of solute particles in true solution could be :

a) ∼1 b) c) d)

199. Mention the type of reaction to obtain Au(sol).

Reaction,

a) Hydrolysis b) Oxidation

c) Reduction d) Double decomposition

200. On addition of 1mL solution of 10% NaCl to 10mL gold solution in the presence of 0.025 g of starch, the coagulation is prevented because starch has the following gold numbers

a) 25 b) 0.025 c) 0.25 d) 2.5

**Time :** 07:46:00 **CHEMISTRY**

**Marks :** 1864

5.SURFACE CHEMISTRY

|  |
| --- |
| **: ANSWER KEY :** |

|  |
| --- |
| **1) d 2) b 3) b 4) b**  **5) c 6) a 7) a 8) b**  **9) b 10) c 11) d 12) d**  **13) c 14) a 15) d 16) b**  **17) d 18) a 19) a 20) c**  **21) b 22) b 23) d 24) a**  **25) b 26) d 27) b 28) a**  **29) b 30) d 31) a 32) c**  **33) d 34) d 35) a 36) b**  **37) d 38) c 39) c 40) b**  **41) b 42) c 43) b 44) b**  **45) c 46) b 47) b 48) b**  **49) c 50) b 51) b 52) c**  **53) d 54) c 55) c 56) d**  **57) c 58) b 59) a 60) c**  **61) b 62) c 63) b 64) c**  **65) a 66) d 67) d 68) a**  **69) c 70) c 71) c 72) a**  **73) a 74) c 75) b 76) a**  **77) b 78) c 79) d 80) c**  **81) c 82) a 83) b 84) d**  **85) c 86) d 87) a 88) d**  **89) c 90) b 91) d 92) d**  **93) a 94) d 95) b 96) b**  **97) c 98) a 99) d 100) b**  **101) c 102) c 103) a 104) d**  **105) a 106) b 107) d 108) b**  **109) b 110) d 111) d 112) a**  **113) b 114) a 115) a 116) b**  **117) d 118) b 119) c 120) b**  **121) c 122) a 123) c 124) c**  **125) a 126) a 127) d 128) d**  **129) d 130) b 131) a 132) b**  **133) a 134) b 135) c 136) d**  **137) a 138) d 139) d 140) d**  **141) b 142) b 143) b 144) b**  **145) a 146) b 147) b 148) c**  **149) c 150) d 151) b 152) d**  **153) b 154) a 155) b 156) d**  **157) c 158) d 159) d 160) c**  **161) b 162) a 163) d 164) b**  **165) d 166) d 167) a 168) c**  **169) c 170) a 171) c 172) a**  **173) d 174) b 175) a 176) a**  **177) a 178) a 179) c 180) c**  **181) a 182) d 183) d 184) a**  **185) c 186) b 187) a 188) a**  **189) d 190) b 191) c 192) b**  **193) d 194) d 195) c 196) c**  **197) a 198) b 199) c 200) a** |