CHEMISTRY

BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)

SURFACE CHEMISTRY

Multiple Choice Questions Adsorption

1. Which of the following statement is correct about Langmuit's adsorption?

A. It forms monolayer

B. It is reversible in nature

C. It occures at low temperature

D. It is not specific in nature.

Answer: A

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2. Adsorption is

A. Colligative

B. Oxidation process

C. Reduction process

D. Surface phenomenon

Answer: D

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3. Which is correct in case of van der Waals adsorption?

A. High temp. , low pressure

B. Low temp., high pressure

C. Low temp., low pressure

D. High temp., high pressure

Answer: B

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4. Which is adsorbed in minimum amount by the activated charcoal?

A. H_2

B. CO_2

C. SO_3

D. CO

Answer: A

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5. Pd can adsorb in the space between its atoms, 900 times its volume of hydrogen. This process is called

A. Absorption

B. Deposition

C. Adsorption

D. Occulusion

Answer: D

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6. Adsorption increases when

A. temperature increases

B. temperature decreases

C. temperature remains constant

D. None of these

Answer: B

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7. Which adsorption takes place at low temperature?

A. Physical

B. Chemical

C. Both

D. None.

Answer: A

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8. Which of the following is adsorbed greatly by activated charcoal?

A. SO_2

B. CO_2

C. CO

D. Water vapours.

Answer: D

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9. In a process, adsorption and absorption take place together. This is defined by

A. Desorption

B. Ad absorption

C. Sorption

D. None of these

Answer: C

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10. According to Freundlich adsorption isotherm, which of the following is correct ?

A. $x/m \propto p^1$

B. $x/m \propto p^{1/n}$

C. $x/m \propto p^{\circ}$

D. All the above are correct for different ranges of pressure.

Answer: D

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11. Which of the following is not applicable to chemisorption?

A. Effect of pressure is given by Freundlich adsorption isotherm

B. There is formation of monomolecular layer

C. It occurs at high temperature

D. It involved the formation of chemical bonds between adsorbent and adsorbate.

Answer: A

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12. In the adsorption of oxalic acid on activated charcoal, the activated charcoal is called

A. adsorbate

B. adsorbent

C. absorber

D. adsorber

Answer: B

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13. Which of the following is true about chemisorption?

A. It is reversible in nature

B. It is usually occurs at low temperature

C. It is highly specific in nature

D. The attractive forces between adsorbate and adsorbent are van der Waal's forces.

Answer: C

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14. Point out the incorrect statement

A. Adsorption may or may not involve the formation of bond between adsorbent and adsorbate

B. At high pressure, the Freundlich isotherm acquires a form $x/m \propto p$

C. Physisorption involves formation of multimolecular layers

D. Adsorption involves the concentration of one substance over the surface of other.

Answer: B

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Colloidal State

1. A metal sulphide sol. can be flocculated by which one of the following ?

A. $\left[Fe(CN)_6\right]^{4-}$

B. SO_4^{2-}

C. $BaCl_2$

D. Al^{3+}

Answer: D

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2. Vanishing cream is an example of

A. Solid emulsion

B. Foam

C. Lyophilic sol.

D. Suspension

Answer: A

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3. Which type of property is the Brownian movement of colloidal sol.?

A. Electrical

B. Optical

C. Mechanical

D. Colligative

Answer: C

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4. The electropositive sol. Among the following is

A. Prussian blue

B. Silicic acid

C. Gold

D. Tannic acid

Answer: A

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5. Gelatin protects

A. Gold sol.

B. As_2S_3 sol.

C. $Fe(OH)_3$ sol.

D. All

Answer: D

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6. Hydrophilic colloids are stable due to

A. negative charged particles

B. large size of particles

C. small size of particles

D. layer of dispersion medium on their particles.

Answer: D

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7. Liquid-Liquid sol are known as

A. Aerosol

B. Emulsions

C. Foam

D. Gels.

Answer: B

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8. The example of heteropolar sol. is

A. Starch sol. in water

B. Rubber sol. in water

C. Protein sol. in water

D. Sulphur sol.

Answer: C

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9. The impurities present in rain water possess .....charge.

A. positive

B. negative

C. zero

D. positive and negative

Answer: B

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10. Which one is an example of miceller system?

A. Soap and water

B. Protein and water

C. Rubber and benzene

D. As_2O_3 and $Fe(OH)_3$

Answer: A

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11. Flocculation vlue is expressed in terms of

A. milli mole/litre

B. mole/litre

C. grams/litre

D. mole/mililitre

Answer: A

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12. Which of the following is not an example of macromolecular colloidal particles?

A. Nylon

B. Plastics

C. Rubber

D. Soaps.

Answer: D

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13. The gold numbers of four protective colloids O,P,Q and R are 0.005, 0.01, 0.1 and 0.5 respectively. The decreasing order of their protective power is

A. R,Q,P,O

B. O,P,Q,R

C. P,Q,R,O

D. Q,R,O,P

Answer: B

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14. When a beam of light is passed through colloidal solution,

A. it gets scattered

B. it gets adsorbed

C. it is refracted

D. it undergoes reflection

Answer: A

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15. In aerosol, the dipersion medium is

A. Solid

B. liquid

C. gas

D. any of these

Answer: C

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16. Fog is a colloidal solution of

A. gas in gas

B. solid in gas

C. liquid is gas

D. None of these

Answer: C

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17. A sol has positively charged colloidal particles. Which of the following solution is required in lowest concentration for coagulation?

A. NaCl

B. $K_4\left[Fe(CN)_6\right]$

C. $ZnCl_2$

D. Na_2SO_4

Answer: B

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18. Which of the following processes best describes the purification of muddy water by addition of alum?

A. Absorption

B. Adsorption

C. Dialysis

D. Coagulation

Answer: D

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19. Blue colour of water in sea is due to

A. Refraction of blue light by impurities in sea water

B. Refraction of blue sky by water

C. Scattering of light by water

D. None of the Reason is correct.

Answer: C

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20. The coagulation of colloidal particles of the sol can be caused by

A. heating

B. adding oppositely charged sol

C. adding electrolyte

D. all the above methods.

Answer: D

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21. In the preparation of AgI sol, the excess of $AgNO_3$ is added to potassium iodide solution. The particles of the sol will acquire

A. negative charged

B. positive charge

C. no charge

D. unpredictable

Answer: B

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22. The colloidal solution of two immiscible liquids is called

A. Gel

B. Aerosol

C. Emulsion

D. None of the above.

Answer: C

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23. The protective power of lyophilic sol is

A. dependent on the size of colloidal particles

B. expressed in terms of gold number

C. expressed by x/m

D. directly proportional to the magnitude of charge on it

Answer: B

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24. Which of the following method is not employed for the purification of colloids?

A. Electrodialysis

B. Dialysis

C. Ultracentrifugation

D. Peptisation

Answer: D

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25. Which of the following statement is not correct in respect of hydrophilic sol. ?

A. The particles are hydrated

B. They are quite stable and are not easily coagulated

C. They are irreversible

D. There are considerable interactions between the dispersed phase and dispersion medium

Answer: C

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26. In which of the following colloidal systems the dispersion medium is solid?

A. Soap lather

B. Smoke

C. Boot polish

D. Clouds.

Answer: C

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27. Which of the following indicates the charge on colloidal particles ?

A. Brownian movement

B. Electrophoresis

C. Electrolysis

D. Tyndall effect

Answer: B

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28. The substances which readily form sol. when brought in contact with water is called

A. hydrophobic

B. hydrophilic

C. crystalloid

D. None of the above.

Answer: B

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29. Clouds represent an example of dispersion of

A. gas in solid

B. solid in gas

C. gas in gas

D. liquid in gas.

Answer: D

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30. The basic principle of cotterell precipitator is

A. Le-Chatelier principle

B. Neutralisation of charge on colloids

C. Peptisation

D. None of the above.

Answer: B

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31. The stability of the dispersed phase in a lyophobic colloids is due to

A. high viscosity of the medium

B. the formation of electrical layer between two phases

C. high surface tension of sol

D. None of the above.

Answer: B

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32. Colloidal particles of soap sol in water are

A. negatively charged

B. positively charged

C. neutral

D. unpredictable

Answer: A

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33. Arsenic sulphide sol is negatively charged. Which of the following electrolytes would be most effective in its coagulation?

A. $BaCl_2$

B. KCl

C. $K_4[Fe(CN)_6]$

D. $AlCl_3$

Answer: D

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34. Metals like silver and copper can be obtained in the colloidal state by

A. Peptisation

B. Bredig's Arc method

C. Dialysis

D. Coagulation

Answer: B

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35. In which of the following states, the particle size would be greater than 300 m μ

A. Suspension

B. True solutions

C. Colloidal solution

D. None of the above.

Answer: A

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36. The particle size range from.....in colloidal state

A. 1-100nm

B. 200-2000nm

C. 2000-4000nm

D. 0.1-1nm

Answer: A

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37. Which of the following processes can be used for the purification of colloids?

A. Coagulation

B. Dialysis

C. Flocculation

D. All of the above

Answer: B

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38. Gold number gives the indication of

A. gm-molecules of gold per 1000 ml of colloidal solution

B. percentage of gold in the suspension

C. charge on the colloids

D. protective power of a colloid

Answer: D

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39. In which of the following systems the dispersed phase and dispersion medium are both solid

A. Foam

B. Dust strom

C. Coloured glass

D. Paints

Answer: C

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40. The presence of colloidal particles of dust in air imparts blue colour to the sky. This is due to

A. absorption of light

B. reflection of light

C. refraction of light

D. scattering of light.

Answer: D

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41. Which of the following chemical equation represents the formation of colloidal solution?

A. $Cu + CuCl_2 \rightarrow Cu_2Cl_2$

B. $2Mg + CO_2 \rightarrow 2MgO + C$

C. $2HNO_3 + 3H_2S \rightarrow 3S + 4H_2O + 2NO$

D. Both 'B' and 'C'

Answer: C

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42. Which of the following can be included in the category of colloids?

A. Milk

B. Blood

C. Latex

D. All.

Answer: D

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43. Gold number is minimum in case of

A. Gelatin

B. Egg albumin

C. Gum arabic

D. Starch.

Answer: A

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44. The ability of ion to bring about coagulation of a give colloidal solution depends upon

A. the size of its ion

B. the magnitude of charge

C. the sign of charge

D. both magnitude and sign of charge

Answer: D

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45. Purple of cassius is

A. collidal solution of gold

B. colloidal solution of silver

C. colloidal solution of platinum

D. oxyacids of gold.

Answer: A

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46. The detergent action of soap is due to its

A. alkalinity

B. solubility in water

C. emuldifying property

D. ability to produce lather with water

Answer: C

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47. The dispersion medium in Gel is

A. Solid

B. liquid

C. Water

D. Gas

Answer: A

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48. The redispersal of a freshly precipitated substance into a sol by the addition of an electrolyte in common is known as

A. Aggregation

B. Condensation

C. Coagulation

D. Peptization

Answer: D

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49. The coagulation of 10 cm^3 of Gold sol is completely prevented by addition of 0.025 g of starch to it. The gold number of starch is

A. 0.025

B. 0.25

C. 2.5

D. 25

Answer: D

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50. The stability of hydrophobic sol is due to

A. solvation of colloidal particles

B. the charge on the colloidal particles

C. the size of the particles

D. None of the above.

Answer: B

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51. Latex is a colloidal suspension of rubber particles, they carry

A. no charge

B. positive charge only

C. negative charge only

D. may be positive or negative charge.

Answer: C

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52. Gelatin is often used as an ingredient in the manufacture of ice cream of

A. causing mixture to solidify

B. improving the flavour

C. stabilising the colloidal system and preventing the crystal growth

D. preventing formation of colloid

Answer: C

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53. When gets are allowed to stand, they give out small quantity of liquid (or water). This process is called

A. Coagulation of gel

B. Syneresis

C. Thixotropy

D. None of the above.

Answer: B

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54. Which of the following has largest protecting power?

A. Gelatin (Gold no.=0.01)

B. Dextrin (Gold no.=15)

C. Potato starch (Gold no. ≈ 0.25)

D. Albumin (Gold no. ≈ 0.25)

Answer: A

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55. Which type of molecules from miselles?

A. Non-polar molecules

B. Polar molecules

C. Surfactant molecules

D. any of the above

Answer: C

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56. The critical micellization concentration (CMC) is

A. The concentration at which micellization begins

B. The concentration at which true solution is formed

C. The concentration at which one molar electrolyte is present per 1000 gm of solution

D. The concentration at which solute and solution form equilibrium.

Answer: A

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57. A dispersion of AgCl in water is

A. hydrophilic colloid

B. an emulsion

C. an alcosol

D. hydrphobic sol.

Answer: D

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58. Which of the following represent homogeneous catalysis?

A. Oil$+H_2 \xrightarrow{Ni}$ saturated fat

B. $N_2(g) + 3H_2(g) \xrightarrow{Fe} 2NH_3(g)$

C. $CH_3COOH + C_2H_5OH \xrightarrow[H_2SO_4]{H^+} CH_3COOC_2H_5 + H_2O$

D. None of the above.

Answer: C

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59. Which of the following is a heterogeneous catalysis?

A. $2C_2H_5OH \xrightarrow{\text{Conc.}H_2SO_4} C_2H_5OC_2H_5 + H_2O$

B. $2CO + O_2 \xrightarrow{NO} CO_2$

C. $SO_2 + \frac{1}{2}O_2 \xrightarrow{NO} SO_3$

D. $SO_2 + \frac{1}{2}O_2 \xrightarrow{V_2O_5} SO_3$

Answer: D

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Revision Question From Competitive Exams

1. Which of the following is a hydrophilic colloidal sol?

A. Barium sulphate sol.

B. Arsenious sulphide sol.

C. Starch sol.

D. Silver iodide sol

Answer: C

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2. The colloidal sols are purified by

A. Peptisation

B. coagulation

C. Dialysis

D. flocculation

Answer: C

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3. 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. True solution

Answer: C

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4. Point out the false statement

A. Colloidal sols are homogeneous

B. Colloids carry +ve orve charge

C. Colloids show Tyndall effect

D. The size range of colloidal particles is 10-1000Å.

Answer: A

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5. Which is a characteristic of a catalyst?

A. It changes the equilibrium point

B. It initiates the reaction

C. It alters the rate of a reaction

D. It increases the average kinetic energy of the molecules.

Answer: C

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6. As_2S_2 sol

A. positive colloid

B. negative colloid

C. neutral colloid

D. None of the above.

Answer: B

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7. Crystalloids differ from colloids mainly in respect of

A. electrical behaviour

B. particle size

C. particle nature

D. solubility.

Answer: B

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8. In chemical reaction, catayst:

A. alters the amount of the products

B. lowers the activation energy

C. decrease the ΔH of forward reaction

D. increase the ΔH of forward reaction

Answer: B

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9. Peptisation denotes

A. digestion of food

B. hydrolysis of proteins

C. breaking and dispersion into colloidal state

D. precipitation of a solid from colloidate state.

Answer: C

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10. A colloidal solution is subjected to an electrical field. The particles move towards anode. The coagulation of same sol is studied using NaCl, $BaCl_2$ and $AlCl_3$ solution. Their coagulating power should be

A. $NaCl > BaCl_2 > AlCl_3$

B. $BaCl_2 > AlCl_3 > NaCl$

C. $AlCl_3 > BaCl_2 > NaCl$

D. $BaCl_2 > NaCl > AlCl_3$

Answer: C

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11. Which one among the following sols is hydrophobic?

A. Gum

B. Gelatin

C. Starch

D. Sulphur.

Answer: D

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12. Which of the following is less than zero during adsorption?

A. ΔG

B. ΔS

C. ΔH

D. All the above

Answer: D

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13. For adsorption of a gas on a solid, the plot of log x/m vs log P is linear with slope equal to: (n being whole number)

A. k

B. log k

C. n

D. 1/n

Answer: D

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14. Which is adsorbed to maximum amount by activated charcoal?

A. N_2

B. CO_2

C. Cl_2

D. O_2

Answer: B

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15. Which of the following constitute irreversible colloidal system in water as dispersion medium?

A. Clay

B. Platinum

C. $Fe(OH)_3$

D. All of these

Answer: D

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16. The size of colloidal particle is in between

A. $10^{-7} - 10^{-3} cm$

B. $10^{-9} - 10^{-11} cm$

C. $10^{-5} - 10^{-7} cm$

D. $10^{-2} - 10^{-3} cm$

Answer: C

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17. The stability of lyophillic colloid 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.

Answer: D

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18. Cod Liver oil is

A. Fat dispersed in water

B. Water dispersed in fat

C. Water dispersed in oil

D. Fat dispersed in fat.

Answer: C

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19. Catalyst only:

A. decrease activation energy

B. inecrease activation energy

C. brings about equilibrium

D. None of these

Answer: A

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20. The cause of Brownian movement is

A. heat changes in liquid state

B. convectional currents

C. the impact of molecules of the dispersion medium on the colloidal particle

D. Attractive forces between the colloidal particles and molecules of dispersion medium

Answer: C

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21. Brownian movement is found in

A. colloidal solution

B. suspendsion

C. saturated solution

D. unsaturated solution

Answer: A

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22. The Rubin number with was proposed by Ostwald as an alternative to the Gold number in order to measure the protective efficiency of a

lyophillic colloid may be difined as the

A. mass in milligrams of a colloid per 100 c.c. of solution which just prevent the colour change of standard sol of dye Congo-Rubin form red to violet when 0.16 g eq. KCl is added to it.

B. mass in milligrams of a colloid per 100 c.c. of solution which just prevent the colour change of standard sol of dye Congo-Rubin form red to violet when 0.1 M KCl is added to it.

C. mass in milligrams of a colloid per 100 c.c. of solution which just prevent the colour change of standard sol of dye Congo-Rubin form red to violet when 0.2 M KCl is added to it.

D. mass in milligrams of a colloid per 100 c.c. of solution which just prevent the colour change of standard sol of dye Congo-Rubin form red to violet when 1M KCl is added to it.

Answer: A

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23. Colloidal sol found effective in treating eye diseases is

A. colloidal sulphur

B. colloidal antimony

C. colloidal gold

D. colloidal silver

Answer: D

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24. How many layer are adsorbed in chemical adsorption?

A. one

B. two

C. many

D. zero.

Answer: A

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25. Cellulose dispersed in ethanol is called

A. emulsion

B. micelle

C. collodion

D. hydrophilic sol.

Answer: C

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26. Random motion of colloid particle is known as

A. Dialysis

B. Brownian movement

C. Electro-osmosis

D. Tyndall effect

Answer: B

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27. Which one is not true?

A. The catalyst accelerates the reaction

B. The catalyst is unchanged at the end of the reaction

C. In a reversible reaction the catalyst alters the equilibrium position

D. A small quantity of catalyst is often sufficent to bring about considerable amount of reaction.

Answer: C

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28. Milk can be preserved by adding a few drops of

A. Formic acid solution

B. Formaldehyde solution

C. Acetic acid solution

D. Acetaldehyde solution.

Answer: B

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

A. Suspensions

B. Emulsions

C. Sugar solution

D. Gold sol.

Answer: C

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30. Which of the following is a lyophillic colloid?

A. Milk

B. Gum

C. Fog

D. Blood.

Answer: B

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31. Which of the following kinds of catalysis can be explained by the adsorption theory?

A. Homogeneous catalysis

B. Acid-base catalysis

C. Heterogeneous catalysis

D. Enzyme catalysis

Answer: C

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32. Lyophillic collids are stable due to

A. charge on the particles

B. Large size of the particle

C. Small size of the particle

D. layer of dispersion medium on their particles.

Answer: D

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33. Which one of the following will have the highest coagulation power for a ferric hydroxide sol.?

A. NaCl

B. $BaCl_2$

C. K_2CrO_4

D. $K_3\left[Fe(CN)_6\right]$

Answer: D

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34. 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.

Answer: C

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35. At CMC the surfactant molecule

A. decomposes

B. becomes completely soluble

C. associates

D. dissociates.

Answer: C

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36. Tyndall effect would be observed in a

A. solution

B. Solven

C. Colloidal solution

D. Precipitation

Answer: C

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37. Adsorption is multilayer in the case of

A. Physical adsorption

B. Chemisorption

C. Both

D. None of the above.

Answer: A

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38. In Brownian movement of motion, the paths of the particle are

A. Linear

B. Zig zag

C. Uncertain

D. Curved

Answer: B

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39. The heats of absorption in physisorption (or physical absorption) lies in the range (in kJ/mole)

A. 40-400

B. 40-100

C. $10 - 40$

D. $200 - 400$

Answer: C

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40. Cloud of fog is a colloidal system in which the dispersed phase and dispersed medium are

A. gas, liquid

B. liquid, gas

C. liquid, liquid

D. solid, liquid

Answer: B

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41. Which is used for ending charge on colloidal solution?

A. Electron

B. Electrolytes

C. Positively charged ions

D. Compounds.

Answer: B

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42. Which of the following ions can cause coagulation of proteins?

A. Ag^+

B. Na^+

C. Mg^{2+}

D. Ca^{2+}

Answer: A

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43. In physical adsorption, the forces of association are

A. ionic

B. covalent

C. van der Waal's

D. H-bonding

Answer: C

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44. Which is used for ending charge on colloidal solution?

A. Electrons

B. Electrolytes

C. Positively charged ions

D. Compounds.

Answer: B

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45. In Zeigler-Natta polymerisation of ethylene the active species is

A. $AlCl_3$

B. Et_3Al

C. CH_2CH_2

D. Ti^{3+}

Answer: D

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46. Which of the following is most effective in causing the coagulation of ferric hydroxide sol?

A. KCl

B. KNO_3

C. K_2SO_4

D. $K_3[Fe(CN)_6]$

Answer: D

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47. Blood may be purified by

A. Dialysis

B. Electroosmosis

C. Coagulation

D. Filtration

Answer: A

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48. Which one of the following is an example of homogeneous catalysis?

A. Haber process of synthesis of ammonia

B. Catalytic conversion of SO_2 to SO_3 in contact process

C. Catalystic conversion of water gas to methanol

D. Acid hydrolysis of methyl acetate.

Answer: D

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49. Colloidal gold is prepared by

A. Mechanical dispersion

B. Peptisation

C. Bredig's arc method

D. Hydrolysis

Answer: C

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50. The migration of colloidal solute particles in a colloidal solution, when an electric current is applied to the solution is known as

A. Brownian movement

B. Electroosmosis

C. Electrophoresis

D. Electrodialysis

Answer: C

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51. Adsorption due to strong chemical forces is called

A. Chemisorption

B. Physiosorption

C. Reversible adsorption

D. Both B and C

Answer: A

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52. When a strong beam of light is passed through a colloidal solution, the light will

A. be reflected

B. be scattered

C. be refracted

D. give a rainbow

Answer: B

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53. Alum helps in purifying water by

A. forming Si complex with clay particles

B. sulphate part which combines with dirt and removes it

C. aluminium which coagulates the mud particles

D. making mud water soluble.

Answer: C

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54. Adsorbed acetic acid on acitvated charcoal is

A. Adsorber

B. Absorber

C. Adsorbent

D. Adsorbate

Answer: D

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55. Milk is a colloid in which a

A. Liquid is dispersed in a liquid

B. Solid is dispersed in a liquid

C. Gas is dispersed in a liquid

D. Sugas is dispersed in liquid.

Answer: A

View Text Solution

56. Surface tension of lyophillic sols is

A. lower than that of H_2O

B. more than that of H_2O

C. equal to that of H_2O

D. None of the above.

Answer: A

View Text Solution

57. 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.

Answer: A

View Text Solution

58. Which among the following statement is false?

A. Increase of pressure increase the amount of adsorption

B. Increase in temperature may decrease the amount of adsorption

C. The adsorption may be monolayered or multilayered

D. Particle size of the adsorbent will not effect the amount of adsorption.

Answer: D

View Text Solution

59. In the case of autocatalysis

A. reactant catalyses

B. heat produced in the reaction catalyses

C. product catlyses

D. solvent catalyses.

Answer: C

View Text Solution

60. Which one of the following substance is not used for preparing lyophillic sols?

A. Starch

B. Gum

C. Gelatin

D. Metal sulphide.

Answer: D

View Text Solution

61. Which of the following incorrect statements for physiosorption?

A. It is a reversible process

B. It require less heat of absorption

C. It requires activation energy

D. It takes place at low temperature.

Answer: C

View Text Solution

62. The formation of a colloida from suspension is

A. Peptisation

B. Condensation

C. Sedimentation

D. Fragmentation.

Answer: A

View Text Solution

63. Arsenic sulphide is a negative sol. The reagent with least precipitating power is

A. $AlCl_3$

B. $NaCl$

C. CaF_2

D. Glucose

Answer: D

View Text Solution

64. Which one of the following is correctly matched?

A. Emulsion-Curd

B. Foam-Mist

C. Aerosol-Smoke

D. Solid sol-Cake.

Answer: C

View Text Solution

65. Colloid of which one of the following can be prepared by electrical dispersion as well as reduction method?

A. Sulphur

B. Ferric hydroxide

C. Arsenious sulphide

D. Gold.

Answer: D

View Text Solution

66. When H_2S is passed through nitric acid, the product is

A. Rhombic(S)

B. Prismatic(S)

C. Amorphous(S)

D. Monoclinic (S)

Answer: C

View Text Solution

67. According to the adsorption theory of catalysis, the speed of the reaction increases because

A. adsorption lower the activation energy of the reaction

B. the concentration of reactant molecules at the active centres of the catalyst becomes high due to adsorption

C. in the process of adsorption, the activation energy of the molecules become large

D. adsorption produces heat which increases the speed of the reaction.

Answer: A

View Text Solution

68. Which one 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.

Answer: B

View Text Solution

69. Which of the following is not characteristic of chemisorption?

A. Adsorption may be multimolecular layer

B. Adsorption is specific

C. ΔH is of the order of 400kJ

D. Adsorption is irreversible.

Answer: A

View Text Solution

70. The concentration of electrolyte required to coagulate a given amount of As_2S_3 sol.is minimum in the case of :

A. Potassium sulphate

B. Aluminium nitrate

C. Magnese nitrate

D. Potassium nitrate

Answer: B

View Text Solution

71. Which of the following is not a surfactant ?

A. $CH_3-(CH_2)_{15}-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{N^+}}-CH_3Br^-$

B. $CH_3-(CH_2)_{14}-CH_2-NH_2$

C. $CH_3-(CH_2)_{16}-CH_2OSO_2^-Na^+$

D. $OHC-(CH_2)_{14}-CH_2-COO^-Na^+$

Answer: B

View Text Solution

72. Which doesn't cause coagulation of colloidal solution ?

A. Filtration

B. Nonelectrolyte

C. Electrolyte

D. All.

Answer: B

View Text Solution

73. Scattering of light takes place in

A. electrolysis

B. collodial solutions

C. electroplating

D. solution of electrolytes.

Answer: B

View Text Solution

74. Colloidal solutions of gold prepared by different methods are of different colours because of

A. variable valency of gold

B. different concentration of gold particles

C. impurities produce by different methods

D. different diameters of colloidal gold particles.

Answer: D

View Text Solution

75. The volume of gases H_2, CH_4, CO_2 and NH_3 absorbed by 1 gm of activated charcoal at 298 K are in the order:

A. $H_2 > CH_4 > CO_2 > NH_3$

B. $CH_4 > CO_2 > NH_3 > H_2$

C. $CO_2 > NH_3 > H_2 > CH_4$

D. $NH_3 > CO_2 > CH_4 > H_2$

Answer: D

View Text Solution

76. Bredig's arc method cannot be used to prepare colloidal solution of which of the following ?

A. Pt

B. Fe

C. Ag

D. Au.

Answer: B

View Text Solution

77. The fresh precipitate can be transformed in colloidal state by

A. Peptisation

B. coagulation

C. Diffusion

D. None of these

Answer: A

View Text Solution

78. Milk is

A. Fat dispersed in water

B. fat dispersed in milk

C. fat dispersed in fat

D. water dispersed in milk

Answer: A

View Text Solution

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

A. Cetyltrimethylammonium bromide

B. Sodium dodecyl sulphate

C. Sodium acetate

D. Urea.

Answer: A

View Text Solution

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

A. N_2

B. SO_2

C. H_2

D. O_2

Answer: B

View Text Solution

81. Identify the correct statement regarding enzymes.

A. Enzymes are specific biological catalysts that can normally function at very high temperature (T~$1000K$)

B. Enzymes are specific biological catalyst that posses well defined active sites.

C. Enzymes are specific biological catalysts that cannot be poisoned.

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

Answer: B

View Text Solution

82. On addition of one mL 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

Answer: A

View Text Solution

83. The disperse phase in colloidal iron (III) hydroxide and colloidal gold is positively and negatively charged respectively. Which of the following statement is not correct ?

A. Mixing the sols has no effect

B. Coagulation in both sols can be brought about by electrophoresis.

C. Magnesium chloride solution coagulation the gold sols. More readily than the iron (III) hydroxide sol.

D. Sodium sulphate solution causes coagulation in both sols.

Answer: A

View Text Solution

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

A. $\frac{V_s}{V_c} \approx 10^{-3}$

B. $\frac{V_s}{V_c} \approx 10^{3}$

C. $\frac{V_c}{V_s} \approx 1$

D. $\frac{V_c}{V_s} \approx 10^{23}$

Answer: B

View Text Solution

85. Which one of the following forms micelles in aqueous solution, above certain concentration.

A. Glucose

B. Urea

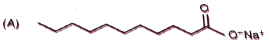
C. Deodecyltrimethylammonium chloride

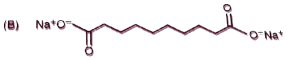
D. Pyridinium chloride.

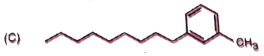
Answer: C

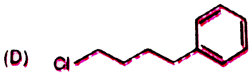
View Text Solution

86. Which of the following molecules is most suitable to disperse benzene in water ?

A. 

B. 

C. 

D. 

Answer: A

View Text Solution

87. Which of the following is used to produce smoke screens ?

A. calcium phosphide

B. zinc sulphide

C. sodium carbonate

D. zinc phosphide

Answer: A

View Text Solution

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

A. $2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$

B. Hydrolysis of aqueous sucrose solution in the presence of aqueous mineral acid.

C. $2H_2O_2(l) \xrightarrow{Pt(s)} 2H_2O(l) + O_2(g)$

D.

Answer: C

View Text Solution

89. 10^{-4} g of gelatin is required to be added to 100 cm^3 of a standard gold sol to just prevent its coagulation by the addition of 1 cm^3 of 10% NaCl solution to it. Hence, the gold number of gelatin is

A. 10

B. 1

C. 0.1

D. 0.01

Answer: D

View Text Solution

90. Which one of the following will have the highest coagulation power for a ferric hydroxide sol.?

A. NaCl

B. $BaCl_2$

C. K_2CrO_4

D. $K_4\left[Fe(CN)_6\right]$

Answer: D

View Text Solution

91. The electric distintegration method used for preparing the gold sol involves

A. Electrodialysis

B. Micelle formation

C. Coagulation

D. Dispersion as well as condensation.

Answer: D

View Text Solution

92. What is the equation form of Langmuir isotherm under high pressure ?

A. $\frac{x}{m} = \frac{a}{b}$

B. $\frac{x}{m} = \alpha p$

C. $\frac{x}{m} = \frac{1}{ap}$

D. $\frac{x}{m} = \frac{b}{a}$

Answer: A

View Text Solution

93. An example of autocatalysis is

A. oxidation of NO to NO_2

B. oxidation of SO_2 to SO_3

C. decomposition of $KClO_3$ to KCl and O_2

D. oxidation of oxalic acid by acidified $KMnO_4$

Answer: D

View Text Solution

94. Which of the following electrolyte will have maximum flocculation value for $Fe(OH)_3$ sol ?

A. NaCl

B. Na_2S

C. $(NH_4)_3PO_4$

D. K_2SO_4

Answer: A

View Text Solution

95. The coagulation of 200 mL of a positive colloid took place when 0.73 g HCl was added to it without changing the volume much. The flocculation value of HCl for the colloid is

A. 0.365

B. 36.5

C. 100

D. 150

Answer: C

View Text Solution

96. Which of the following is true in respect of its adsorption ?

A. $\Delta G > 0, \Delta S > 0, \Delta H < 0$

B. $\Delta G < 0, \Delta S < 0, \Delta H < 0$

C. $\Delta G > 0, \Delta S > 0, \Delta H < 0$

D. $\Delta G < 0, \Delta S < 0, \Delta H > 0$

Answer: B

View Text Solution

97. If (x/m) is the mass of the adsorbate adsorbed per unit mass of adsorbent, p is pressure of the adsorbate gas and a and b are constant, which of the following represent Langmuir adsorption isotherm ?

A. $\frac{\log(x)}{m} = \log\left(\frac{a}{b}\right) + \frac{1}{a}\log p$

B. $\frac{x}{m} = \frac{b}{a} + \frac{1}{ap}$

C. $\frac{x}{m} = \frac{1+bp}{ap}$

D. $\frac{1}{(x/m)} = \frac{b}{a} + \frac{1}{ap}$

Answer: D

View Text Solution

98. Which acts as autocatalyst during titration of $KMnO_4$ and oxalic acid in presence of H_2SO_4?

A. H_2SO_4

B. $KMnO_4$

C. Oxalic acid

D. $MnSO_4$

Answer: D

View Text Solution

99. The formation of micelles which occurs only beyond certain temperature is called

A. critical temperature

B. critical sol temperature

C. consulate temperature

D. kraft temperature

Answer: D

View Text Solution

100. Although nitrogen does not absorb on the surface at the room temperature, it absorbs on the same surface at 83 K. Which one of the following statement is correct ?

A. At 83 K, there is formation of monomolecular layer

B. At 83 K, there is formation of multi molecular layer

C. At 83 K, nitrogen molecules are held by chemical bonds.

D. At 83 K, nitrogen is absorbed as atoms.

Answer: B

View Text Solution

101. The gold number of some colloids are given below:

Colloid	Gold number
A	0.01
B	2.5
C	20

The protective nature of these colloids follows the following order

A. $C > B > A$

B. $A > B > C$

C. $A = B = C$

D. $B > A > C$

Answer: B

View Text Solution

102. Which one of the following acts as the best coagulating agent of ferric hydroxide sol ?

A. magnesium chloride

B. hydrochloric acid

C. aluminium chloride

D. potassium ferricyanide

Answer: D

View Text Solution

103. Which among the following statement are correct with respect to adsorption of gases on a solid ?

(1) The extent of adsorption is equal to kp^n according to Freundlich isotherm

(2) The extent of adsorption is equal to $kp^{1/n}$ according to Freundlich isotherm

(3) The extent of adsorption is equal $\frac{(a+bp)}{ap}$ according to Langmuir isotherm

The extent of adsorption is equal $\frac{ap}{(1+bp)}$ according to Langmuir isotherm

(5) Freundlich adsorption fails at a low pressure

A. 1 and 3

B. 1 and 4

C. 2 and 3

D. 2 and 4

Answer: D

View Text Solution

104. Milk is an example of

A. Gel

B. Emulsions

C. sol

D. Suspension

Answer: B

View Text Solution

105. Which one of the following is a homogeneous catalysis ?

A. Hydrogenation of oils

B. Synthesis of ammonia by Haber's process

C. Manufacture of sulphuric acid by lead chamber process

D. Manufacture of sulphuric acid by constant process

Answer: C

View Text Solution

106. The physical state of dispersed phase and dispersion medium in colloid like pesticide spray respectively are

A. solid,gas

B. gas,liquid

C. liquid,gas

D. liquid,solid

Answer: C

View Text Solution

107. Plot of log x/m against log p is a straight line inclined at an angle of 45° . When the pressure is 0.5 atm and Freundlich parameter, k is 10.6, the amount of the solute adsorbed per gram of adsorbent will be (log 5 =0.0990)

A. 1 g

B. 2g

C. 3g

D. 5g

Answer: D

View Text Solution

108. The number of moles of lead nitrate needed to coagulate 2 mol of colloidal $[AgI]I^-$ is

A. 2

B. 1

C. $1/2$

D. $2/3$

Answer: B

View Text Solution

109. Dalda is prepared from oils by

A. hydrolysis

B. distillation

C. oxidation

D. reduction

Answer: D

View Text Solution

110. The colour of sky is due to

A. absorption of light by atmospheric gases

B. transmission of light

C. wavelength of scattered light

D. All of these

Answer: C

View Text Solution

111. The basic principle of Cottrel's precipitator is

A. neutralization of charge on colloidal particles

B. scattering of light

C. Lechateliar's principle

D. Peptization

Answer: A

View Text Solution

112. Fog is an example of colloidal system of

A. liquid dispersed in a liquid

B. liquid dispersed in a gas

C. gas dispersed is a liquid

D. solid dispersed in a liquid

Answer: B

View Text Solution

113. An emulsion is a colloidal solution of one of the following dispersed in another liquid.

A. Solid

B. Liquid

C. Gas

D. Medium

Answer: B

View Text Solution

114. Hair cream is an example of

A. Gel

B. Sol

C. Aerosol

D. Emulsion

Answer: D

View Text Solution

115. Freundlich equation for adsorption of gases (in amount of x g) of a solid (in amount of m g) at constant temperature can be expressed as

A. $\log\left(\frac{x}{m}\right) = \log p + \frac{1}{n}\log k$

B. $\log\left(\frac{x}{m}\right) = \log k + \frac{1}{n}\log p$

C. $\frac{x}{m} \propto p^n$

D. $\frac{x}{m} = \log p + \frac{1}{n}\log k$

Answer: B

View Text Solution

116. Adsorption is an exothermic process. 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

Answer: D

View Text Solution

117. Rate of physical adsorption increases with

A. decrease in surface area

B. decrease in temperature

C. decrease in pressure

D. increase in temperature

Answer: B

View Text Solution

118. The most adsorbed gas on activated charcoal is

A. N_2

B. H_2

C. CO_2

D. CH_4

Answer: C

View Text Solution

119. In which one of the following, the dispersed phase is a liquid ?

A. Whipped crean

B. Foam rubber

C. Paint

D. Colud.

Answer: D

View Text Solution

120. The solution of which one of the following will be least effective in coagulation of $Fe(OH)_3$ sol ?

A. $K_4[Fe(CN)_6]$

B. K_2CrO_4

C. KBr

D. K_2SO_4

Answer: C

View Text Solution

121. Which one of the following has minimum gold number ?

A. Starch

B. Sodium oxalate

C. Gum arabic

D. Gelatin.

Answer: D

View Text Solution

122. Which one of the following does not involve coagulation ?

A. Formation of delta region

B. Petization

C. Treatment of drinking water by potash alum

D. Clotting of blood by use of ferric chloride.

Answer: B

View Text Solution

123. Collodian is a 4% solution of which one of the following alcohol ether mixture

A. nitroglycerine

B. cellulose acetate

C. glycol dinitrite

D. nitrocellulose

Answer: D

View Text Solution

124. Adsorption is accompanied by

A. decrease in enthalpy and increase in entropy

B. increase in enthalpy and increase in entropy

C. decrease in enthalpy and decrease in entropy

D. no change in enthalpy and entropy

Answer: C

View Text Solution

125. The formation of miscelles takes place only above

A. inversion temperature

B. Boyle temperature

C. Critical temperature

D. kraft temperature

Answer: D

View Text Solution

126. Cetyl trimethyl ammonium bromide is a popular

A. anionic detergent

B. cationic detergent

C. non-ionic detergent

D. sweeterner

Answer: B

View Text Solution

127. Associated colloid among the following is

A. enzymes

B. protein

C. cellulose

D. Sodium stearate

Answer: D

View Text Solution

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

A. $\Delta H < 0$ and $\Delta S < 0$

B. $\Delta H > 0$ and $\Delta S < 0$

C. $\Delta H > 0$ and $\Delta S > 0$

D. $\Delta H < 0$ and $\Delta S > 0$

Answer: A

View Text Solution

129. Which of the following does not involve coagulation ?

A. Clotting of blood by the use of all ferric chloride

B. Formation of delta region

C. Treatment of water by potash alum

D. Peptization

Answer: D

View Text Solution

130. Dialysis can be used to separate

A. glucose and fructose

B. protein and starch

C. glucose and protein

D. glucose and starch

Answer: C

View Text Solution

131. During adsorption of a gas on the surface of a solid which of the following is true

A. $\Delta G < 0, \Delta S > 0, \Delta H < 0$

B. $\Delta G > 0, \Delta H < 0, \Delta S < 0$

C. $\Delta G < 0, \Delta H < 0, \Delta S < 0$

D. $\Delta G < 0, \Delta H < 0, \Delta S > 0$

Answer: C

View Text Solution

132. All collidal dispersion have

A. very high osmotic pressure

B. low osmotic pressure

C. high osmotic pressure

D. no osmotic pressure.

Answer: A

View Text Solution

133. Silver iodide is used for producing artificial rain because Ag_2I

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.

Answer: C

View Text Solution

134. The disease kalazar is cured by

A. Colloidal antimony

B. Milk of magnesia

C. Argyroes

D. Colloidal gold

Answer: A

View Text Solution

135. In Freundlich adsorption isotherm to the value of 1/n is

A. between 0 and 1 in all cases

B. between 2 and 4 in all cases

C. 1 in case of physical adsorption

D. 1 in case of chemisorption.

Answer: B

View Text Solution

136. The protcting power of lyophilic colloidal solution is expressed in terms of

A. coagulation value

B. critical micelle concentration

C. gold number

D. oxidation number

Answer: C

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137. According to Freundlich adsorption isotherm, which of the following is correct?

A. $x/m \propto p'$

B. $\frac{x}{m} \propto p^{1/n}$

C. $\frac{x}{m} \propto p^{\circ}$

D. All the above are correct for different ranges of pressure.

Answer: D

Watch Video Solution

138. Milk is the example of

A. w/o type emulsion

B. o/w type emulsion

C. w/w type emulsion

D. o/o type emulsion

Answer: B

Watch Video Solution

139. Cheese in an example of

A. solid

B. Emulsions

C. gel

D. aerosol.

Answer: C

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140. In the adsorption of a gas on a solid, Freundlich isotherm is obeyed. Then the extent of adsorption is

A. directly proportional to the pressure of the gas

B. inversely propotional to the pressure of the gas

C. directly propotional to the square root of the pressure of gas

D. inversly propotional to the square root of the pressure of gas

Answer: A

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Selected Straight Objective Type Mcq S

1. Adsorption is accompanied by :-

A. decrease in enthalpy of the system

B. increase in enthalpy of the system

C. decrease in free energy of the system

D. $T\Delta S$ for the process is positive.

Answer: A::C

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2. A common example of heterogeneous catalysis is the synthesis of NH_3

$$N_2(g) + 3H_2(g) \overset{Fe}{\Longleftrightarrow} 2NH_3(g)$$

In this example,

A. adsorption provides the activation energy for the reaction

B. adsorption increase the concentration of reactants on the surface of the catalyst

C. Catalyst increase the rate of forward reaction more than the rate of backward reaction.

D. adsorption splits the molecular species into more reactive atomic species.

Answer: A::B::D

View Text Solution

3. Which one is not lyophilic in nature?

A. Gelatine sol

B. Red gold sol

C. Muddy water

D. As_2S_3 sol.

Answer: B::C::D

View Text Solution

4. Which one is not lyophobic in nature ?

A. Starch sol.

B. White of an egg

C. Sulphur sol

D. As_2S_3 sol.

Answer: A::B

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5. At isoelectric point

A. colloidal particles migrate towards oppositely charged electrodes

B. coagulates

C. becomes electrically neutral

D. pH of the solution becomes 7

Answer: B::C

View Text Solution

Mcq With Only One Correct Answer

1. Adsorption is generally an

A. exothermic process

B. endothermic process

C. may be exothermic or endothermic

D. neither exothermic nor endothermic.

Answer: A

View Text Solution

2. The function of gum Arabic in the preparation of Indian ink is

A. Coagulation

B. peptization

C. protective action

D. adsorption

Answer: B

View Text Solution

3. Tyndall effect is more pronounced in

A. hydrophilic sols

B. hydrophobic sols

C. lyophilic sols

D. Both A and C

Answer: B

View Text Solution

4. Action of a heterogeneous catalyst depends upon

A. mass

B. solubility

C. particle size

D. none.

Answer: C

View Text Solution

5. Which of the following is an associated colloid ?

A. Protein + water

B. Soap+ water

C. Rubber + benzene

D. Milk.

Answer: B

View Text Solution

6. Blood may be purified by

A. Dialysis

B. electro-osmosis

C. Coagulation

D. Filtration

Answer: A

View Text Solution

7. Gold number represents

A. precentage of gold in the red gold sol

B. precentage of gold in the blue gold sol

C. protective power of a lyophilic colloid

D. quantity of gold in its alloys

Answer: C

View Text Solution

8. Peptisation is a process of

A. precipitation of colloidal particles

B. purification of colloids

C. dispersing precipitate into colloidal solution

D. movement of colloidal particles in the electric field.

Answer: C

View Text Solution

9. Rate of physisorption increase with

A. decrease in temperature

B. increase in temperature

C. decrease in pressure

D. decrease in surface area.

Answer: A

View Text Solution

10. Adsorption of gases on solid surface is generally exothermic because

A. enthalpy is positive

B. entropy decrease

C. entropy increases

D. free energy increases.

Answer: B

View Text Solution

11. Which of the following is correct for lyophillic sol ?

A. Irreversible sol.

B. Formed from inorganic substances

C. Readily coagulated by addition of electrolyte

D. Self stabilized.

Answer: D

View Text Solution

12. In Langmuir's model of adsorption of a gas on a solid surface,

A. the mass of gas striking a given area of surface is proportional to the pressure of the gas.

B. the mass of gas striking a given area of surface is independent of the pressure of the gas.

C. The rate of dissociation of adsorbed molecules, from the surface does not depend on the surface covered

D. the adsorption at a single site on the surface covered

Answer: A

View Text Solution

13. A plot of x/m versus log p for the adsorption of a gas on a solid gives a straight line with slope equal to

A. 1/n

B. log k

C. $-\log k$

D. n.

Answer: A

View Text Solution

14. Given below, catalyst and corresponding process/reaction are matched. The mismatch is

A. $\left[RhCl(PPh_3)_2\right]$: hydrogenation

B. $TiCl_4 + Al(C_2H_5)_3$: polymerisation

C. N_2O_5 , Haber Bosch process

D. nickel, hydrogenation

Answer: C

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15. The Langmuir adsorption isotherm is deduced using the assumption.

A. The adsorbed molecules interact with each other

B. The adsorption takes place in multi layers

C. The adsorption sites are equivalent in their ability to adsorb the particles

D. The heat of adsorption varies with the coverage.

Answer: C

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16. Among the following, which surfactant will form micelles in aqueous solution at the lowest molar concentration at ambient conditions?

A. $CH_3(CH_2)_{15}N^+CH_3Br^-$

B. $CH_3(CH_2)_{11}OSO_3^-Na^+$

C. $CH_3(CH_2)_6COO^-Na^+$

D. $CH_3(CH_2)_{11}N^+(CH_3)_3Br^-$

Answer: A

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17. Gold numbers of protective colloids A, B, C and D are $0.5, 0.01, 0.10$ and 0.005 respectivaly. The correct order of their protective power is

A. $A < C < B < D$

B. $B < D < A < C$

C. $D < A < C < B$

D. $C < B < D < A$

Answer: A

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18. Which of the following statements is incorrect regarding physisorption?

A. It occurs because of Vander Waal's forces

B. More easily liquefiable gas is absorbed readily

C. under high pressure it result into multimolecular layers on adsorbent surface

D. Enthalpy of adsorption (ΔH adsorption) is low and positive.

Answer: D

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19. If x is the amount of adsorbate and m is the amount of adsorbent, which of the following relation is related to adsorption process?

A. p=f(T) at constant (x/m)

B. $x/m=p \times T$

C. $x/m=f(p)$ at constant T

D. $x/m=f(T)$ at constant P.

Answer: B

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20. The correct statement(s) pertaining to the adsorption of a gas on a solid surface is (are)

A. Adsorption is always exothermic

B. Physisorption may transform into chemisorption at high temperature

C. Physisorption increase with increasing temperature but chemisorption decreases with increasing temperature

D. Chemisorption is more exothermic than physisorption, however it is very slow due to higher energy of activation.

Answer: A::D

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Linked Comprehension Type Mcqs

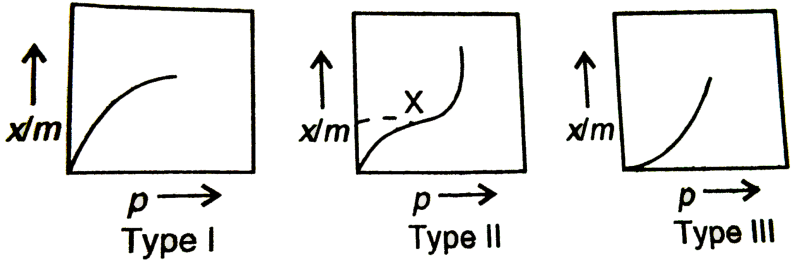
1. The amount of gas adsorbed (x/m) is the function of temperature and pressure, which can be shown as under

$\frac{x}{m}$ = f(p,T)

The variation x/m and p, at constant temperature is known as adsorption isotherm

i.e., x/m=f(p) at constant temperature

Seven type of physisorption isotherms are known. Some of them are shown below

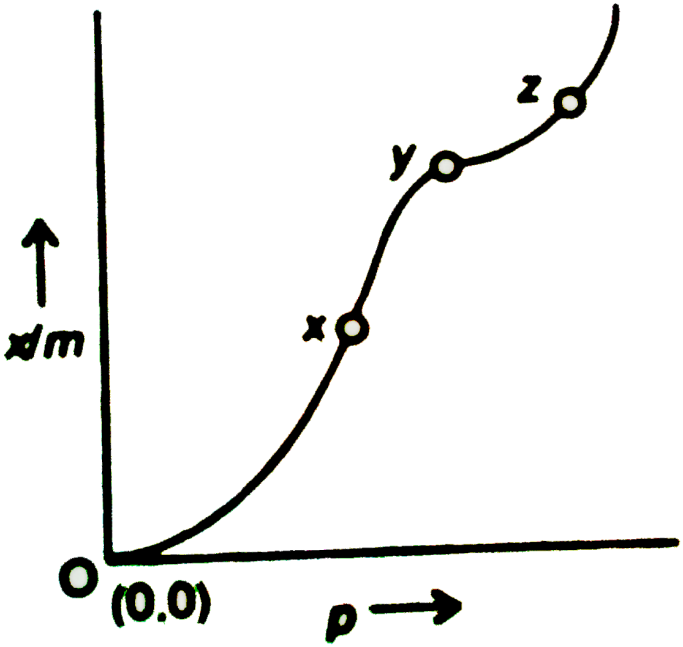


Physisorption Type I. Where there is formation of monolayer on the surface of adsorbent, this type of curve is obtained.

Physisorption Type II. The transition point 'X' of this physisorption isotherm indicates, that the formation of mono layer is complete and that of multilayer is started.

Physisorption Type III. This isotherm has no transition point. In this type of curve, the multimolecular starts before the completion of monomolecular layer.

On the basis of this comprehension, answer teh following question from the physisorption isotherm of a gas on a solid shown as under.



The portion "OX" of the physisorption isotherm represents

A. x/m is directly proportional to p

B. x/m is linear function of pressure

C. adsorption isotherm has no transition point, the formation of multi-molecular layer starts before the completion of monomolecular layer

D. Both B and C

Answer: D

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2. The amount of gas adsorbed (x/m) is the function of temperature and pressure, which can be shown as under

$\frac{x}{m}$ = f(p,T)

The variation x/m and p, at constant temperature is known as adsorption isotherm

i.e., x/m=f(p) at constant temperature

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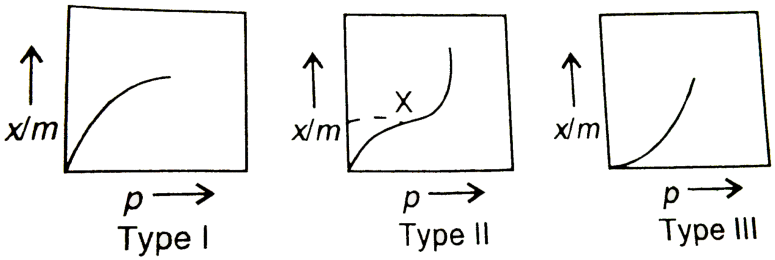

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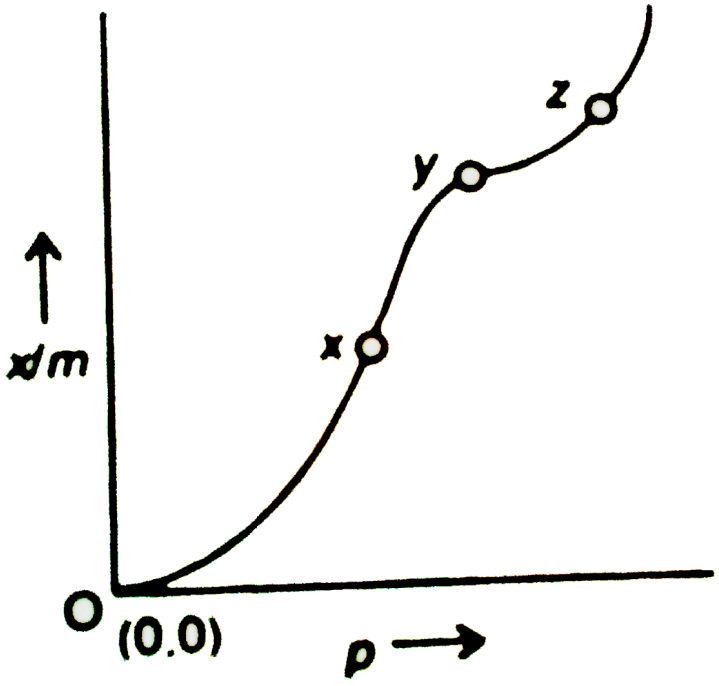

The portion XY of the curve correctly represents

A. x/m is directly proportional to p^n, where n is greater than 1

B. x/m is directly proportional to p^n where n $\leq$ 1,

C. monolayer formation

D. Both A and C

Answer: A

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3. The amount of gas adsorbed (x/m) is the function of temperature and pressure, which can be shown as under

$\frac{x}{m}$ = f(p,T)

The variation x/m and p, at constant temperature is known as adsorption isotherm

i.e., x/m=f(p) at constant temperature

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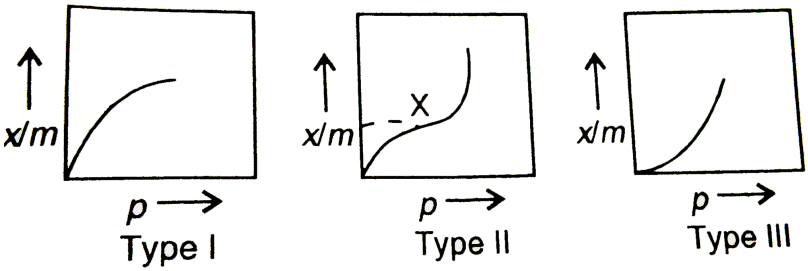

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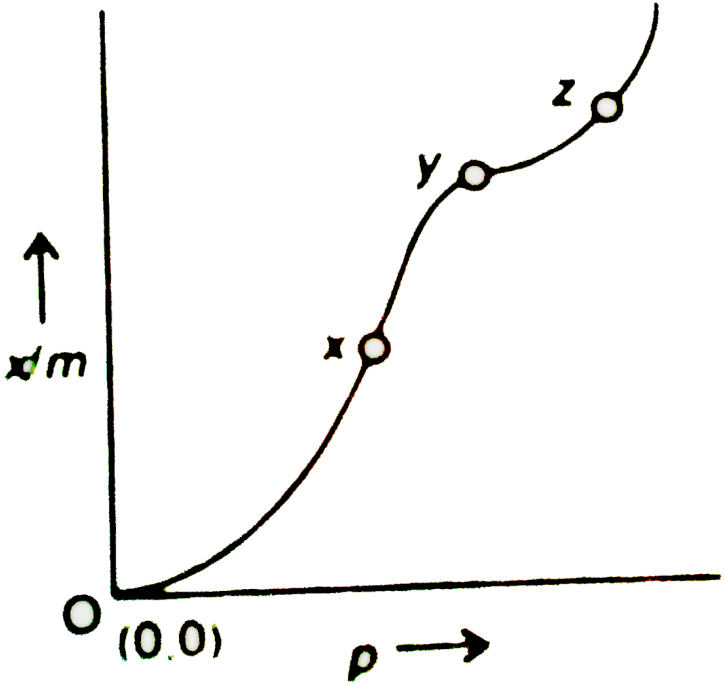

The point Y of physisorption isotherm correctly represents

A. formation of monolayer

B. formation of multilayer

C. first monolayer formation thereafter the formation of multilayer

D. none

Answer: A

View Text Solution

4. The amount of gas adsorbed (x/m) is the function of temperature and pressure, which can be shown as under

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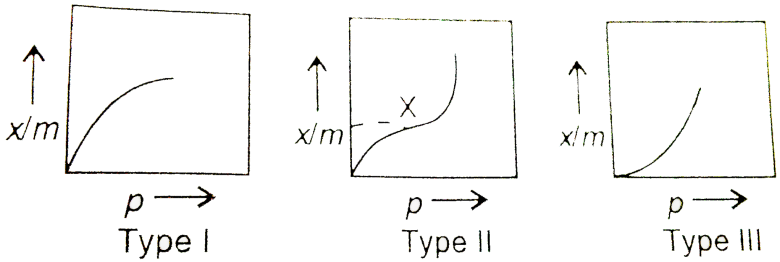

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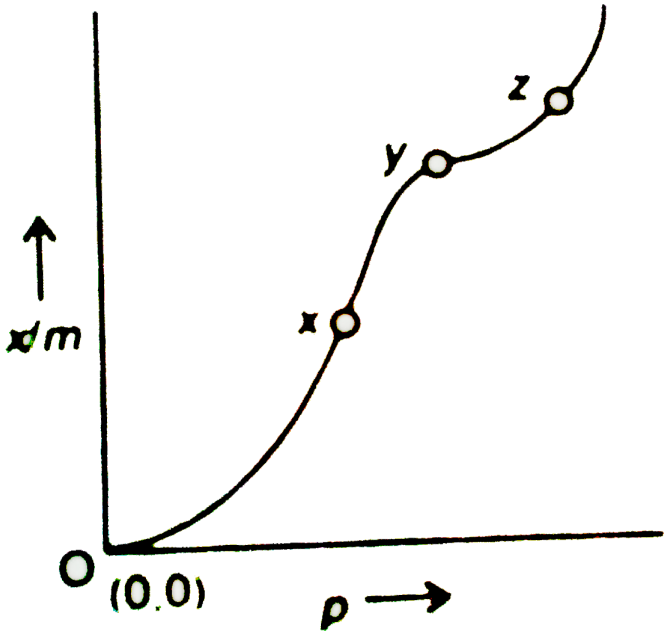

The point Z of the physisorption correctly represents

A. Just beginning of formation of multilayer

B. Just beginning of formation of monolyer

C. Just completion of multilayer and just formation of monolyer

D. $\frac{x}{m} \propto p^n$ where n $>$ 1

Answer: A

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5. In the macromolecular type of colloids, the dispersed particles are themselves large molecules (usually polymer). Since these molecules have dimesions comparable to those of colloidal particles, their dispersions are called macromolecular colloids. Most lyophilic sols belong to this category.

There are certain colloids which behave as normal strong electrolytes at low concentrations, but exhibit colloidal properties at higher concentrations due to the formation of aggergated particles. These are known as micelles associated colloids. Surface active agents like soaps and synthetic detergents belong to this class.

Critical micelle concentration (C.M.C) is the lowest concentration at which micelle formation appears. C.M.C. increase with the total

surfactant concentration. At the concentration higher than C.M.C. they form extended parallel sheets known as lamellar micelles which resemble biological membranes which are two molecules thick. The individual molecule is perpendicular to the sheets such that hydrophilic groups are on the outside in aqueous solution and hydrophobic on the inside in a nonpolar medium.

In concentrated solution, micelles take the form of long cylinders packed in hexagonal arrays and are called hytotropic mesomorphs .

in an aqueous solution (polar medium), the polar groups point toward the periphery and the hydrophobic hydrocarbon chains point toward the canter forming the core of the micelle.

Micelles from the ionic surfactants can be formed only above a certain temperature called the kraft temperature they are capable of forming ions molecules of soaps and detergents consist of lyophilic as well as lyophobic parts which associate together to form micelles. Micelles may contain as many as 100 molecules or more.

Select the incorrect statement (s)

A. Surface active agents like soaps and synthetic detergent are micelles.

B. Soap are emulsifying agents

C. $C_{17}H_{35}$ (hydrocarbon part) and COO^- (carboxylate) part of stearate ion $\left(C_{17}H_{35}COO^-\right)$ both ar hydrophobic

D. All are incorrect statements.

Answer: C

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ions molecules of soaps and detergents consist of lyophilic as well as lyophobic parts which associate together to form micelles. Micelles may contain as many as 100 molecules or more.

Which part of soap $\left(RCOO^{-}\right)$ dissolves grease and forms micelle ?

A. R part (called tail of the anion)

B. $-COO^{-}$ part (called head of the anion)

C. Both (A) and (B)

D. None of the above.

Answer: C

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In multimolecular colloidal sols, atoms or molecules are held together by

A. H- bonding

B. van der Walls forces

C. ionic bonding

D. polar covalent bonding.

Answer: B

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8. In the macromolecular type of colloids, the dispersed particles are themselves large molecules (usually polymer). Since these molecules have dimesions comparable to those of colloidal particles, their dispersions are called macromolecular colloids. Most lyophilic sols belong to this category.

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Select the correct statement about phopholipids

A. In aqueous solution, they form micelles

B. They form bilayers

C. They are principal components of cell membranes.

D. All the above.

Answer: D

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9. In the macromolecular type of colloids, the dispersed particles are themselves large molecules (usually polymer). Since these molecules have dimesions comparable to those of colloidal particles, their dispersions are called macromolecular colloids. Most lyophilic sols belong to this category.

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Cleansing action of soap occurs because

A. Oil and grease can be absorbed into the hydrophobic centres of soap micelles and washed away

B. Oil and grease can be absorbed into the hydrophilic centres of soap micelles and washed away

C. Oil and grease can be absorbed into both hydrophilic and hydrophobic centres but not washed away

D. Cleansing action is not related to micelles.

Answer: A

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10. In the macromolecular type of colloids, the dispersed particles are themselves large molecules (usually polymer). Since these molecules have dimesions comparable to those of colloidal particles, their dispersions are called macromolecular colloids. Most lyophilic sols belong to this category.

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2.56 g of sulphur (colloidal sulphur) in 100mL solution shows osmotic

pressure of 2.463 atm at $27^{\circ}C$. How many sulphur atoms are associated in a colloidal sol ?

(Solution constant =0.0821 L atm $mol^{-1}K^{-1}$)

A. S_2

B. S_4

C. S_6

D. S_8

Answer: D

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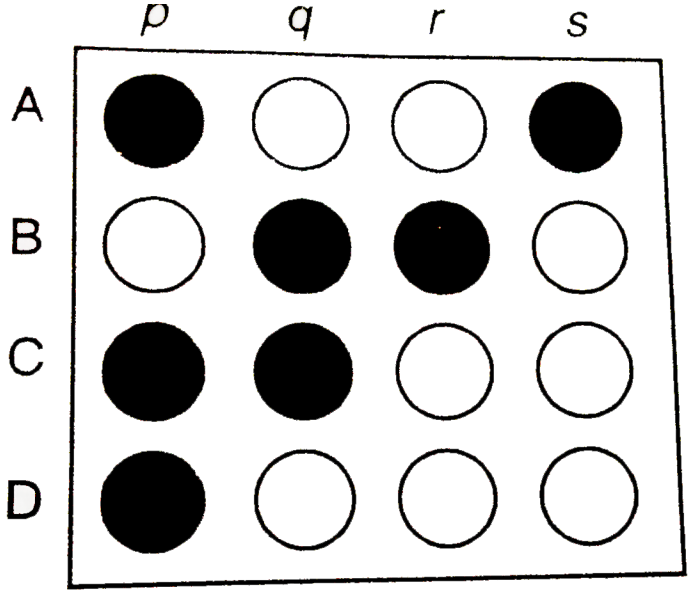
Matrix Match Type Mcqs

	Column I	Column II
	(A) Emulsion	p Colloidal solution
1.	(B) sol	q Dye test
	(C) Tyndall effect	r Milk
	(D) Colligative properties	s Haemoglobin



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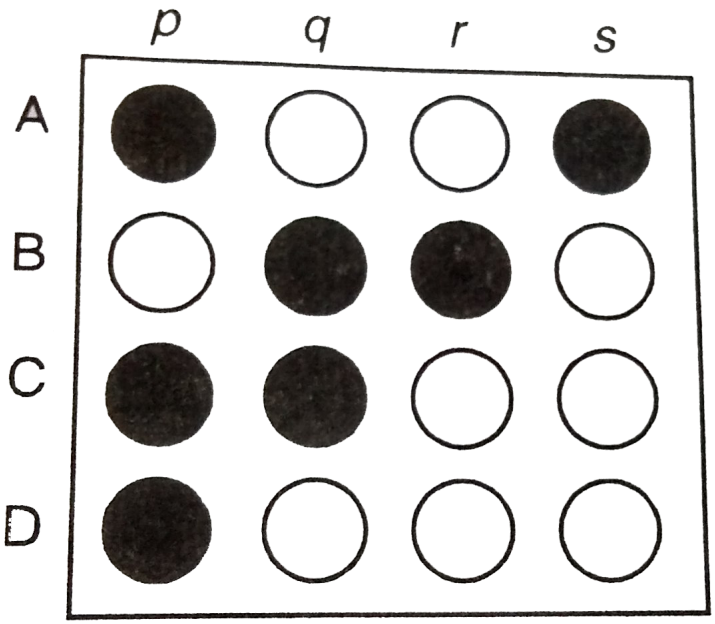
	Column I	Column II
	(A) Chemisorption	p Exothermic
2.	(B) Physical adsorption	q Endothermic
	(C) Desorption	r Removal of adsorbed material
	(D) Activation of adsorbent	s Specifi in nature



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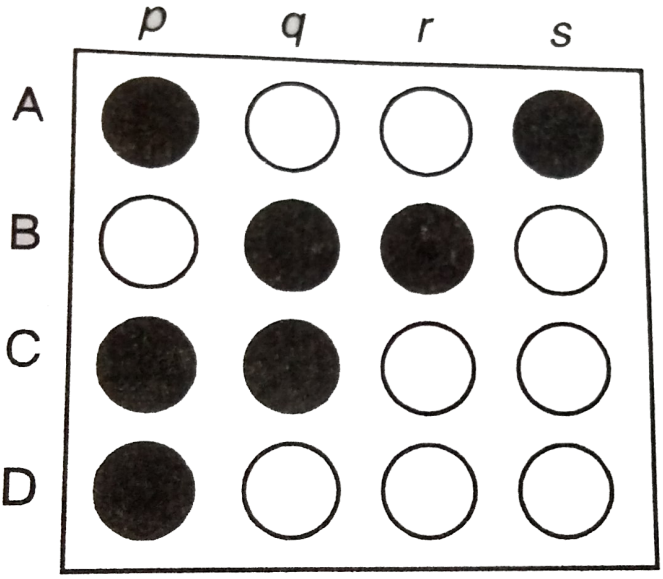
3.

Column I	Column II
(A) Electrophores	p Movement of molecules of dispersion medium
(B) Electro-osmosis	q Determination at Avogador's number
(C) Tyndall effect	r Ultra-microscope
(D) Brownian motion	s Determination of charge on colloidal particle.



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Integer Type Question

1. How many of the following are the lyophilic sols?

Gold sol, Silver sol, geltin,, starch, gum, $Fe(OH)_3$,As_2S_3

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2. How many of the following are aerosols of liquid of gas ?

Fog, clutch mist, insecticide sprays, smoke, dust.

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3. How many of the following are macro molecular colloids?

Proteins, starch, cellulose, gold sol, sulphur sol, sodium stearate.

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4. How of the following are positively charged sols ?

Cu sol, Ag sol, CdS, As_2S_3, $Fe(OH)_3$, $Al(OH)_3$ methylene blue.

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Reason Assertion A Type Mcqs

1. Assertion (A) : A sol of As_2S_3 prepared by the action of H_2S on As_2O_3 is negatively charged.

Reason (R): It is due to the adsorption of H^+ ions on the surface of the colloidal particle and S^{2-} ions in the diffused layer.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

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2. Assertion(A): Small quanity of soap is used to prepare a stable emulsion.

Reason(R): Soap lowers the interfacial tension between oil and water.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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3. Assertion (A) : Fluorescein is an adsorption indicator.

Reason (R): Fluorescein is a dye.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

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4. Assertion (A) : A lyophilic colloidal sol is more stable than a lyophobic sol.

Reason (R): A lyophilic sol is solvated to a much greater extent in comparision to lyophobic sol.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

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5. Assertion (A) : Smoke consists of unburnt electrically charged carbon articles dispersed in waste gases. But the smoke coming out from the chimney of the factory is free from carbon particles.

Reason (R): The smoke is passed through the charged plates before allowing it to escape out of the chimney, when the charged particles of carbon get discharged.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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6. Assertion (A) : Finely divided iron acts as a catalyst in Haber's process of manufacture of ammonia from nitrogen and hydrogen.

Reason (R):Chemisorption of the reacting nitrogen and hydrogen gases on the surface of iron takes place.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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7. Assertion (A) : Poisonous gases like SO_2, Cl_2, CH_4 etc. from the atmosphere displace O_2, N_2 gases already adsorbed by the charcoal in the gas masks.

Reason (R): A strongly adsorbed gas is displaced by a weakly adsorbed gas.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

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8. Assertion (A) : Atmosphere contains small amount of poisonous gases but they are preferably adsorbed on activated charcoal.

Reason (R): On a particular adsorbent, the more strongly adsorbable adsorbate adsorbs to a greater extent than its partial pressure indicates.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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9. Assertion (A) : When freshly precipitated nickel sulphide (NiS) is shaken with a solution of hydrogen sulphide, a colloidal sol. is

obtained .

Reason (R): The cause of peptization is the development of positive or negative charge on the precipitates by selective adsorption of ions from electrolytes.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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10. Assertion (A) : Colloidal solution are stable but the colloidal particles do not settle down.

Reason (R): Brownian movement counters the force of gravity actively on colloidal particles.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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Ultimate Prepatarory Package

1. In certain cases, the rate of reaction increase with time. This phenomenon is known as

A. induced catalysis

B. catalytic inhibition

C. autocatalysis

D. catalytic promotion

Answer: C

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2. Catalytic poison acts by

A. chemically combining with catalyst

B. coagulating the catalyst

C. getting adsorbed on the active centres on the surface of the catalyst

D. chemical combination with any one of the reactants.

Answer: C

View Text Solution

3. Negative catalyst is that which

A. takes the reaction in backward direction

B. retards the rate of the reaction

C. promotes the side reactions

D. None of these.

Answer: B

View Text Solution

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

A. initiator

B. catalyst

C. promotor

D. autocatalyst.

Answer: C

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5. The sky looks blue due to

A. dispersion effect

B. transmission

C. reflection

D. scattering

Answer: D

View Text Solution

6. The CMC of a given soap in water is 10^{-3} mol L^{-1}. $A10^{-4}$ mol L^{-1} solution of this soap in water in a

A. lyophilic sol

B. lyophobic sol

C. true solution

D. None of these.

Answer: C

View Text Solution

7. The temperature above which formation of micelles takes place is known as

A. Critical temperature

B. Charles temperature

C. Kraft temperature

D. Critical temperature.

Answer: C

View Text Solution

8. The average particle mass in colloidal solutions can be determined by

A. elevation in boiling point

B. depression in freezing point

C. relative lowering in vapour pressure

D. osmotic pressure.

Answer: D

View Text Solution

9. A colloidal solution of gold in water is

A. red in colour

B. blue in colour

C. golden spangles

D. all the three.

Answer: D

View Text Solution

10. The colour of a colloidal solution depends upon

A. particle size

B. temperature

C. the direction in which it is being viewed

D. both A and C

Answer: D

View Text Solution

11. In a colloidal solution of AgCl in water the AgCl particles

A. do not carry any charge

B. carry a +ve charge

C. carry a -ve charge

D. may carry a +ve or -ve charge depending upon conditions.

Answer: D

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12. In the stoichiometry of nautral faujasite-a zeolite with formula $Na_x\left[(AlO_2)_{56}(SiO_2)_{136}\right]$ $250H_2O$ the value of x is

A. 56

B. 136

C. 250

D. None of these.

Answer: A

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13. STEM stand for

A. scanning transmission electron microscope

B. scanning tunneling electron microscope

C. both A and B

D. None of these.

Answer: C

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14. An example of gel is

A. milk

B. molten butter

C. milk cream

D. milkcurd(dehi).

Answer: D

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15. An example of water in oil type emulsion is

A. milk

B. butter

C. milk cream

D. both B and C

Answer: D

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16. An example of oil in water type emulsion is

A. butter

B. milk

C. milk cream

D. Both A and C

Answer: B

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