

CHEMISTRY

BOOKS - SURA CHEMISTRY (TAMIL ENGLISH)

SURFACE CHEMISTRY

Choose The Correct Answer

1. For Freundlich isotherm a graph of $\log \frac{x}{m}$ is plotted against $\log p$. The slope of the line and its y - axis intercept respectively corresponds to

A. $1/n$, k

B. $\log 1/n$, k

C. $1/n$, $\log k$

D. $\log 1/n$, $\log k$

Answer: C



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2. Which of the following is incorrect for physisorption?

A. reversible

B. increases with increase in temperature

C. low heat of adsorption

D. increases with increase in surface area

Answer: B



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3. Which one of the following characteristics are associated with adsorption?

A. ΔG and ΔH are negative but ΔS is positive

B. ΔG and ΔS are negative but ΔH is positive

C. ΔG is negative but ΔH and ΔS are positive

D. ΔG , ΔH and ΔS all are negative.

Answer: C



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4. Fog is colloidal solution of

A. solid in gas

B. gas in gas

C. liquid in gas

D. gas in liquid

Answer: C



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5. Assertion : Coagulation power of Al^{3+} is more than Na^{+} .

Reason : greater the valency of the flocculating ion added, greater is its power to cause precipitation

- A. if both assertion and reason are true and reason is the correct explanation of assertion
- B. if both assertion and reason are true but reason is not the correct explanation of assertion
- C. assertion is true but reason is false
- D. both assertion and reason are false.

Answer: B



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6. Statement : To stop bleeding from an injury, ferric chloride can be applied. Which comment about the statement is justified?

A. It is not true, ferric chloride is a poison.

B. It is true, Fe^{3+} ions coagulate blood which is a negatively charged sol

C. It is not true, ferric chloride is ionic and gets into the blood stream.

D. It is true, coagulation takes place because of formation of negatively charged sol with



Answer: B



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7. Hair cream is

A. gel

B. emulsion

C. solid sol

D. sol

Answer: B



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8. Which one of the following is correctly matched

- A. Emulsion - Smoke
- B. Gel - butter
- C. foam - Mist
- D. whipped cream - sol

Answer: B



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9. The most effective electrolyte for the coagulation of As_2S_3 Sol is

A. NaCl

B. $Ba(NO_3)_2$

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

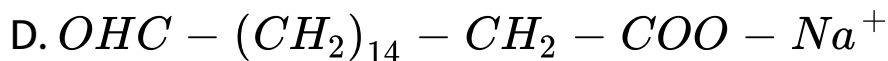
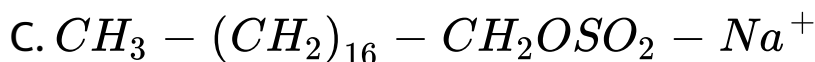
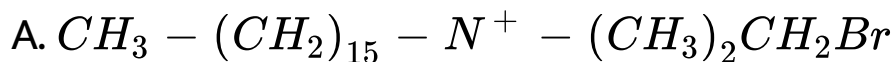
D. $Al_2(SO_4)_3$

Answer: D



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10. Which one of the following is not a surfactant?



Answer: B



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

- A. Cataphoresis
- B. Electrophoresis
- C. Coagulation
- D. Tyndall effect

Answer: D



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12. In an electrical field, the particles of a colloidal system move towards cathode. The coagulation of the same sol is studied using K_2SO_4 (i), Na_3PO_4 (ii), $K_4[Fe(CN)_6]$ (iii) and NaCl (iv) Their coagulating power should be

- A. II gt I gt IV gt III
- B. III gt II gt I gt IV
- C. I gt II gt III gt IV
- D. none of these

Answer: B



13. Collodion is a 4% solution of which one of the following compounds in alcohol – ether mixture?

- A. Nitroglycerine
- B. Cellulose acetate
- C. Glycoldinitrate
- D. Nitrocellulose

Answer: D



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

A. manufacture of ammonia by Haber's process

B. manufacture of sulphuric acid by contact process

C. hydrogenation of oil

D. hydrolysis of sucrose in presence of dil. HCl

Answer: D



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15. The coagulation values in millimoles per litre of the electrolytes used for the coagulation of As_2S_3 are given below

(I) $(NaCl) = 52$

(II) $(BaCl_2) = 0.69$

(III) $(MgSO_4) = 0.22$

The correct order of their coagulating power is

A. III gt II gt I

B. I gt II gt III

C. I gt III gt II

D. II gt IIIgtI

Answer: A



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

- A. ΔH increases
- B. ΔS increases
- C. ΔG increases
- D. ΔS decreases

Answer: D



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17. If x is the amount of adsorbate and m is the amount of adsorbent, which of the following relations is not related to adsorption process?

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

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

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

D. $x/m = PT$

Answer: D



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18. On which of the following properties does the coagulating power of an ion depend ?

- A. Both magnitude and sign of the charge on the ion.
- B. Size of the ion alone
- C. the magnitude of the charge on the ion alone
- D. the sign of charge on the ion alone.

Answer: D



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19. Which among the following true regarding adsorption?

(i) Adsorption is a spontaneous process

(ii) Adsorption is always accompanied by increase in free energy.

(iii) Adsorption is an endothermic process

(iv) Adsorption can occur in all interfacial surfaces.

A. only (ii)

B. (ii) and (iii)

C. only (i)

D. (i) and (iv)

Answer: D



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20. Which among the following does not affect adsorption?

A. surface area of the adsorbent

B. catalyst

C. temperature

D. pressure

Answer: B



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21. According to Freundlich adsorption isotherm,

A. $\frac{x}{m} = kp$

B. $\frac{m}{x} = (kp)^{\frac{1}{n}}$

C. $\frac{x}{m} = kp^{\frac{1}{n}}$

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

Answer: C



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22. Which of the following is true Freundlich adsorption isotherm equation?

- A. Purely empirical
- B. Valid only over a limited pressure range.
- C. The value of constants k and n varies with temperature
- D. All the above

Answer: D



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23. Pick the odd one out.

A. dialysis

B. electro dialysis

C. electrophoresis

D. ultrafiltration

Answer: C



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24. Adsorption is accompanied by

- A. decrease in free energy
- B. increase in free energy
- C. increase in entropy
- D. both (b) and (c)

Answer: A



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25. Which of the following interface cannot be obtained?

A. solid - solid

B. solid - liquid

C. gas - gas

D. liquid - liquid

Answer: C



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26. Which among the following is an example of absorption?

A. Water on calcium chloride

B. Water on silica gel

C. Ammonia gas on charcoal

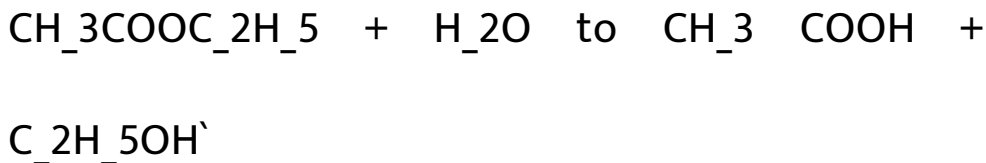
D. Hydrogen on finely divided nickel

Answer: A

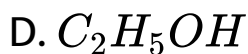
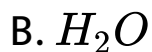


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27. Auto catalysis is observed in the reaction given below



Identify the auto catalyst .



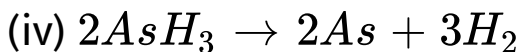
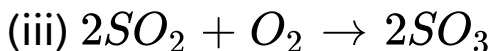
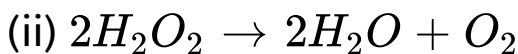
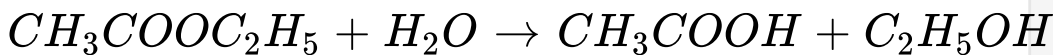
Answer: C



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28. Which among the following reactions is an example of auto catalysis?

(i)



A. only (i)

B. (i) and (ii)

C. (i) and (ii)

D. (i) and (iv)

Answer: D



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29. Fog is colloidal solution of

A. gas in liquid

B. liquid in gas

C. gas in solid

D. solid in gas

Answer: D



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30. The intermediate compound formation theory does not explain

- A. action of catalytic poison
- B. specificity of a catalyst
- C. the mechanism of heterogeneous catalysed reactions
- D. both (a) and (c)

Answer: D



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31. Which among the following is not correct with regards to enzyme catalysis?

- A. The rate of enzyme catalysis varies with pH
- B. Enzyme catalysis is highly specific in nature.
- C. Catalytic activity of enzymes is increased by
co-enzymes
- D. Enzymes cannot be inhibited

Answer: D



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32. Which one of the following is correctly matched?

- A. Emulsion - Mayonnaise
- B. Foam - Cream
- C. Solid aerosol - Fog.
- D. Solid sol - Pumice stone

Answer: A



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

A. formation of delta

B. peptisation

C. clotting of blood

D. tanning of leather

Answer: B



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34. The dispersion medium is a liquid and the dispersed phase is a gas. Name the colloid

A. sol

B. foam

C. liquid aerosol

D. solid aerosol

Answer: B



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35. The place where rivers meet the sea is the delta region. Which of the following process is responsible for the formation of delta?

A. Emulsification

B. Peptisation

C. Gel formation

D. Coagulation

Answer: D



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36. Which among the following is/are solid aerosol?

(i) Dust (ii) Fog (iii) Aerosol spray (iv) Air

A. (i) and (iv)

B. (iii) and (iv)

C. (i) and (iii)

D. only (iii)

Answer: A



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37. Colloidal solution of ink is prepared by

A. mechanical dispersion

B. electro dispersion

C. ultrasonic dispersion

D. peptisation

Answer: A



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38. The migration of colloidal particles under the influence of an electric field is known as

A. electro-osmosis

B. cataphoresis

C. electro dialysis

D. dialysis

Answer: B



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39. Which one is the correct factor that explains the increase of rate of reaction by a catalyst?

- A. Shape selectivity
- B. Particle size
- C. Increase of free energy
- D. Lowering of activation energy

Answer: D



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40. The phenomenon of Tyndall's effect is not observed in

- A. emulsion
- B. colloidal solution
- C. true solution
- D. none

Answer: C



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41. In case of physical adsorption, there is desorption when

A. temperature increases

B. temperature decreases

C. pressure increases

D. concentration increases

Answer: A



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42. Colloidal medicines are more effective because

- A. they are clean
- B. they are easy to prepare
- C. the germs move towards them
- D. they are easily assimilated and adsorbed

Answer: D



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43. The Tyndall's effect associated with colloidal particles is due to

A. presence of charge

B. scattering of light

C. absorption of light

D. reflection of light

Answer: B



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44. Oil soluble dye is mixed with emulsion and emulsion remains colourless then, the emulsion is

A. O/W

B. W/O

C. O/O

D. W/W

Answer: A



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45. For selective hydrogenation of alkynes into alkene the catalyst used is

A. Ni at 250°C

B. Pt at 25°C

C. Pd, partially inactivated by quinoline

D. Raney nickel

Answer: C



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46. For chemisorption, which is wrong?

A. irreversible

B. it requires activation energy

C. it forms multimolecular layers on adsorbate

D. surface compounds are formed

Answer: C



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47. An emulsion is a colloidal solution of

A. two solids

B. two liquids

C. two gases

D. one solid and one liquid

Answer: B



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48. Colloids are purified by

A. precipitation

B. coagulation

C. dialysis

D. filtration

Answer: C



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49. The multilayer adsorption of gases on solids take place in

A. physical adsorption

B. chemisorption

C. sols

D. active centres

Answer: A



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50. This adsorption is irreversible

A. Vanderwaal's adsorption

B. Physical adsorption

C. Chemical adsorption

D. All the above

Answer: C



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51. In adsorption theory, the activated complex is

- A. reversible
- B. irreversible
- C. stable
- D. unstable

Answer: D



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52. The impurity present in the colloidal particle is

- A. electrolytes
- B. solute
- C. both (a) and (b)
- D. neither (a) or (b)

Answer: A



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53. Emulsion can be broken into constituent liquids by

- A. heating
- B. freezing
- C. centrifuging
- D. all the above

Answer: D



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54. Which among the following is found to be solvent loving in nature?

- A. Lyophilic
- B. Lyophobic
- C. Gel
- D. Sol

Answer: A



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55. When the operation force between the adsorbent and adsorbate is weak Vander waal's force, then it is called

- A. physical adsorption
- B. chemical adsorption
- C. Vanderwaal's adsorption
- D. both (a) and (c)

Answer: D



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56. A substance that enhances the catalytic activity of the catalyst is

A. gel

B. sol

C. promoter

D. poison

Answer: C



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57. Name the colloid in which the dispersed phase is solid and dispersion medium is liquid

A. gel

B. aerosol

C. sol

D. solid sol

Answer: C



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58. A colloidal system in which the dispersed phase has very little affinity for the dispersion medium is called

A. lyophilic

B. lyophobic

C. solid

D. aerosol

Answer: B



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59. The dispersion of a precipitated material into colloidal solution by the action of an electrolyte is called

- A. ultrafiltration
- B. electro dispersion
- C. peptisation
- D. all the above

Answer: C



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60. Peptisation is not used to prepare

- A. silver chloride sol
- B. ferric hydroxide sol
- C. both (a) and (b)
- D. colloidal platinum

Answer: D



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61. Pick out the dispersion method of preparation of colloids

A. oxidation

B. change of physical state

C. reduction

D. peptisation

Answer: D



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62. The process of removing ions from a sol by diffusion through a permeable membrane is called

- A. Ultra filtration
- B. Dialysis
- C. electrophoresis
- D. Cataphoresis

Answer: B



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63. The phenomenon of scattering of light by the sol particles is called

- A. tyndall effect
- B. electrophoresis
- C. cataphoresis
- D. dialysis

Answer: A



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64. The combination of the two layers of charges around the sol particle is called

- A. Brownian movement
- B. Tyndall effect
- C. Helmholtz double layer
- D. None of these

Answer: C



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65. For W/O emulsion, the principle emulsifying agent is

- A. proteins
- B. synthetic soaps
- C. lampblack
- D. gums

Answer: C



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66. Which type of colloid is a sol ?

A. Solid in liquid

B. Liquid in solid

C. Solid in solid

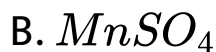
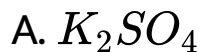
D. Gas in solid

Answer: A



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67. The autocatalyst in the oxidation of oxalic acid by acidified $KMnO_4$ is



Answer: B



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68. The sky looks blue due to

A. adsorption

B. dispersion

C. reflection

D. scattering of light.

Answer: D



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69. The decomposition of hydrogen peroxide in the presence of colloidal platinum is a/an

A. positive catalysis

B. negative catalysis

C. auto-catalysis

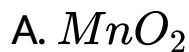
D. induced catalysis

Answer: A

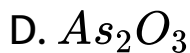


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70. The oxidation of sodium sulphite by air is retarded by



C. Alcohol



Answer: C



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71. The rate of decomposition of hydrogen peroxide decreases in presence of

A. Platinum

B. Iron

C. MnO_2

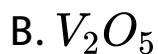
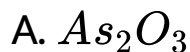
D. Glycerine

Answer: D



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72. The iron catalyst used in the synthesis of ammonia in Haber's process is poisoned by



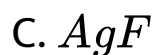
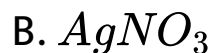
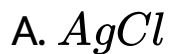
D. Glycerine

Answer: C



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73. Silver salt used in photography is



Answer: D



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74. Colloidal milk of magnesia is used

- A. as germ killer
- B. as fertilizer
- C. for stomach disorders
- D. as tonic

Answer: C



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75. Haze is a colloidal solution of

- A. gas in liquid
- B. liquid in gas

C. gas in solid

D. solid in gas

Answer: D



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76. Emulsifying agent used for O/W type emulsion is

A. proteins

B. heavy metal salts of fatty acids

C. long chain alcohol

D. lamp black

Answer: A



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77. Which of the following is not a favourable condition for physical adsorption?

A. high pressure

B. negative ΔH

C. higher critical temperature of adsorbate

D. high temperature

Answer: D



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78. The dispersed phase and dispersion medium in soap lather are respectively.

- A. gas and liquid
- B. liquid and gas
- C. solid and gas
- D. solid and liquid

Answer: A



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

A. starch

B. sodium oleate

C. gum arabic

D. gelatin

Answer: D



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Short Answer Questions

1. Give two important characteristics of physisorption.



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2. Differentiate physisorption and chemisorption.



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3. In case of chemisorption, why adsorption first increases and then decreases with temperature?

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4. Which will be adsorbed more readily on the surface of charcoal and why, NH_3 or CO_2 ?

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5. Heat of adsorption is greater for chemisorptions than physisorption. Why?



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6. In a coagulation experiment, 10 mL of a colloid (X) is mixed with distilled water and 0.1M solution of an electrolyte AB so that the volume is 20 mL. It was found that all solutions containing more than 6.6 mL of AB coagulate within 5 minutes. What is the flocculation values of AB for sol (X)?



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7. Peptising agent is added to convert precipitate into colloidal solution. Explain with an example.

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8. What happens when a colloidal sol of $Fe(OH)_3$ and As_2O_3 are mixed?

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9. What is the difference between a sol and a gel?

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10. Why are lyophilic colloidal sols are more stable than lyophobic colloidal sol



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11. Addition of Alum purifies water. Why?



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12. What are the factors which influence the adsorption of a gas on a solid?



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13. What are enzymes? Write a brief note on the mechanism of enzyme catalysis.



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14. What do you mean by activity and selectivity of catalyst?



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15. Describe some feature of catalysis by Zeolites .



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16. Give three uses of emulsions.



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17. Why are solids rigid ?



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18. Why is desorption important for a substance to act as good catalyst?

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19. Comment on the statement : Colloid is not a substance but it is a state of substance.

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20. Explain any one method for coagulation

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21. Write a note on electro-osmosis



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22. Write a note on catalytic poison.



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23. Explain intermediate compound formation theory of catalysis with an example.



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24. What is the difference between homogenous and hetrogeneous catalysis ?



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25. Describe adsorption theory of catalysis.



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[Fill In The Blanks](#)

1. When temperature is raised, chemisorption_____.

A. increases

B. decreases

C. first decreases and then increases

D. first increases and then decreases

Answer: D



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2. Variation of adsorption at constant pressure is

_____.

A. isobar

B. isotherm

C. isochor

D. isomer

Answer: A



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3. Extent of physisorption of a gas increases with_____.

- A. increase in temperature
- B. decrease in surface area of adsorbent
- C. decrease in pressure
- D. decrease in temperature

Answer: D



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4. A substance which destroys the activity of a catalyst is

A. negative catalyst

B. catalytic poison

C. both (a) and (b)

D. promoter

Answer: B



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5. In the decomposition of hydrogen peroxide acts a negative catalyst.

A. H_2S

B. glycerol

C. Pt

D. Fe

Answer: B



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6. _____ enzyme hydrolyses starch into maltose.

A. pepsin

B. diastase

C. zymase

D. urease

Answer: B



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7. If the dispersion medium is an alcohol, the colloid is termed as_____.

A. aquasol

B. alcohol gel

C. alcosol

D. benzosol

Answer: C



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8. An example of Gel is _____.

A. sharing cream

B. paints

C. butter

D. whipped cream

Answer: C



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9. The property of the colloid which is independent on the charge of colloidal particle is_____.

- A. cataphoresis
- B. electrophoresis
- C. electro - osmosis
- D. Tyndall effect

Answer: D



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10. As_2S_3 is ___shaped colloid.

A. disc

B. plate

C. rod

D. spherical

Answer: D



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11. Brownian movement of colloidal particles is a _____ property.

A. Kinetic

B. Electrical

C. Optical

D. Magnetic

Answer: A



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12. An example of positively charged colloid is_____.

A. clay

B. starch

C. Ag

D. haemoglobin

Answer: D



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13. The flocculation and setting down of the sol particles is called

A. Tyndall effect

B. Brownian movement

C. Electro osmosis

D. Coagulation

Answer: D



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14. _____ is a measure of protecting power of a colloid

A. Colloid number

B. Coagulation number

C. Gold number

D. Sol number

Answer: C



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15. The process of separation of emulsion into two separate layers is called_____.

A. Emulsification

B. Deemulsification

C. Coagulation

D. Flocculation

Answer: B



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16. When the surface area of the adsorbent increases, adsorption_____.

A. increases

B. decreases

C. remains constant

D. first decreases and then increases

Answer: A



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17. In auto catalysis _____ acts as catalyst.

A. reactant

B. product

C. both

D. none

Answer: B



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18. The intermediate compound formation theory applies to _____ reactions.

A. homogeneous

B. heterogeneous

C. both (a) & (b)

D. none of the above

Answer: A



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19. Sulphur in water is an example of colloids.

A. lyophilic

B. lyophobic

C. emulsion

D. gel

Answer: B



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20. Colloidal graphite is prepared by ___ method.

A. eletrodispersion

B. mechanical dispersion

C. ultrasonic dispersion

D. peptisation

Answer: B



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21. Tyndall effect is a_____ property of colloidal particles.

A. optical

B. kinetic

C. electrical

D. eletronic

Answer: A



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22. _____ is an example of O/W type emulsion.

A. butter

B. cream

C. milk

D. curd

Answer: D



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23. Butter and cream are examples of _____ type of emulsion

A. O/O

B. O/W

C. W/W

D. W/O

Answer: D



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24. in W/O system, the dispersion medium is ____

A. water

B. benzene

C. alcohol

D. oil

Answer: D



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25. To stabilize the emulsion _____ is added.

- A. stabilising agent
- B. emulsifying agent
- C. standardizing agent
- D. none of the above

Answer: B



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26. Decomposition of hydrogen peroxide is retarded in the presence of _____.

A. alcohol

B. glycerine

C. MnO_2

D. Mo

Answer: B



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27. The process of hardening of leather is called ___.

A. coagulation

B. tanning

C. centrifuging

D. stabilization

Answer: B



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28. The emulsifying agent used in O/W type is

A. lampblack

B. alcohols

C. gums

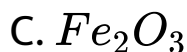
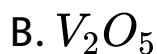
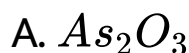
D. heavy metal salts of fatty acids

Answer: C



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29. The platinum catalyst used in the oxidation of SO_2 by contact process is poisoned by_____.



Answer: A



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30. Emulsifying agent is used for_____.

- A. precipitation of an emulsion
- B. coagulation of an emulsion
- C. stabilization of an emulsion
- D. none of these

Answer: C



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31. The function of $FeCl_3$ in the conversion of $Fe(OH)_3$ precipitate into a colloid is _____.

- A. peptising agent
- B. emulsifying agent
- C. reducing agent
- D. precipitating agent

Answer: A



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32. The colloid used for stomach disorder is _____.

- A. colloidal silver
- B. colloidal antimony
- C. colloidal gold
- D. milk of magnesia

Answer: D



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33. An example of lyophilic colloid is _____.

- A. sulphur in water
- B. phosphorus in water

C. starch

D. all of these

Answer: C



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34. Argyrol is_____.

A. colloidal silver

B. colloidal antimony

C. colloidal gold

D. milk of magnesia

Answer: A



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35. Silica gel is utilised for the_____ of the number of gases.

- A. adsorption
- B. absorption
- C. desorption
- D. all of these

Answer: A



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36. Electrophoresis is a ___ property of a colloid.

A. Optical

B. Kinetic

C. Electrical

D. Magnetic

Answer: C



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Assertion And Reason

1. Assertion : Heat of adsorption is very high in chemisorption

Reason : The force that causes chemisorption is dipole - dipole moment

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: C



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2. Assertion : Increase in temperature, increases chemisorption first and then decreases

Reason : Due to the formation of a activated complex followed by desorption.

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: A



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3. Assertion : Gases such as SO_2 , NH_3 , HCl are easily adsorbed.

Reason : Adsorption is a surface phenomenon

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: B



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4. Assertion : A catalyst can initiate a reaction.

Reason : The principle behind catalysis is absorption.

- A. (A) and (R) are true and (R) is the correct explanation of (A)
- B. Both (A) and (R) are true but (R) does not explain (A)
- C. (A) is true but (R) is false
- D. Both (A) and (R) are false

Answer: D



5. Assertion : Fe^{3+} can be used for coagulation of As_2S_3 sol.

Reason : Fe^{3+} reacts with As_2S_3 to give Fe_2S_3 .

- A. (A) and (R) are true and (R) is the correct explanation of (A)
- B. Both (A) and (R) are true but (R) does not explain (A)
- C. (A) is true but (R) is false
- D. Both (A) and (R) are false

Answer: C



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6. Assertion : Lyophilic colloids are highly stable.

Reason : Lyophilic colloids have definite force of attraction between dispersion medium and dispersed phase.

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: A



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7. Assertion : Zeolites are extensively used in petrochemical industry.

Reason : Zeolites are microporous, crystalline aluminosilicates

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: B



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8. Assertion : Gas - Gas colliodal system does not exist.

Reason : Gases are completely miscible and form a true solution.

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: A



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9. Assertion : Colloidal solution are quite stable.

Reason : Brownian movement does not allow the particles to be acted by force of gravity

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: A



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10. Assertion : Butter and cheese are emulsions

Reason: Emulsion is a colloidal solution of liquid dispersed in solid.

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: D



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11. Assertion : Electro dialysis is carried out under the influence of electric field.

Reason : The combination of three layers of

charges around the sol particle is called Helmholtz double layer.

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: C



View Text Solution

12. Assertion : Lyophilic colloids are more stable than lyophobic colloids.

Reason : In lyophobic system, the dispersed particles are more solvated than in lyophilic system.

- A. (A) and (R) are true and (R) is the correct explanation of (A)
- B. Both (A) and (R) are true but (R) does not explain (A)
- C. (A) is true but (R) is false
- D. Both (A) and (R) are false

Answer: C



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13. Assertion : Colloidal solutions show colligative properties.

Reason : Colloidal particles are larger in size.

A. (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true but (R) does not explain (A)

C. (A) is true but (R) is false

D. Both (A) and (R) are false

Answer: B



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Correct Statement

1. Pick out the correct statement with respect of lyophilic sol

A. They are less stable

B. They will not be precipitated easily

C. There is no definite attractive force existing between the dispersion medium and dispersed phase

D. They are called irreversible sols.

Answer: B



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Incorrect Statement

1. Pick out the incorrect statement with regard to catalyst

- A. Presence of catalyst does not change the nature of products
- B. A catalyst alters the state of equilibrium
- C. A catalyst is more effective in the finely divided form
- D. all the above

Answer: B



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2. Pick out the wrong statement regarding physical adsorption.

A. It is reversible

B. It depends on the nature of the gas

C. It is due to Vanderwall's force

D. Heat of adsorption is large

Answer: D



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3. Pick out wrong statement regarding 'catalysts.

A. It is specific in its action

B. Very small amount of the catalyst is used

C. It does not alter the state of chemical equilibrium.

D. It can initiate a chemical reaction.

Answer: D



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Very Short Answer

1. What is an interface?



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2. What do you mean by positive adsorption?



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3. What do you mean by negative adsorption?



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4. Define adsorption isobar.



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5. Define adsorption isotherm.



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6. What are limitations of Freundlich adsorption isotherm?



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7. What are the concepts of catalysis that intermediate compound formation theory throws light on?



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8. What are the limitations of intermediate compound formation theory?



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9. What is a dispersed phase in a colloid ?



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10. What is a dispersion medium in a colloid ?



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11. What are the methods by which colloids are prepared?



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12. What is ultrasonic dispersion?



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13. When are condensation methods used for the preparation of colloids?



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14. Why are colloids purified?



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15. What are main impurities in a colloidal solution?

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16. Give the methods of purification of colloids

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17. Write a note on dialysis.

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18. What is Ultrafiltration?



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19. What is collodion?



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20. What is Helmholtz double layer?



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21. What are the two types of emulsion?



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22. Define emulsification.



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23. Give three examples of emulsifiers.



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24. Define Deemulsification.



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25. What do you mean by inversion of phase?



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26. What is difference between sol, gel and emulsion?



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27. How do aquasol and aerosol differ?



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28. What causes Brownian movement in a colloid?



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29. What happens when a colloidal sol of As_2S_3 and $Fe(OH)_3$ are mixed?



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30. Gelatin acts as a protective colloid. Explain.



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31. A solid catalyst is more effective in its finely divided form - Justify.



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32. Tanning makes leather get hardened - Explain why?



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33. What is the formula for Ziegler - Natta catalyst?



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34. Define colloidal solution.



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35. What is electrophoresis?



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36. What is catalysis?



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37. What are the two types of catalysis?



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38. Why colloidal system in gas in gas does not exist?



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39. What are emulsions?



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40. What is Tyndall effect?



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41. Define adsorbent



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42. Define adsorbate



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43. What are the factors affecting adsorption?



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44. What are promoters?



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45. What are lyophobic colloids? Give examples.



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46. What are lyophilic colloids? Give examples.



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47. What is peptisation? Give an example.



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48. Explain the kinetic property of colloids.



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49. Explain the formation of delta.



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50. Explain O/W and W/O types of emulsions with examples.



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51. Why is a colloidal sol stable?



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52. Name the factors that affect adsorption.



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53. Which will adsorb more gas, a lump of charcoal or its powder and why?



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54. Write the Freundlich adsorption isotherm?



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55. Name the types of emulsions.



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Short Answer

1. Give any three application of adsorption



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2. Write a note -

Positive catalyst



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3. Write a note-

Negative catalyst



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4. Write a note on auto catalysis?



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5. What are active centres?



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6. What are the important concepts of catalysis that adsorption theory explains?



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7. Give three examples of enzyme catalyzed reactions.

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8. Give an example for a reaction catalysed by nano particles.

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9. Explain the advantages of using nano catalyst.

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10. How are colloidal solution of ink and graphite prepared?



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11. Write a note on Ultrafiltration?



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12. What are the advantages of Brownian movement?



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13. How is coagulation brought about by addition of electrolytes?



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14. Define Gold number.



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15. What are the tests used to identify the type of emulsion?

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16. Name various techniques by which a colloid can be deemulsified.

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17. Write the optical properties of colloids with diagram.



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18. Name two industrial process where heterogeneous catalysts are used.



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19. What are catalytic poisons? Give an example.



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20. Define adsorption.



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21. What are emulsifying agent?



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22. For the coagulation of 100 ml of arsenious sulphide sol, 5 ml of 1 M NaCl is required. What is the flocculation value of NaCl?



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23. Why does physisorption decrease with increase of temperature?

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24. Explain the meaning of the statement.
'Adsorption is a surface phenomenon'.

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25. Explain the preparation of colloidal platinum by Bredig arc method.



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Long Answer

1. Write the characteristics of adsorption.



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2. Explain the factors affecting adsorption.



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3. Write a note on Freundlich adsorption isotherm.

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4. Write the characteristics of catalysts.

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5. Give the special characteristics of enzyme catalysed reactions.

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6. Write a note on phase transfer catalysis.



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7. Explain Reactant selectivity



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8. Explain Transition state selectivity



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9. Explain Product selectivity

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10. Explain the various chemical methods by which colloids can be prepared.

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11. Explain electrolysis.

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12. Explain the electrical property of colloids with a neat diagram.

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13. Name the method to deduce the charge of the sol particle. Explain it with a neat diagram.

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14. Write any five applications of colloids in day - to day life.



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Hots

1. Gelatin is generally added to Ice cream. Give reason.



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2. Vanishing cream and cold cream both are emulsions. Then, what is the difference between the two?



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3. Adsorption of a gas on the surface of solid is generally accompanied by decrease in entropy. Still it is a spontaneous process. Explain



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4. Why artificial rain can be caused by throwing common salt on the clouds?



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5. Why is ferric chloride preferred over potassium chloride in case of a cut leading to bleeding?



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6. Why the sun looks red at the time of setting?

Explain on the basis of colloidal properties.



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Unit Test Choose The Correct Answer

1. Assertion : Cougulation power of Al^{3+} is more than Na^{+}

Reason : Greater the valency of the flocculating ion added , greater is its power to cause precipitaion

A. if both assertion and reason are true and reason is the correct explanation of assertion

B. if both assertion and reason are true but reason is not the correct explanation of assertion

C. assertion is true but reason is false

D. both assertion and reason are false.

Answer: A



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

A. ΔH increases

B. ΔS increases

C. ΔG increases

D. ΔS decreases

Answer: D



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3. Fog is colloidal solution of

A. solid in gas

B. gas in gas

C. liquid in gas

D. gas in liquid

Answer: C



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4. The phenomenon of Tyndall's effect is not observed in

- A. emulsion
- B. colloidal solution
- C. true solution
- D. none

Answer: C



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5. Which type of colloid is a sol ?

A. Solid in liquid

B. liquid in solid

C. solid in solid

D. gas in solid

Answer: A



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Unit Test Short Answer

1. (a) (i) What are the factors which influence the adsorption of a gas on a solid?
- (ii) Write a note on electro osmosis.



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Unit Test Long Answer

1. Differentiate physisorption and chemisorption.



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2. Describe adsorption theory of catalysis.



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