CHEMISTRY

BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)

SURFACE CHEMISTRY

Example

1. A graph between log (x/m) and log p is straight line at an angle of 45° with intercept on y-axis equal to 0.3010. Calculate the amount of the gas adsorbed per gram of the adsobent when the pressure is 0.2 atm.

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2. In the adsorption of acetic acid vapors by 1 g of charcoal, the following data was obtained :

$x\left(cm^3\right)$	0.726	0.478
$p(cmofHg)$	0.570	0.210

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3. 3 g of activated charcoal was added to 50 mL of acetic acid solution (0.06 N) in a flask. After an hour, It was filtered and the strength of the filtrate was found to be 0.42 N. Calculate the amount of acetic acid adsorbed per gram of charcoal.

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4. 1 gram of charcoal adsorbs 100 mL of 0.5 M CH_2COOH to from a monolayer and thereby the molarity of acetic acid is reduced to 0.49 M. Calculate the surface area of the charcool adsorbed by each molecule of acetic acid. Surface area of charcoal $3.01 \times 10^2 m^2 / gram.$

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5. The coagulation valus of the electrolytes $AlCl_3$ and NaCl for As_2S_3 sol are 0.093 and 52 respectively. How many times has $AlCl_3$ greater coagulating power than NaCl ?

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6. For coagulating 200 mL of arsenious sulphide sol, 10 mL of 1M NaCl solution is required. Find out the flocculation volum of NaCl.

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7. 0.025 g of starch sol is required to prevent the coagulation of 10 mL of gold sol when 1 mL of 10% NaCl solution is aded. What is the gold number of starch sol ?

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8. Compare the heat of adsorption for physical and chemical adsorption?

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9. Why is a finely divided substance more effective as an adsorbent?

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

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11. What is adsorption isotherm ? Distinguish between Frundlich adsorption isotherm and Langmuir adsorption isotherm.

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12. What do you understend by activation of adsorbent? How is it achieved ?

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13. What role does adsorption play in heterogeneous catalysis ?

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14. Methods For The Preparation Of Colloids

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15. How are the colloidal solutions classified on the the basis of physical states of the dispersed phase and dispersion medium ?

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16. Disuss the effect of pressure and temperature on the adsorption of gases on solides.

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17. What are lyophilic and lyophobic sols?Give one example of each type ? Why is hydrophobic sol easily coagulated ?

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18. What is the difference between multimolecular and macromolecular colloids ? Give one example of each How are associated colloids different from these two types of colloids ?

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19. What are enzymes ? Write in brief the mechanism of enzyme catalysis ?

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20. How are colloid classified on the basis of: ltbtgt (a) physical state of components

(b) nature of dispersion medium

(c) interaction between dispersed phase and dispersion medium ?

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21. Explain what is observed when :

(i) a beam of light is passed through colloidal sol

(ii) an electrolyte NaCa is added to ferric hydroxide sol

(iii) electric current is passed through a colloidal sol ?

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22. What are emulsions ? What are their different types ? Give an example of each type ?

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23. What is demulsification ? Name two demulsifiers.

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24. Action of soap is due to emulsification and micelle formation. Comment.

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25. Give four examples of heterogeneous catalytic reactions.

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26. What do you mean by activity and selectivity of catalysts ?

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27. Describe some features of catalysis by zeolites.

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28. Shape selective catalyst are so called because of :

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29. Explain the following terms :

$a.\ Eletrophoresis \quad b.\ Coagation$

$c.\ Dialysis \quad d.\ Tyndalleffect$

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30. Give four uses of emulsion.

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31. What are micelles ? Give an example of a micelle system.

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32. Explain the following terms with suitable examples :

$a.\ alcosol, b.\ Aeorsol, c.\ Hydrosol$

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33. Comment on the statement that colloid is not a substance but state of a substance

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34. Which of the folowing process does not occur at the interface of phases?

A. crystallisation

B. heterogenous catalysis

C. homogeneous catalysis

D. corrosion

Answer: C

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35. At the equilibrium position in the process of adsorption .....

A. $\Delta H > 0$

B. $\Delta H = T\Delta S$

C. $\Delta H > T\Delta S$

D. $\Delta H < T\delta S$

Answer: B

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36. Which of the following interface cannot be obtained?

A. liquid-liquid

B. solid liquid

C. liquid-gas

D. gas-gas

Answer: D

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37. The term 'sorption' stands for ..... .

A. absorption

B. adsorption

C. both sbsorption and adsorption

D. desorption

Answer: C

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38. Extent of physisorption of a gas increases with ..... .

A. increase in temperature.

B. decrease in temperature.

C. decrease in surface area of adsorbent.

D. decrease in strengyh of van der Walls' forces.

Answer: B

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39. Extent of adsorption of adsorbate from solution phase increases with ..... .

A. increase in amount of adsorbate in solution.

B. decrease in surface are area of adsorbent.

C. increase in temperature of solution.

D. decrease in amount of adsorbate in solution.

Answer: A

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40. Which one of the following statements is wrong about adsorption?

A. $\Delta H > 0$

B. $\Delta G < 0$

C. $\Delta S > 0$

D. $\Delta H < 0$

Answer: A

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41. 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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42. Physical adsorption of a gaseous species may change to chemical adsorption with

A. decrease in temperature

B. increase in temperature

C. increase iin surface area of adsorbent

D. decrease in surface area of adsorbent.

Answer: B

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43. In physisorption adsorbent does not show specificity for any particular gas because ..... .

A. involved van der Waals' forces are universal.

B. gases involved behave like ideal gases.

C. enthlpy of adsorption is low.

D. it is a reversible process.

Answer: A

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44. Which of the following is an example of absorption?

A. Water on silica gel

B. Water on anhydrous calcium chloride

C. Hydrogen on finely divided nickel

D. Oxygen on metal surface

Answer: B

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45. Given

Gas	H_2	CH_4	CO_2	SO_2
critical temperature /K	33	190	304	630

ON the basic of data given above , predict which of the following gases shows least a dsorption on a definite amount of charcoal ?

A. CO_2

B. SO_2

C. CH_4

D. H_2

Answer: D

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46. What is the effect of temperature and pressure on the yields of products?

a. $N_2(s) + 3H_2(g) \Leftrightarrow 2NH_3 + xcal$

b. $N_2(g) + O_2(g) \Leftrightarrow 2NO(g) - ycal$

c. $2SO_2(g) + O_2(g) \Leftrightarrow 2SO_3(g) + 46.9kcal$

d. $PCl_5(g) \Leftrightarrow PCl_3(g) + Cl_2(g) - 15.0kcal$

A. (ii),(iii)

B. (ii),(iii),(iv)

C. (i),(ii)(iii)

D. (iv)

Answer: A

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47. In a soap micelle , the soap molecules are arranged radially with:

A. molecular collid

B. associated collid

C. macromolecular colloid

D. lyophilic colloid

Answer: B

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48. Which of the following will show Tyndall effect?

A. Aqueous solution of soap below critial micelle concentration.

B. Aqueous solution of soap above cirtical micelle concentration.

C. Aqueous solution of sodium chloride.

D. Aqueous solution of sugar.

Answer: B

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49. collodial particles in a sol can be coagulated by :

A. by addition of oppositely charged sol.

B. by addition of an electrolyte.

C. by addition of lyophilic sol.

D. by boiling

Answer: C

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50. The process of passing of a precipitate into colloidal solution on adding an electrolyte is called

A. coaguation

B. electrolysis

C. diffusion

D. peptization

Answer: D

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51. Which of the following electrolytes will have maximum coagulating value for Ag/Ag^+ sol?

A. Na_2S

B. Na_3PO_4

C. Na_2SO_4

D. NaCl

Answer: B

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52. If the dispersed phase is a solid and the dispersion medium is a liquid, then colloidal system is known as a/an.

A. solid sol

B. gel

C. emulsion

D. sol

Answer: D

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53. The values of colligative properties of colloidal solution are of small order in comparison to those shown by true solutions of same concentration because of colloidal particles ..... .

A. exhibit enormous surface area.

B. remain suspended in the dispersion medium.

C. from lyophilic colloids.

D. are comparatively less in number.

Answer: D

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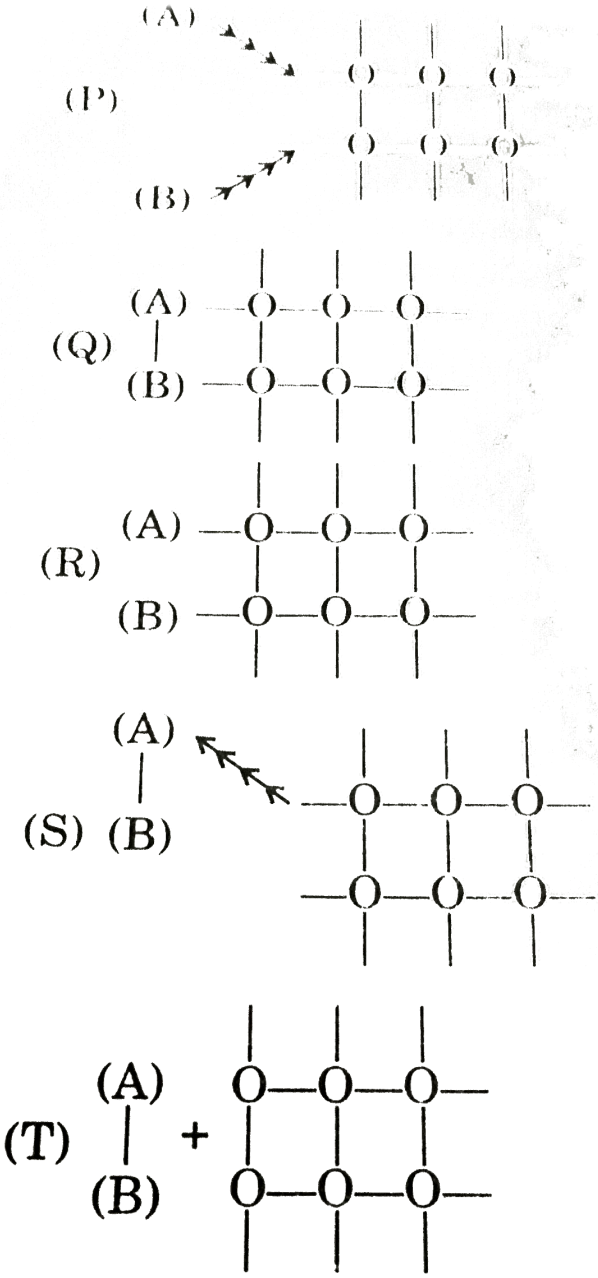
54. Arrange the following diagrams in correct sequence of steps involved in the mechanism of catalysis, in accordance

with modern adsorption theory.



A. (i) (ii) (iii) (iv) (v)

B. (i) (ii) (iii) (iv) (v)

C. (i) (iii) (ii) (v) (iv)

D. (i) (ii) (iii) (v) (iv)

Answer: B

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55. Which of the following process is responsible for the formation of delta at a place where rivers meet the sea?

A. Emulsification

B. Colloid formation

C. Coagulation

D. Peptization.

Answer: C

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56. Which of the following curves is in accordance with freundlich adsorption isotherm?

A. 

B. 

C. 

D. 

Answer: C

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57. The charge on the lyophobic sol particles is due to

A. Electron capture by sol particles.

B. Adsorption of ionic species from solution.

C. Formation of helmholtz electrical double layer.

D. Absorption of ionic species from solution.

Answer: D

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58. Which of the following phenomenon is applicable to the process shown in the Fig. ?

A. absorption

B. Adsorption

C. Coagulation

D. Emulsification

Answer: B

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59. In the following questions two or more options may be correct.

A. Micelle formation by sope in aqueous solution is possible at all temperatures.

B. Micelle formation by soap in aqueous solution occurs above a particular concentration.

C. On dilution of soap solution micelles may revert to individual ions.

D. Soap solution behaves as a normal strong electrolyte at all concentrations.

Answer: B::C

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60. Which of the following statements are correct about solid catalyst?

A. Same reactants may give different products by using different catalysysts.

B. Catalyst does not change ΔH of reaction.

C. Catalyst is required in large quantities to catalyse reaction

D. Catalytic aactivity of a solid catalyst does not depend upon the strength of chemisorption.

Answer: A::B

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61. Freundlich adsorption isotherm is given by the expression $\frac{x}{m} = kp^{\frac{1}{n}}$ Which of the following conclusions can be drawn

from this expression?

A. When 1/n =0, the adsorption is independent of pressure.

B. When 1/n = 0, the adsorption is directly proportional to pressure.

C. When n = 0, x/m vs p graph is a line parallel to x-axis.

D. When n=0, plot x/m vs p is a curve.

Answer: A::C

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62. H_2 gas is adsorbed on activated charcoal to a very little extent in comparison to easily liquefiable gases due to ..... .

A. very strong van der Walls' interaction

B. very strong van der Waals' forces

C. very low critical temperature

D. very high criticul temperature.

Answer: B::C

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63. Which of the following statements are correct ?

A. Maxing two oppositely charged sols neutralises their charges and stabilises the colloid.

B. Presence of equal and similar charges on colloidal particles provides stability to the colloids.

C. Any amout of dispersed liquid can be added to emulsion without destabilising it.

D. Brownian movement stabilises sols.

Answer: B::D

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64. An emulsion cannot be broken by .....and ..... .

A. heating

B. adding more amout of dispersion medium

C. freezing

D. adding emulsifying agent

Answer: B::D

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65. Which of the following substances will precipitate the negatively charged emulsions ?

A. KCl

B. Glucose

C. Urea

D. NaCl

Answer: A::D

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66. Which of the following colloids cannot be coagulated easily?

A. Lyophobic colloids

B. Irreversible colloids

C. Reversible colloids

D. Lyophilic colloids.

Answer: C::D

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67. What happens when a Lyophilic sol is added to a Lyophobic sol?

A. Lyophobic sol is protected.

B. Loyophilic sol is protected.

C. Lyophobic sol is formed over lyophilic sol.

D. Film of lyophobic sol is formed over lyophilic sol.

Answer: A::C

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68. Which phenomenon occurs when an electric field is applied to a colloidal solution and electrophoresis is prevented?

A. Reverse osomosis takes place

B. Relectroosmosis takes place

C. Dispersion medium begins to move

D. Dispersion medium becomes stationary.

Answer: B::C

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69. In a reaction, catalyst changes ..... .

A. physically

B. qualitatively

C. chemically

D. quantitatively.

Answer: A::B

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70. Which of the following process will be observed, when a chalk stick is dipped in the solution of ink?

A. adsorption of coloured substance

B. adsorption of solvent

C. absorption and adsorption both of solvent

D. absorption of solvent.

Answer: A::D

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N C E R T In Text Questions

1. Why are substance like platinum and palladium oftern used for carrying out the electrolysis of aqueous solutions ?

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2. Why does physisorption decrease with increase of temperature ?

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3. Why are powdered substance more effective as adsorbents than their crystalline forms ?

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4. Why is it necessary to remove CO when ammonia is obtained by Haber's process ?

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5. Why is ester hydrolysis slow in the beginning and becomes fast after sometime ?

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6. What is the role of dosorption in the process of catalysis ?

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7. What modification can you suggest for Hardy-Schulze Law ?

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8. Why is it essential to wash a precipitate with water before estimating it quantitatively ?

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N C E R T Exercise

1. Distinguish between the meaning of the terms adsorption and absorption. Given one example of each.

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Matching Type Questions

1. Match the type of packing given in column I with the iterms given in column II.

Column I	Column II
A. Square close packing in two dimensions	1. Triangular voids
B. Hexagonal close packing in two dimensions	2. Pattern of spheres is repeated in every fourth layer
C. Hexagonal close packing in three dimensions	3. Coordination number = 4
D. Cubic close packing in three dimensions	4. Pattern of sphere is repeated in alternate layers

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2. Match the statement given in Column I. with the phenomenon given in column II.

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3. Match the items given in Column I and Column II.

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4. Match the types of colloidal systems given in Column I with the name given in Column II.

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5. Match the times of Column In and Column II.

View Text Solution

6. Match the items of Column I and Column II

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Assertion Reason Type Questions

1. Assertion (A) An ordinary filter paper impregnated with collodion solution stops the flow of colloidal particles.

Reason (R) Pore size of the filter paper becomes more than the size of colloidal particle.

A. Assertion and reson both are correct and the reason is correct explation os assertion.

B. Assertion and reson both are correct but reason does not explain assertion.

C. Assertion is correct but reason is incorrect.

D. Both assertion and reason are incorrect.

Answer: c

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2. Assertion (A) Colloidal solution show colligative properties.

Reason (R) Colloidal particles are large in size.

A. Assertion and reson both are correct and the reason is correct explation os assertion.

B. Assertion and reson both are correct but reason does not explain assertion.

C. Assertion is correct but reason is incorrect.

D. Both assertion and reason are incorrect.

Answer: b

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3. Assertion (A) Colloidal solutions do not show Brownian motion.

Reason (R) Brownian motion is responsible for stability of sols.

A. Assertion and reson both are correct and the reason is correct explation os assertion.

B. Assertion and reson both are correct but reason does not explain assertion.

C. Assertion is correct but reason is incorrect.

D. Assertion is incorrected but reason is correct.

Answer: e

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4. Assertion (A) Coagulation power of Al^{3+} is more than Na^{+}.

Reason (R) Greater the valency of the flocculating ion added,

greater is its power to cause precipitation (Hardy-Schulze rule) .

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

B. Assertion and reason both are correct but reason does not explain assertion.

C. Assertion is correct but reason is incorrect.

D. Both assertion and reason are incorrect.

Answer: A

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5. Assertion (A) Detergents with low CMC are more economical to use.

Reason (R) Cleansing action of detergents involves the formation of micelles. These are formed when the cocentration of detergents becomes equal to CMC.

A. Assertion and reson both are correct and the reason is correct explation os assertion.

B. Assertion and reson both are correct but reason does not explain assertion.

C. Assertion is correct but reason is incorrect.

D. Both assertion and reason are incorrect.

Answer: a

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Short Asnwer Type Questions

1. NH_4CI is used to clean metal surface because

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

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3. Colloidal particles of soap sol in water are

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4. What happens when gelatin is mixed with gold sol ?

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5. How does it become possible to cause artificial rain by spaying silver iodide on the clouds ?

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6. Gelatin which is a pwptide is added in ice cream. What can be its role ?

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7. What is collodion ?

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8. Why do we add alum to purify water ?

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9. What happens when aeledtric field is applied to colloidal solution ?

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10. What causes Brownian motion in colloidal despersion ?

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Watch Video Solution

11. How do emulsifiers stabilise emulsion ? Name two emulsifiers.

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12. Why are some medicines more effective in the colloidal form ?

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13. Why does leather get hardened after tanning ?

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14. Cottrell precipitator acts on which of the following principles ?

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15. How will you distiguish between dispersed phase and dispersion medium in an emulsion ?

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16. Hardy-schulze rule sates that :-

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17. It is difficult to stop bleeding from a cut in human body at high altitude. Why?

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18. Why is $Fe(OH)_3$ colloid positively charged when prepared by adding $FeCl_3$ to hot water ?

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19. Why do physisorption and chemisorption behave differently with rise in temperature ?

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20. What happens when dialysis is prolonged ?

Watch Video Solution

21. Why do we store silver chloride in dark coloured bottles?

Watch Video Solution

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

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23. Rivers from land, add minerals to sea water. Discuss how ?

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24. Write differences between physisorption and chemisorption.

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25. Explain why transition metals and their many compounds act as good catalyst.

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26. What role does adsorption play in heterogeneous catalysis ?

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27. How does a catalyst work?

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28. Do the vital functions of the body such as digestion get affected during fever ? Explain your answer.

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Long Answer Type Questions

1. What is the role of adsorption in heterogeneous catalysis?

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2. What are the applications of adsorption in chemical analysis?

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3. What is the role of adsorption in froth floatation process used especially for concentration of sulphide ores?

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4. What do you understand by shape selective catalysis? Why are zeolites good shape selective catalysts?

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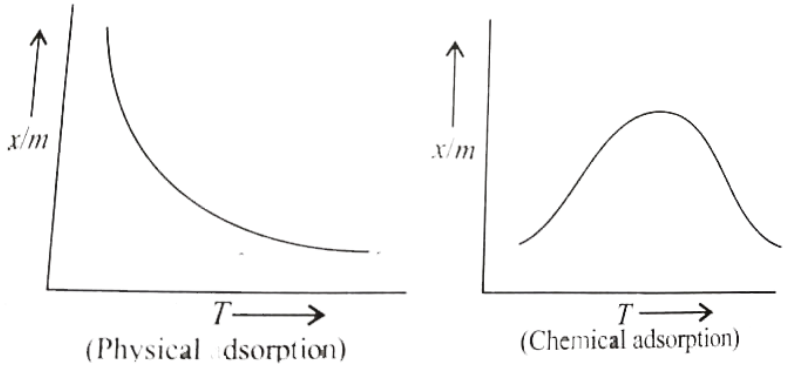
Additional Important Questions

1. Physical and chemical adsorption respond differently with a rise in temperature. What is this difference and why is it so? It brgt



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2. Identify the dispersed phase and dispersion medium in the following examples of colloids :

(a) Fog (b) Cheese (c) Coloured gem stone.

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3. For drying H_2S gas concentrated H_2SO_4 can not be used why ?

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4. When freshly precipitated $Fe(OH)_3$ is shaken with aqueous solution of $FeCl_3$, a colloidal solution is formed. The process is known as :

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5. A difference between diffusion and osmosis is

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6. 2-56 g of sulphur present in 100 mL of solution in colloidal form shows an osmotic pressure of 2.463 atm at 300 K. How many atoms of sulphur get associated to from the colloidal sol ?

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7. Why does a secondary rainbow have inverted colours ?

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8. on adding $AgNO_3$ solution into KI solution , a negatively charged colloidal sol is obtained when they are in :

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9. The extent of adsorption of a gas depends upon the

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10. Which of the following gases can be liquefied easily ?

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11. The critical temperature of O_2 and N_2 are $155K$ and $126K$ respectively Calculate the ratio of reduced temperature of O_2 and N_2 at $300K$.

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12. Gelatin is generally added to ice creams. Why?

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

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14. Lyophilic sols are more stable than lyophobic sols because their particles are

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15. Artificial rain can be caused by spraying charged dust particles over clouds. Discuss.

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16. Ferric hydroxide sol is more readily conagulated by Na_3PO_4 in comparison to KCl. Why ?

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17. Delta is generally formed wheere river meets the ocean. How will you account for it ?

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18. The layer of fat in the pans used for manufacturing soaps can be removed by adding boiling washing soda solution. How will you account for it ?

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19. Which out of the following solution having the same concentration will be most effective in causing coaugulation of the arsenic sulphide sol that is yellow in colour : KCl, $MgCl_2$, or Na_3PO_4 ?

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20. 100 mL of a standard sol required 240 mg of starch for its protection against coagulation, Calculate gold number of

starch.

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21. Adsorption is always exothermic in nature , Do tor agree ?

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22. Why does leather get hardened after tanning?

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Question From Board Examinations

1. How can you make dialysis fast ?

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2. Which of the following is more effective in coauglating positively charged ferric hyydroxide sol $(i) KCl (ii) FeCl_3 (iii) K_4[Fe(CN_6]$?

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3. How is the protective power of a lyophilic sol expressed ?

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4. Give one example of oil in water type emulsion.

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5. Gold numbers of gelatin and haemoglobins are 0.005 and 0.03 respectively. Which of them is a better proctecting colloid ?

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6. What will happen if equimolar solution of positively and negatively charged colloidal sols be mixed ?

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7. What will happen if gelatin is added to a goal sol ?

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8. What is collodion ?

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9. Give one example of an opaque that is colloidal and an example of opaque liquid that is true solution.

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10. Why does smoke from a fire often has a blue tinge ?

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11. Explain the curding of milk when it is sour.

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12. What is purple of casis ?

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13. how will you disitinguish between a true solution and a colloidal solution of the same colour ?

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14. What happens if an electric field is applied to a colloidal sol ?

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15. How does chemical adsorption of a gas on the surface of a solid very with temperature ?

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16. How will you prepare a colloidal sol of arsenic suplhide ?s

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17. Which of the following has minimum flocculation value :-

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18. What is Milk of Magnesia? For what purpose, is it used ?

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19. What are surfactants ?

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20. What is iso-electric point of colloids ?

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21. What is syneresis or weeping of gels ?

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22. Explain why dose feeric hydroxide sol get coagulate on addition of solution of potassium sulphate ?

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23. Why does a beam of light on passing through a colloidal solution have visible path ?

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24. Milk is an emulsion of fat dispersed in Water. What stabiliser stabilise the emulsion ?

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25. Can the same substance act both as colloid and crystalloid ?

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26. If a strong beam of light is passed through a colloidal sol place in a dark space, the part of the beam gets illuminated. This phenomenon is called

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27. Why does clear sky appear blue ?

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28. Why are lypolhilic colloids more stable than hybrobic colloids ?

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29. Give one example each of multimolecular and macro-molecular colloids.

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30. What happens when colloidal solution of $fe(OH)_3$ and $As_2S(3)$ are mixed in equimolar propotions ?

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31. What happens when freshly precipitated ferric hydroxide is treated with dilute solution of ferric chloride ?

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32. Why is pyophobis sol easily congulated as compared to lyophilic sol ?

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33. Mention two ways by which lyophobic colloids can be coagulated.

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34. What will happen when a small amount of NaCl solution is added to hydrated ferric oxide sol ?

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35. Why does physisorption decrease with increase in temperature ?

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36. A synthetic rubber which is resistant to the action of oils gasoline and other solvents is

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37. What is Tyndall Effect?

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38. What is coagulation process ?

Watch Video Solution

39. What is an emulsion ?

Watch Video Solution

40. Name two types of adsorption phenmenon.

Watch Video Solution

41. Name the catalyst and promoter in the Haber's process for the manufacture of ammonia.

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42. What are the physical states of the dispersion medium and dispersed phase in forth ?

Watch Video Solution

43. Adsorption of a gas on the surface of solid is sgenerally accompanied by decrease in entropy but still it is spontaneous in naturre. Explain.

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44. How does increase in tempeature affect both physical and chemical adsorption ?

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45. What do you understand by shape selective catalysis? Why are zeolites good shape selective catalysts?

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46. Name a process by which coagulation of lyophobic sol can be carried out.

Watch Video Solution

47. What is a reversible sol. ?

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48. How are the folowihg colloids different with respwct ot dispersed phase nd dispersion medium ? Give on example of each

(i) Aerosol (ii) Emulsion (iii) Hydrosol.

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49. Give one example of aerosol and gel.

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50. Classify colloids where dispersion medium is water. State their characteristics and write one example of each of these classes.

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51. Explain what is observed when :

(i) a beam of light is passed through colloidal sol

(ii) an electrolyte NaCa is added to ferric hydroxide sol

(iii) electric current is passed through a colloidal sol ?

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52. Adsorption Theory Of Heterogeneous Catalysis

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53. Which of the following is the most effective electrolyte for the coagulation of $Fe_2O_3.H_2\frac{\emptyset}{F}e^{3+}$ sol ? $KCl, AlCl_3, MgCl_2, K_4[Fe(CN)_6]$

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54. Give reasons for the following :

(i) Peptazing agent is added to convert a precipitate into a colloidal solution.

(ii) Colloidal gold is used for intramuscular injection.

(iii) Cottrell's smoke precipitator is fitted at the mouth of a chimeny used in factories.

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55. name the type of potential difference between fixed charged layer and diffused layer having opposite charges around the colloidal particles.

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56. (a) Heat of adsorption is greater for chemisorptions than physisorption. Why ?

(b) What is collodion?

(c) Differentiate between peptisation and coagulation.

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57. Ferric chloride is applied to stop bleeding cut because

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58. Give one main difference between lyophobic and lyphilic colloids.

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59. Name two groups in which the phenomenon of catalysis can be divided. Give one example of each group with chemical equation.

Watch Video Solution

60. Write differences between physisorption and chemisorption.

Watch Video Solution

61. Define the following terms giving one example of each.

(i) Electrophoresis (ii) Micelles (iii) Peptization.

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62. What is the particles size in a coloidal solution ?

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63. Which of the two, adsorption or absorption, is surface phenomenon?

Watch Video Solution

64. Write differences between physisorption and chemisorption.

Watch Video Solution

65. Give reason for the following :

(a) Rough surface of catalyst is more effective than smooth surface.

(b) Smoke is passed through charged surface before allowing

it to come out of chimneys in factories.

(c) Ne gets more easily adsorbed over charcoal than He.

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66. What are the characteristics of the following colloids ? Give one example of each

(i) Multimolecular colloids

(ii) Lyophobic sola

(iii) Emulsions.

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67. Which aerosol depletes ozone layer?

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68. Write differences between physisorption and chemisorption.

Watch Video Solution

69. Write the dispersed phase and dispersion medium in the colloidal systems (i) Smoke (ii) Milk.

Watch Video Solution

70. Out of Lyophilic and Lyophobic sols, which can be easily coagulated on the addition of a small amount of electrolyte ?

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71. Mechanism Of Enzyme Catalysis

Watch Video Solution

72. What is the difference between sol and gel ?

Watch Video Solution

73. What are enzymes ? Give two example with uses.

Watch Video Solution

74. What is the main difference between physisorpton and chemisorption ?

Watch Video Solution

75. What is an adsorption isotherm? Describe Freundlich adsorption isotherm.

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76. Based on the type of particles in the dispersed phase and dispersion medium, give one example each of associated colloid and multimolecular colloid.

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77. Why is adsorption always exothermic ?

Watch Video Solution

78. Explain what is observed when

(i) Silver Nitrate solution is added to potassium iodide solution.

(ii) The size of the finest gold sol particles increases in the gold sol.

(iii) Two oppositely charged sols are mixed in almost equal proportions.

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79. Activity And Selectivity Of Catalysts

Watch Video Solution

80. Distinguish between the meaning of the terms adsorption and absorption. Given one example of each.

Watch Video Solution

81. What are emulsions ? What are their different types ? Give an example of each type ?

Watch Video Solution

82. The cause of Brownian-movement is

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83. What is Tydall effect ? Discuss.

Watch Video Solution

84. State Hardy schulze rule.

Watch Video Solution

85. What are lyophilic and lyophobic sols?Give one example of each type ? Why is hydrophobic sol easily coagulated ?

Watch Video Solution

86. (a) What is enzyme catalysis ? Give an example.

(b) What type of emulsion is milk ? Explain.

(c) Explain electrophoresis with a labelled diagram.

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87. Give reasons for the following observations :

(a) A deal is formed at the meeting point of sea water and river water.

(b) NH_3 gas adsorbs more readily than N_2 gas on the surface of charcoal.

(c) Powdered substances are more effective adsorbents.

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88. Write a method by which lyophobic colloids can be coagulated.

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89. Give reasons for the following observations :

(a) Physisorption decreases with increase in tempetature.

(b) Addition of alum purifies water.

(c) Brownian movement provides stability to the collidal solution

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90. Out of $BaCl_2$ and KCl, which is more effective in causing coagulation of a negatively charged colloidal sol ? Give

reason.

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91. Adsorption is always exothermic in nature , Do you agree ?

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92. According to Hardy Schulze rule, the power of coagulation of an ion depends upon.....

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93. What is sorption.

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94. Why are powdered substance more effective adsorbent than their crystalline forms?

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95. Homogeneous And Heterogeneous Catalysis

Watch Video Solution

96. Write the main reason for the stability of colloidal sols.

Watch Video Solution

97. Difine the following terms :

(i) Pepization (ii) Zeta potential (iii) Brownian movement.

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98. What are associated colloids ?

Watch Video Solution

99. Write one similarity between physisorption and chemisorption.

Watch Video Solution

100. Write one difference in each of the following:

(i) Lyophobic and Lyophilic sol (ii) Solution and colloid (iii) Homogeneous catalysis and Heterogeneous catalysis.

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101. How is Brownain movement responsible for the stability of sol ?

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102. Name the promoter used in the Haber's process for the manufacture of ammonia.

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103. The charge on the lyophobic sol particles is due to

Watch Video Solution

104. What is an adsorption isotherm? Describe Freundlich adsorption isotherm.

Watch Video Solution

105. What happens when :

(a) freshly prepared precipitate of $Fe(OH)_3$ is shaken with a small amount of $FeCl_3$ solution

(a) persistent dialysis of a colloidal solution is carried out

(c) an emulsion centrifuges ?

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106. (a) Explain how phenomenon of adaorption findss application in heterogeneous catlysis ?

(b) Which of the following electrolytes in the most effective for the coagulation of $\left(Fe(OH)_3\right)$sol, that is positively charged ?

$NaCl, Na_2SO_4, Na_3PO_4.$

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107. Adsorption of gases on solid surface is exothermic because :

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108. Write differences between physisorption and chemisorption.

Watch Video Solution

109. (a) What is Electrophoresis ?

(b) What are catalytic promoters ? Given one example.

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110. (a) Write two difference between lyophilic and lyophobic colloids.

(b) What is heterogeneous catalysis? Given an example.

(c) Give an expression for Freundlich Adsorption Isotherm.

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Higher Order Thinking Skills Hots Questiona And Numerical Problems

1. In order to coagulate a fixed amount of As_2S_3, sol, how will NaCl,$MgCl_2$ and $AcCl_3$ vary in their activity?

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2. A student wrote the following explanation about the working of a catalyst.

"When ethene reacts with hydrogen to from ethane, the molecules of the two gases must collide. Nickel catalyes the reaction by lowering the activation energy of the collision reaction between the reactiing molecules". Is there any error

regarding the understanding by the student about the working of the catalyst?

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3. In the Freundlich adsorption isotherm, the value of x/m is 0.4 under a pressure of 0.2 atm. Calculate the value the intercept.

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4. Graph between log x/m and log P is a straight line at angle of 45° with intercept 0.4771 on y-axis. Calculate the amount of gas adsorbed in gram per gram of adsorbent when pressure is 3 atm.

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5. Consider the adsorption isotherm given below and interpret the variation in the extent of adsorption $\left(\frac{x}{m}\right)$ when

a. Temperature increased at constant pressure.

b. Pressure increases at constant temperature.

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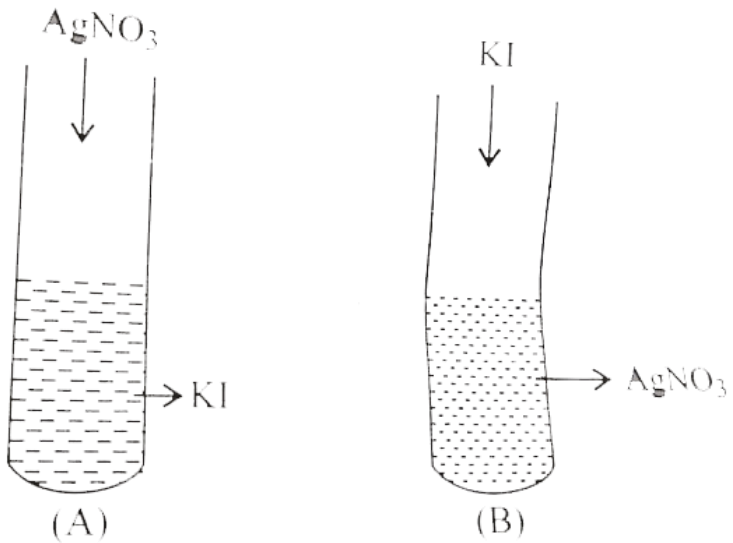
6. A colloidal solution of Agl is prepared by two different methods as shown in the figure below:



What is the charge of Agl colloidal particles in the two test tubes (A) and (B) ?

b. Given reasons for the origin of charge.

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7. 100 mL of 0.3 M acetic acid is shaken with 0.8 g wood charcoal. The final concentration of acetic acid in the

solution after adsorption is 0.125 M. The mass of acetic acid adsorbed per gram of charcoal is :

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8. In the adsorption of acetic acid vapours by 1 g of charcoal, the following data was abtained :

$x\left(cm^3\right)$	0.726	0.478
$p(cmofHg)$	0.570	0.210

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9. SnO_2 form a positively charged colloidal sol in the acidic medium and negatively charged sol in the basic medium. Explain.

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10. When bezoyl chloride si reduced by H_2 in the presence of Pd catalyst, the product is benzyl alcohol. If $BaSO_4$ is mixed with the catalyst before passing the gas, the product is benzaldehyde. Assign reason.

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11. To the aqueous solution of a slat taken in a tube, a feq drops of blue litums solution were added. Ammonia solution was added dropwise to the red solution formed till it regained its blue colour. The solution was then heate3d for sometime and the tube was left undisturbed. A blue mass was seen floating in colourless solution. How will you acount for this ?

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Multiple Choice Question Bank Mcqb

1. Which of the following is used for removing charge on colloidal solution ?

A. Electrons

B. Electrolytes

C. Positively charged ions

D. Compounds.

Answer: B

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2. Action of shape selective catayst depends upon :

A. mass

B. solubility

C. particle size

D. none of these.

Answer: C

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3. Which of the following in not correct regarding the absorption of a gas on the surface of solid ?

A. On increasing temperature, adsorption increases continuously.

B. Enthalpy and entropy changes are negative.

C. Chemisorption is more specific than physisorption.

D. It is a reversible reaction.

Answer: A

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

A. the concentration of reactant molecules at the acive centres of the catalyst becomes high due to

adsorption

B. in the process of adsorption, the activation energy of the molecules becomes large

C. adsorption produces heat which increases the speed of reaction

D. adsorption lowers the activation energy of the reaction.

Answer: D

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5. Bredig's Arc Methof cannot be used to prepare colloidal solution of :

A. Pt

B. Fe

C. Ag

D. Au

Answer: B

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6. A plot of log (x/m) versus log p for the adsorption of a gas on the surface of a solid gives a straight line which slope equal to :

A. log K

B. $-\log K$

C. n

D. $\frac{1}{n}$

Answer: D

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7. The coagulationof 200 mL of a positive sol 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. 200

Answer: C

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8. the Langmuir adsorption isotherm is deduced using the assumption.

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

B. The heat of adsorption varies with coverage.

C. The adsorbed molecules interact with each orther.

D. The adsorption takes place in multi-layers.

Answer: A

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9. In colloidal particles, the range of diameter is :

A. 1 to 100 nm

B. 1 to 1000 nm

C. 1 to 100 cm

D. 1 to 100m.

Answer: B

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10. Which of the following statements are correct with respect to adsorption of gases on a solid ?

(i) The ectent of adsorption is equal to KP^n according to

Freundlich isotherm.

(ii) The extent of adsorption is equal to $KP^{1/n}$ according to Frendlich isotherm.

(iii) The extent of adsorption is equal to (1+bP)/aP according to Langmuir isotherm.

(iv) The extent of adsorption is equal to aP/(1+bP) according to Langmuir isotherm.

(v) Freundlich adsorption isotherm fails at low temperature.

A. (i) and (ii)

B. (i) and (iv)

C. (ii) and (iii)

D. (ii) and (iv)

Answer: D

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11. Adsorption is accompanied by

A. decrease in enthalpy and increaase in entropy

B. increase in enthalpy and increase in entropy

C. decrease in enthalpy and decrease in entropy

D. increase in enthalpy and decrease in entropy

Answer: C

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12. The formation of micelles takes place only above

A. Inversion temperature

B. Boyle temperature

C. Critical temperature

D. Kraft temperature

Answer: D

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13. Collodion is a 4% solituon of which one of the following in alcohol-enter mixture ?

A. nitrocerine

B. callulose acetate

C. glycoldi nitrate

D. nitrocellulose

Answer: D

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14. 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. 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 = p $\times$ T.

Answer: D

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15. In freundlich adsorption isotherm, 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 physisorption

D. 1 in case of chemisorption.

Answer: A

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16. Whch one of the following statement is incorrect about enzyme catalyisis ?

A. Enzymes are mostly proteinous in nature

B. Enzyme action is specific

C. Enzymes are denatured in ultraviolet rays and at high temperature

D. Enzymes are least reactive at high temperature.

Answer: D

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17. Identify the positively charged sol

A. Haemoglobin (blood)

B. As_2S_3

C. Clay

D. Gold sol.

Answer: A

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18. Protective sols are:

A. Lyophilic

B. Lyophobic

C. Both 1 and 2

D. none of these.

Answer: A

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19. Which property of the coloidal solution is independent of the charge on the colloidal particles ?

A. Electro-osmosis

B. Tyndall effect

C. Coagulation

D. Electrophoresis.

Answer: B

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20. Which of the following statements is incorret about physisorption?

A. It is of reversible nature

B. It froms multilayer

C. Extent of physisoprion decreases with increases in temperature

D. It increases with increase in surface area.

Answer:

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21. As the size of the gold particle increases, the colour of the solution varies as:

A. Purple $\rightarrow$ blue $\rightarrow$ golden $\rightarrow$ red

B. Golden $\rightarrow$ red $\rightarrow$ purple $\rightarrow$ blue

C. Red $\rightarrow$ purple $\rightarrow$ blue $\rightarrow$ golden

D. Blue $\rightarrow$ purple $\rightarrow$ $golden$to` red.

Answer: C

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22. Which of the following statements is not correct for the catalyst?

A. It catalyses the forward and backward reaction to the same extent

B. It alters ΔG for the reaction

C. It does not change the equilibrium constant ofa reaction

D. It provides an alternate mechanism by reducing activation energy between the reactants and products.

Answer: B

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23. Fog is a collodal solution of:

A. solid in gas

B. gas in gas

C. iliquid in gas

D. gas in liquid.

Answer: C

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24. The coagulation values in millimoles per litre of the electrolytes used for the coagulation of As_2S_3 are given : I (NaCl) = 52, their coagulating power is

A. $I > II > III$

B. $II > I > III$

C. $III > II > I$

D. $III > II > II$

Answer: C

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25. Which is not correctly matched

A. Lyophobic colloid - Metal suplhide sol

B. Multimolecular colloid- Gold sol

C. Lyophilic colloid - Sulphur sol

D. Macromolecular colloid- Cellulose

Answer: C

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26. Which one of the following statements is not correct ?

A. The value of equlibrium constant is changed in the presence of a catalyst in the reaction at equlibrium.

B. Enzymes catalyes mainly bio-chemical reactions.

C. Cienxymes increase the catalitic activity of enzyme.

D. Catalyst does not initiate any reaction.

Answer: A

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27. On which of the following properties does the coagulation power of an ion depend ?

A. The magnitude of charge on the ion

B. Size of the ion alone

C. Both magnitude and sign of charge on the ion alone

D. The sign of the charge on the ion alone.

Answer: C

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28. Which of the following statements is incorrect ?

A. On prolonged dialysis, solloid becomes stable

B. $AnNO_3$ is excess KI froms negative colloid

C. $AgNO_3$ in excess KI from postive colloid

D. Medicines work in colloidal from because of grater surface area.

Answer: C

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Jee Main Other Engineering Entrance Examinations

1. Which of the followig characteristics is not correct for physical adsorption ?

A. Adsorption increases with increase in temperature

B. Adsorption is spontaneous

C. Both enthalpy and entropy of adsorption are negative

D. none of these

Answer: A

Watch Video Solution

2. Identify the correct statement regarding enzymes

A. Enzymes are specific biocatalysts that can normally function at a very low temperature (about 100 K)

B. Enzymes are normally hetergeneous catalysts that are very specific in action

C. Enzymes are specific biological catalysts which cannot be poisoned

D. c

Answer: D

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3. In Langur's mofel of adsorption of a gas on the solid surface :

A. the rate of dissociation of adsorbed molecules on the solid surface does not depend on the surface covered.

B. the adsorption at a single site on the surface may involve multiple molecules at the same time

C. the mass of gas striking a given area of surface is proporational to the pressure of the gas

D. none

Answer: C

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4. $RCOCl + H_2 \xrightarrow{Pd / BaSO_4 / S} RCHO + HCl$

In the above reaction (Rosenumed reduction),$BaSO_4 / S$

asts as:

A. promoter for catalyst

B. poison for catalyst

C. only catalyst

D. d

Answer: B

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5. In a reversible reaction, a catalyst :

A. increases the rate of the forward reaction only

B. increases the rate of the forward reaction ot greater extent than that of the backward reaction

C. increases the rate of the forward reaction and decreases that of the backward reaction to different extent

D. increases the rate of the forward and backward reactions equally.

Answer: A

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6. Which statement about enzymes is not corect ?

A. Enzymes are in coloidal state

B. Enzymes are catalysts

C. Enzymes can catalyes any reaction

D. a

Answer: C

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7. The rate of a certain biochemical reaction c arried by enzymes in human body is 10^3 times faster than when it is carried in the laboratory. The activation energy of the reaction:

A. is zero

B. is different in the two cases

C. is the same in the two cases

D. none of these.

Answer: B

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8. Plot of log 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, the amount of solute adsorbed per gram of adsorbent will be : (log 5=0.6990)

A. 1 g

B. 2 g

C. 3 g

D. 5 g.

Answer: D

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9. 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. $B < D < A < C$

B. $D < A < C < B$

C. $C < B < D < A$

D. $A < C < B < D$

Answer: D

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

A. It occurs because of van der Walls' forces

B. More easily liquefiable gases are adsorbed readily

C. Under high pressure, it results in multi moleculer layer on adsorbent surface

D. Enthalpy of adsorption is low and positive.

Answer: D

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11. 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

Watch Video Solution

12. Petro-crops are plants

A. Platinum

B. ASM-5

C. Iron

D. Nickel

Answer: B

Watch Video Solution

13. 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. $x/m \propto p^o$

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

Answer: D

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14. which one is an example of multimolecular coloid system?

A. Aqueous starch sol

B. Aqueous enzyme sol

C. Alcoholic polystyene sol

D. Sulphur sol in water.

Answer:

Watch Video Solution

15. The stabilization of a lyophobic colloid is due to :

A. Adsorption of covalent molecules on colloid

B. Size of particles

C. Charge on the particles

D. Tyndall effect.

Answer: C

Watch Video Solution

16. â€¦â€¦.. Is the gold number of hydrophilic colloid, greater is its protective power.

A. higher

B. lower

C. constant

D. non of these.

Answer: B

Watch Video Solution

17. For Freundlich isotherm, a groph of log x/m is plotted against log p.

A. 1/n, k

B. log 1/n, k

C. 1/n log k

D. log 1/n, log k

Answer: C

Watch Video Solution

18. Which of the following colloieds cannot be easily coagulated ?

A. Multimolecular colloids

B. Irreversible colloids

C. Lyophilic colloids

D. Macromolecular colloids

Answer: D

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19. Which of the following curves is in accordance with Freundlich adsorption isotherm ?

A. 

B. 

C. 

D. 

Answer: D

Watch Video Solution

20. 3 g of activated charcoal was added to 50 mL of acetic acid solution (0.06 N) in a flask. After an hour, It was filtered and the strength of the filtrate was found to be 0.42 N. Calculate the amount of acetic acid adsorbed per gram of charcoal.

A. 32 mg

B. 42 mg

C. 54 mg

D. 18 mg

Answer: D

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21. Dispersed phase and sispersion medium for fog are :

A. solid , liquid

B. liquid, liquid

C. liquid, gas

D. gas, liquid

Answer: C

Watch Video Solution

22. Which of the following statements is not correct ?

A. Chemical adsorption is reversible in nature

B. Physical adsorption is reversible in nature

C. ΔH is small in physical adsorption

D. ΔH is large in chrmical adsorption.

Answer: A

Watch Video Solution

23. Aqueous solution of raw sugar (generally brown) when passed over beds of anijmal charcoal becomes

A. red

B. blue

C. pink

D. colourless.

Answer: D

Watch Video Solution

24. At a given temperature nd pressure, adsorption of which gas out of the following will take place the mose?

A. Dihdrogen

B. Ammonia

C. Dioxygen

D. Dinitrogen

Answer: B

Watch Video Solution

25. Which of the following is the most effective in c ausing 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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26. For a linear plot of log (x/m) versus log p in a Freundlich adsorption isotherm, which of the following statements is correct ? (K and n are constants)

A. Both K and 1/n appears in the slope term.

B. 1/n appears as the intercept.

C. Only 1/n appears as the slope

D. log (1/n) appears as the intercept.

Answer: C

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27. Point out the false statement.

A. Colloidal sols are homogeneous

B. Colloids carry + ve or -ve charges

C. Colloids show Tyndall effect.

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

Answer: A

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28. Which is not correct statement in respect to chemisorption?

A. Highly specific adsorption

B. Irreversible adsorption

C. Multilyer adsorption

D. High negative enthalpy of adsorption.

Answer: C

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29. The charge on As_2S_3 sol is due to:

A. adsorption of S^{-2} ions

B. absorption of S^{2-} ions

C. absorption of H^+ ions

D. adsorption of H^+ ions

Answer: A

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

A. High pressure

B. Low temperature

C. High temperature

D. High critical temperature of adsorbate

Answer: C

Watch Video Solution

31. The Tyandall effect is observed only when following conditions are satisfied

(a) The diameter of the dspersed particle is much smaller than the wavelength of the light used

(b) The diameter of the dispersed particles isnot much smaller than the wavelength of the light uses

(c) The refractive indices of the dispersed phase and sispersion medium are almost similar in magnitude.

(d) The refractive indices of the dispersed phase and the dispersion medium differ greatly in magnitude.

A. A and C

B. B and C

C. A and D

D. B and D

Answer: D

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32. Gold sol is not s

A. Lyophobic sol

B. Negatively charged sol

C. Macromolecular sol

D. Multimolecular sol.

Answer: C

Watch Video Solution

33. Which of the following statement is true regarding chemosorption of gas on the solid surface

A. This type of adsorption ofirst increases with rise in temperature

B. No compoundformation takes plac in this case

C. The forces operting are weak van der Waals force

D. If forms multimolecular layer of as molculse on the surface of the solid.

Answer: A

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Comprhension Linked Mcqs

1. Adsorption is a surface phenomenon and it differs feom adsorption which occurs throughout the body of the substance which absorbs. In physisorption, the attractive forces are mainly van der Waals' forces while in chemisorption actual bonding occurs between the particles of adsorbent and adsorbente. Generally, easily liquefying gases are adsorbed more easily on the surface of a solid as compared to teh gases whihc are liquefied with difficult. Adsorption increases with the increases in pressure and decreases as the temperature is increases.

The ease with which the gases H_2, CH_4, CO_2 and NH_3 are adsorbed on the surface of charcoal is :

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

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2. Adsorption is a surface phenomenon and it differs feom adsorption which occurs throughout the body of the substance which absorbs. In physisorption, the attractive forces are mainly van der Waals' forces while in chemisorption actual bonding occurs between the particles of adsorbent and adsorbente. Generally, easily liquefying gases are adsorbed more easily on the surface of a solid as compared to teh gases whihc are liquefied with difficult. Adsorption increases with the increases in pressure and

decreases as the temperature is increases.

Freunlich adsorption isotherm gives a straight line on plotting :

A. x/m vs P

B. log x/m vs P

C. log x/m vs log P

D. x/m vs 1/P.

Answer: C

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3. Adsorption is a surface phenomenon and it differs feom adsorption which occurs throughout the body of the substance which absorbs. In physisorption, the attractive

forces are mainly van der Waals' forces while in chemisorption actual bonding occurs between the particles of adsorbent and adsorbente. Generally, easily liquefying gases are adsorbed more easily on the surface of a solid as compared to teh gases whihc are liquefied with difficult. Adsorption increases with the increases in pressure and decreases as the temperature is increases.

The effect of pressure on adsorption is high if:

A. temperature is low

B. temperature is high

C. temperature is neither low nor high

D. charcoal powder is replaced by charcoal pieces.

Answer: A

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4. Adsorption is a surface phenomenon and it differs feom adsorption which occurs throughout the body of the substance which absorbs. In physisorption, the attractive forces are mainly van der Waals' forces while in chemisorption actual bonding occurs between the particles of adsorbent and adsorbente. Generally, easily liquefying gases are adsorbed more easily on the surface of a solid as compared to teh gases whihc are liquefied with difficult. Adsorption increases with the increases in pressure and decreases as the temperature is increases.

Whihc one of the followig is wrong about chemisorption ?

A. It involves the formation of a compound on the su rface of solid adsorbent

B. It is specific in nature

C. It first increases with increase in temperature and then decreases

D. It is reversible in nature.

Answer: D

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5. Adsorption is a surface phenomenon and it differs feom adsorption which occurs throughout the body of the substance which absorbs. In physisorption, the attractive forces are mainly van der Waals' forces while in chemisorption actual bonding occurs between the particles of adsorbent and adsorbente. Generally, easily liquefying

gases are adsorbed more easily on the surface of a solid as compared to teh gases whihc are liquefied with difficult. Adsorption increases with the increases in pressure and decreases as the temperature is increases.

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

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

B. I the process of adsorption, the activation energy of molecules becomes large

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

D. adsorption lowers the activation energy of the reaction.

Answer: A

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6. In a colloidal state, the particle size of he dispersed phase ranges between 10^3 to 10^6 pm and the colloidal sol is of heterogeneous nature. Depending upon the ease with which these sols are formed, the colloidal sols are cassified as lyophilic and lyophobic. THe stability of a colloidal sol is due to the presence of charge on the sol particles and the neutralisation of the same is known as coagulation or precipitation. The coagulationg power of the active ions of he electrolytes can be compared with the help of Hardy-

Schulze Law. The protecting power of the lyophilic sols can be compared with the help of gold number. Lesser the value of gold number, more will be the protecting power of the lyophilic sol.

Lyophilic sols are more stable than lyophobic sols because

A. The colloidal particles have positive charge

B. The colloidal particles have no charge

C. The colloidal particles are solvated

D. There are strong electrostatic repulsions between the negatively charged colloidal particules.

Answer: C

 Watch Video Solution

7. In a colloidal state, the particle size of he dispersed phase ranges between 10^3 to 10^6 pm and the colloidal sol is of heterogeneous nature. Depending upon the ease with which these sols are formed, the colloidal sols are cassified as lyophilic and lyophobic. THe stability of a colloidal sol is due to the presence of charge on the sol particles and the neutralisation of the same is known as coagulation or precipitation. The coagulationg power of the active ions of he electrolytes can be compared with the help of Hardy-Schulze Law. The protecting power of the lyophilic sols can be compared with the help of gold number. Lesser the value of gold number, more will be the protecting power of the lyophilic sol.

The areseneous sulphide sol has negative (-) charge. The maximum power to precipitate it is of :

A. H_2SO_4

B. Na_3PO_4

C. $CaCl_2$

D. $AlCl_3$.

Answer: D

Watch Video Solution

8. In a colloidal state, the particle size of he dispersed phase ranges between 10^3 to 10^6 pm and the colloidal sol is of heterogeneous nature. Depending upon the ease with which these sols are formed, the colloidal sols are cassified as lyophilic and lyophobic. THe stability of a colloidal sol is due to the presence of charge on the sol particles and the

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0.025 g of starch sol is required to prevent the coagulatio of 10 mL of gold sol when 1 mL of $10\,\%$ NaCl solution is present. The gold number of strach sol is :

A. 0.025

B. 2.5×10^{-5}

C. `0.25

D. 25

Answer: D

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9. In a colloidal state, the particle size of he dispersed phase ranges between 10^3 to 10^6 pm and the colloidal sol is of heterogeneous nature. Depending upon the ease with which these sols are formed, the colloidal sols are cassified as lyophilic and lyophobic. THe stability of a colloidal sol is due to the presence of charge on the sol particles and the neutralisation of the same is known as coagulation or precipitation. The coagulationg power of the active ions of he electrolytes can be compared with the help of Hardy-Schulze Law. The protecting power of the lyophilic sols can be compared with the help of gold number. Lesser the value

of gold number, more will be the protecting power of the lyophilic sol

$[AgI]I^-$ colloidal sol can be coagulated by the addition of a suitable action. 1 mol of $[AgI]I^-$ required mole of $AgNO_3$, $Pb(NO_3)_2$ and $Fe(NO_3)_3$ as:

A. $1, 1, 1$

B. $1, 2, 3$

C. 1,1//2,1//3`

D. $6, 3, 2$

Answer: C

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10. In a colloidal state, the particle size of he dispersed phase ranges between 10^3 to 10^6 pm and the colloidal sol is of heterogeneous nature. Depending upon the ease with which these sols are formed, the colloidal sols are cassified as lyophilic and lyophobic. THe stability of a colloidal sol is due to the presence of charge on the sol particles and the neutralisation of the same is known as coagulation or precipitation. The coagulationg power of the active ions of he electrolytes can be compared with the help of Hardy-Schulze Law. The protecting power of the lyophilic sols can be compared with the help of gold number. Lesser the value of gold number, more will be the protecting power of the lyophilic sol.

On adding feq drops of dilute HCl to freshly precipitated

ferric hydroxide, a red coloured colloidal sol is obtained. The phenomenon is Known as:

A. Peptisation

B. Dialysis

C. Protective action

D. Dissolution.

Answer: A

Watch Video Solution

11. In a colloidal state, the particle size of he dispersed phase ranges between 10^3 to 10^6 pm and the colloidal sol is of heterogeneous nature. Depending upon the ease with which these sols are formed, the colloidal sols are cassified as

lyophilic and lyophobic. THe stability of a colloidal sol is due to the presence of charge on the sol particles and the neutralisation of the same is known as coagulation or precipitation. The coagulationg power of the active ions of he electrolytes can be compared with the help of Hardy-Schulze Law. The protecting power of the lyophilic sols can be compared with the help of gold number. Lesser the value of gold number, more will be the protecting power of the lyophilic sol.

Small amount of ferric chloride $(FeCl_3)$ solution is added to freshly prepared and well washed $Fe(OH)_3$ precipitate :

A. $Fe(OH)_3$ is dissolved forming $FeCl_3$

B. A raddish brown positively charged sol $\left[Fe(OH)_3\right]Fe^{3+}$ is formed due to peptasation.

C. Areddish brown negatively charged sol $\left[Fe(OH)_3\right]:3Cl^-$ is formed due to peptisation

D. A double salt $Fe(OH)_3.FeCl_3$ is formed.

Answer: B

Watch Video Solution

12. There are certain substances which behave as normal, strong electrolyte at low concentration but at higher concentration they behave as colloidal solutions due to the formation of aggregated particles. Such colloids called associated colloids and the aggregated particles are called micelles. The formation of micelles take place above certain concentration called critical micellization concentration

(CMC) and a characteristic temperature.

Micelles are

A. emulsion cum gels

B. associated colloids

C. adsorbed catalyst sts

D. ideal solutions

Answer: B

Watch Video Solution

13. There are cartain substances which behave as normal strong electrolytes at low concentration but at higher concentration they behave as colloidal solutions due to the formation of aggregated particles. Such colloids are called

associated coloids and the aggreagated particles are called micelles. Soaps and detergents are the examples of associated colloids. The formation of micelles takes place above certain concentration called critical micrllization concentration (CMC) and a characteristic temperature.

Select the incorrect statements (s).

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

B. Soap are emulsifying agents.

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

D. All the above statement are incorrect.

Answer: C

Watch Video Solution

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

A. R part (called tail of the anion)

B. $-CO^-$ part (called head of the anion)

C. Both a and b

D. None of the above.

Answer: C

Watch Video Solution

15. There are cartain substances which behave as normal strong electrolytes at low concentration but at higher concentration they behave as colloidal solutions due to the formation of aggregated particles. Such colloids are called associated coloids and the aggreagated particles are called micelles. Soaps and detergents are the examples of

associated colloids. The formation of micelles takes place above certain concentration called critical micrllization concentration (CMC) and a characteristic temperature.

What type of molecules from micelles ?

A. Non-polar molecules

B. Polar molecules

C. Surfactant molecules

D. Salt of wak acid and weak base

Answer: C

Watch Video Solution

16. There are cartain substances which behave as normal strong electrolytes at low concentration but at higher

concentration they behave as colloidal solutions due to the formation of aggregated particles. Such colloids are called associated coloids and the aggreagated particles are called micelles. Soaps and detergents are the examples of associated colloids. The formation of micelles takes place above certain concentration called critical micrllization concentration (CMC) and a characteristic temperature.

Micelles are formed only :

A. below the CMC and the Kraft temperature

B. above the CMC and below the Kraft temperature

C. below the CMC and above the Kraft temperature

D. below the CMC and above the Kraft temperature

Answer: C

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17. There are cartain substances which behave as normal strong electrolytes at low concentration but at higher concentration they behave as colloidal solutions due to the formation of aggregated particles. Such colloids are called associated coloids and the aggreagated particles are called micelles. Soaps and detergents are the examples of associated colloids. The formation of micelles takes place above certain concentration called critical micrllization concentration (CMC) and a characteristic temperature.

Above CMC, the surfactant molecules undergo :

A. dissociation

B. aggregation

C. micelle formation

D. b and c

Answer: D

18. There are certain substances which behave as normal, strong electrolyte at low concentration but at higher concentration they behave as colloidal solutions due to the formation of aggregated particles. Such colloids called associated colloids and the aggregated particles are called micelles. The formation of micelles take place above certain concentration called critical micellization concentration (CMC) and a characteristic temperature.

Micelles are used in

A. detergents

B. magnetic separation

C. electrolytic refining of metals

D. All the above.

Answer: A

 Watch Video Solution

19. The colloidal solution of two immiscible liquids in which one of the liquids acts as a dispersed phase and the other as dispersion medium is called emulsion. Milk is an example of emulsion in which fat globules are dispersed in water. Emuldion are of two types i.e., O/W and W/O type emulsion,

identified by dilution test, conductivity test and dye test.

Choose the correct answer:

A. O/W

B. W/O

C. Both a and b

D. none of these.

Answer: A

Watch Video Solution

20. The colloidal solution of two immiscible liquids in which one of the liquids acts as a dispersed phase and the other as dispersion medium is called emulsion. Milk is an example of emulsion in which fat globules are dispersed in water.

Emuldion are of two types i.e., O/W and W/O type emulsion, identified by dilution test, conductivity test and dye test.

Which property is observed in an emulsion ?

A. Tyndall effect

B. Brownian motion

C. Both a and b

D. none of these.

Answer: C

Watch Video Solution

21. The colloidal solution of two immiscible liquids in which one of the liquids acts as a dispersed phase and the other as dispersion medium is called emulsion. Milk is an example of

emulsion in which fat globules are dispersed in water. Emuldion are of two types i.e., O/W and W/O type emulsion, identified by dilution test, conductivity test and dye test.

In milk, whihc acts as an emulsifier ?

A. Gelatin

B. Albumin

C. Casein

D. none of these.

Answer: C

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22. Match the List I (Colloidal dispersion) with List-II (Nature of dispersion) and select answer in terms of code given

below.

A. A-4, B-2, C-1, D-5

B. A-1, B-5, C-3, D-2

C. A-4, B-5, C-1, D-2

D. A-1, B-2, C-3, D-5

Answer: A

View Text Solution

23. The cogulation of 100 mL of colloidal solutionof gold is completely prevented by additionof 0.25 g of substance "X" to it before addition of 1 mL of $10\ \%$ NaCl solution. The gold number of substance 'X' is :

A. 0.25

B. 25

C. 250

D. 2.5

Answer: B

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24. 1 mole of AgI / Ag^{+} sol is coagulated by

A. 1 mole of KI

B. 500 mL of 1M K_2SO_4

C. 300 mL of IM Na_3PO_4

D. 1 mole of Agl

Answer: A

Watch Video Solution

25. At CMCm the surfactant molecules undergo :

A. association

B. aggregation

C. micele formation

D. All of these

Answer: D

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26. Adsorption power of the adsorbent can be increased:

A. by increasing surface area

B. by finely dividing it

C. by making it porous

D. All of these

Answer: D

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27. Which of the following is not a surface phenomenon?

A. Heterogeneous catalysis

B. Fusion of solids

C. Corrosion

D. Electrolysis process.

Answer: D

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28. Langmuir adsorption isotherm works particularly well :

A. where multilayer adsorption ccan take place

B. where only unimolecular adsorption can take place

C. at initial stage where unimolecular adsorption takes place and not after that when multimolecular adsorption continues

D. in all of the above situations.

Answer: B

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29. Adsorption playso no role in :

A. sugar industry to decolourise the crude sugar

B. stopping bleeding from a fresh cut

C. drying of the substance using anhydrous $CaCl_2$

D. concentration of the ores by Froath floatation method.

Answer: C

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30. Chromatography is based on :

A. chemical adsorption

B. physical adsorption

C. hydrogen bonding

D. sedimentation.

Answer: B

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31. Gold number is associated with :

A. electroporesis

B. purple of casius

C. porotective coloids

D. amount of pure gold.

Answer: C

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32. When stauration is attained in terms of adsorption, variation of (x/m) and c (concentration) is given by the portion of the isotherm

A. OA

B. OB

C. AB

D. BC.

Answer: D

View Text Solution

33. Rate of physisorption increases with :

A. decrease in temperature

B. increase in temperature

C. decrease in temperature

D. decreases in surace area.

Answer: A

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34. Adsorpton of gases on solid surface is generally exothermic because :

A. enthalpy is positive

B. entropy decreases

C. entropy increases

D. free energy increases.

Answer: B

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35. Which of the following is correct for lyophilic sol ?

A. irreversible nature

B. formed from inorganic substances

C. readily coagulated by the addition of electrolyte

D. self-stabilised.

Answer: D

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36. Among the following , the surfactant that will form micelles in aqueous solution at the lowest molar concentration at amibemt conditions, is :

A. $CH_3(CH_2)_{15}N^+(CH_3)_3Br^-$

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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37. Among the electrolytes Na_2SO_4, $CaCl_2$, $As_2(SO_4)_3$ and NH_4Cl, the most effective coagulationf agent for Sb_2S_3 negatively charged sol is :

A. Na_2SO_4

B. $CaCl_2$

C. $Al_2(SO_4)_3$

D. $NH_4Cl.$

Answer: C

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38. Methylen blue, from its aqueous solution is adsorbed on activated charcoal at $25^{\circ}C$. For this process, the correct statement is

A. the adsorption requires activation at $25^{\circ}C$.

B. the adsorption is accompanied by a decrease in enthalpy

C. the adsorption incrases with increase of temperature

D. the adsorption is irreversible.

Answer: B

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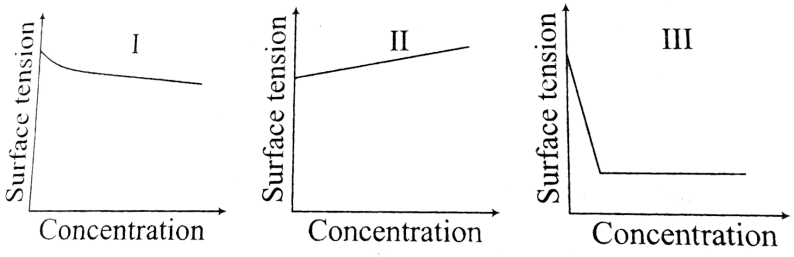
39. The equalitative sketches I, II and III given below show the variation of surface tension with molar concentration of three diferent aqueous solutions of KCl, CH_3OH and $CH_3(CH_2)_{11}OSO_3^- Na^+$ at room temperature.



The correct assignment of the sketches is

A.

$I: KCl \quad II: CH_3OH \quad III: CH_3(CH_2)_{11}OSO_3^- Na^+$

B.

$I: CH_3(CH_2)_{11}OSO_3^- Na^+ \quad II: CH_3OH \quad III: KCl$

C.

$I: CH_3OH \quad II: CH_3(CH_2)_{11}OSO_3^- Na^+ \quad III: KCl$

D.

$I: CH_3OH \quad II: KCL \quad III: CH_3(CH_2)_{11}OSO_3^- Na^+$

Answer: D

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Multiple Correct Options Type Mcws

1. Which of the following are lyophilic in nature ?

A. Gum

B. Sulphur

C. Starch

D. Protein.

Answer: A::C::D

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2. Select the correct statement among the following:

A. Milk is an emulsion of fat in water

B. An emulsifier stabilises emulsion

C. Emulsifier forms a thin layer around the droplets of dispersed phase

D. Mile is an emulsion of protein in water.

Answer: A::B::C

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3. Which fo the following statements are ture ?

A. Floccuation value is inversely proportional to the cogaulating power

B. Colloidal silicon is a protective colloid.

C. Alum is used for clening muddy water.

D. Gelatin is added to ice cream to act as emulsifier

Answer: A::C::D

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4. Which of following are examples of aerosols ?

A. Whipped cream

B. Cloud

C. Fog

D. starch solution

Answer: B::C

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5. Which of the following are macromolecular colloids ?

A. Starch

B. Soap

C. Detergent

D. Cellulose.

Answer: A::D

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6. Methods for preparing colloidal sols are :

A. hydrolysis

B. coagulation

C. peptisation

D. dispersion.

Answer: A::C::D

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7. Multimolecular colloids are present in :

A. sulphur sol

B. gold sol

C. protein sol

D. soap sol.

Answer: A::B

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8. Which among the following are enzyme catalysts ?

A. Glucose

B. Amylase

C. Trypsin

D. Nuclease.

Answer: B::C::D

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9. Choose the correct reason (s) for the stability of lyophobic colloidal particles.

A. Preferential adsorption of ions of their surface from the solution.

B. Preferential adsorption of solvent on their surface form the solution.

C. Attraction betweendifferent partiles having opposite charges on thir surface.

D. Potential difference between the fixed layer and the diffused layer of opposite charge around the colloidal partcles.

Answer: A::B::C

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10. A mol of $[Ag]Ag^{+}$ sol cagulated by :

A. 2 mole of KI

B. 501 mL of 1 M K_2SO_4

C. 2 L of 1M KI

D. None of these

Answer: A::B::C

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11. Raeaction of zeolite catalyst depend upon :

A. pores

B. apertures

C. size of cavites

D. pressure.

Answer: A::B::D

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12. 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

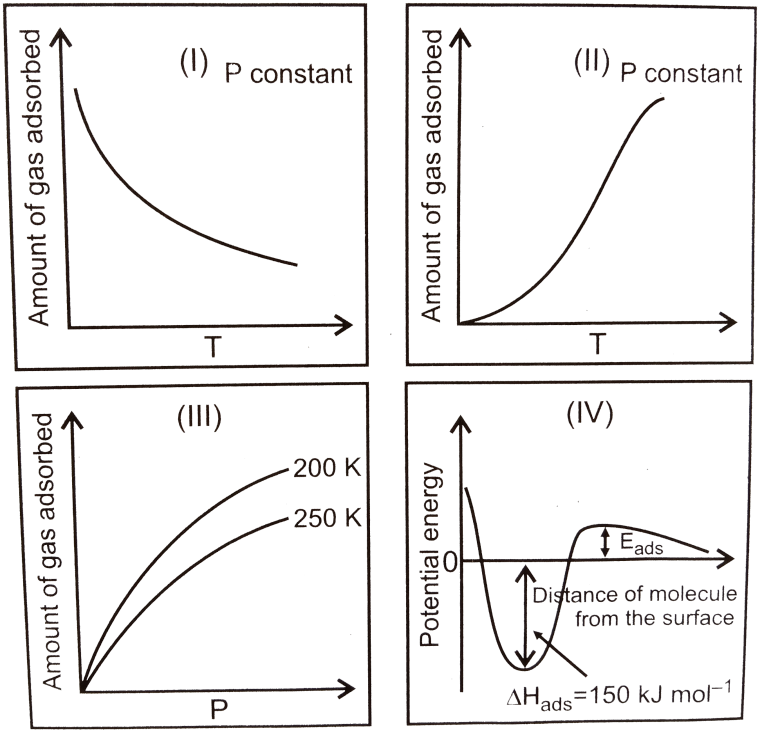
C. Physisorption icnreases with inincreasing temperature but chemisorption decreases with increasing temperatue.

D. chemisorption is more exothermic than py sisorption, however it is very slow due to higher energy of aactivation.

Answer: A::C

Watch Video Solution

13. The given graphs//data I, II, II and IV pepresent general terends obseved of diffent physiorpton and chemisorption processes under mild conditions of temperature and pressure , which of the following choice (s) about I, II, II anIV is (are) correcty ?



A. I is physisorption and II is chemisorption

B. I is physisorption and III is chemisorption

C. IV is physisorption and II is chemisorption

D. IV is physisorption and III is chemisorption.

Answer: A::D

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14. When O_2 is adsorbed on a metallic surface, electron transfer occurs form the metal to O_2. The true statement (s) regardign this adsorption is (are)

A. O_2 is physisorbed

B. heat is released

C. occupancy of $\hat{}(**)\mathrm{pi\_}(2\mathrm{p})ofO_2$ is increased

D. bond length of O_2 is increases.

Answer: B::C::D

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15. The correct (S) about surface properties is (are)

A. The critical temperatures of ethane and nitrogen are 563 K and K, respectibely. The adsorption of ethame will be nore than that of nitrogen on same amount of activated charcoal at a given temperature

B. Cloud is an emulsion type of colloid in which liquid is dispersed phase and gas is dispersion medium

C. Adsorption is accompained by decreases in enthalpy and decrease in enthalpy and decrease in entropy of th system

D. Brownian motion of colloidal particles does not depend on the size of the particles but depends on visosity of the solution.

Answer: A::C

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Assertin Reason Type Questions

1. Assertion : In physisorption, adsorption decreases with increase in tempetrature.

Reason : Lhysisorption is of eothermic nature.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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2. Assertion : Lyophilic sols are more stable than Lyophobis sols.

Reason : Lyophilic sols are more readily hydrated than lyophobic sols.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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3. Assertion : Catalysts increase the reaction velocity.

Reason : Catalysts provide large surface area for reactions to occur.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: B

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4. Assertion : Soap acts as emulsifier in its cleansing action.

Reason : Soap has both hydrophilic and hydrophobic groups present.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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5. Assertion : Colloidal sol scatters ight while true solution does not.

Reason : The particles in a colloidal sol move slowly than in a true solution.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: B

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6. Assertion : A colloidal sol of $Al(OH)_3$ is more readly coagulated by 0.1 M NaCl than by $0.1MNa_2SO_4$.

Reason : The coagulating power of an electrolyte is related to the concentration of the active ions.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: D

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7. Assertion : A sol of As_2S_3 prepared by the action of $H_2S on As_2O_3$ is negatively charged.

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

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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Watch Video Solution

8. Assertion : Physical adsorption on the surface of sadsorbent equires appreciable activation energy

Reason : Because bonds of the adsorbate molecules are to break.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: D

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9. Assertion : Aqueous gold colloidal sol is red in colour.

Reason : The colour arised due to scattering of hight by particles of gold.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

Watch Video Solution

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

Reason : Fe^{3+} ions react with As_2S_3 give Fe_2S_3.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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11. Assertion : In the presenced of promote, the activity on the surface of catalyst is enhanced.

Reason : Promote increase the surface area of the catalyst and as a result, the number of active centres increase.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

 Watch Video Solution

12. Assertion : A colloidal sol. Of $Fe(OH)_3$ formed by peptisation carries positive charge.

Reason : During formation of $Fe(OH)_3$, the electrons are lost by the particles.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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13. Assertion : Proteins, starch and rubber are lyophilic coloids.

Reason : They have strong interaction with the dispersion medium.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

 Watch Video Solution

14. Assertion : Lyophilic colloids such as starch, gelatin etc, act as protective colloids.

Reason : Protective power of lyophilic coloids is expressed in terms of gold number.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: B

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15. Assertion : The micelle formed by sodium stereate in water has $-COO^-$ groups at the surface.

Reason : Surface tension of water is reduced by the addition of stereate.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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16. Assertion : Sulphide ores are concentrated by forth flotation process.

Reason : Pine oil froms emulsion in water.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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17. Assertion : Colloidal solutions are electrically netural

Reason : Dispersed phase and dispersion medium carry same change.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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18. Assertion : During adsorption, $\Delta G, \Delta H$ and ΔS decrease i.e., their values become negative.

Reason : Adsorption is a spontaneous process. Randomness ofr disorder decreases during adsorption.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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19. Assertion : Al^{3+} ions have greater precipitating power for As_2S_3 than N_a^+ ions.

Reason : As_2S_3 sol is a negatively charged sol.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: B

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20. Assertion : Oxidation of Na_2SO_3 is not caused by air but in the presence of Na_3AsO_3.

Reason : Na_3AsO_3 can be oxidised by air.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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21. Assertion : A catalyst lowers the threshold energy level for a reaction

Reason : A catalyst combines with one of the reactans of from an intermediate the follows an alternate path with lesser energy of activation.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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22. Assertion : Gelatin is often used as a protective colloid.

Reason : Protection is the property of lyophilic colloids.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: B

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23. Assertion : The concentration of sulphide ore by froth floatation process is based on emulsification.

Reason : The addition of pine oil in w ater froms an emulsion.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: A

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24. Assertion : Physical adsorption is reversible.

Reason : Chemical adsorption is alos reversible.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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25. Assertion : $Fe(OH)_3$ and As_2S_3 colloidal sols on micing fro precipitate.

Reason : $Fe(OH)_3$ and As_2S_3 combine to from precipitate of new compound.

A. If both assertion and reason are correct and reason is correct explanation for assertion.

B. If both assertion and reason are correct but reason is not correct explanation for assertion.

C. If assertion is correct but reason is incorrect.

D. If assertion and reason both are incorrect.

Answer: C

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Brain Storming Multiple Choice Questions Mcqs

1. Followin are the serms about ac itivty and selectivity:

I. Acitivity is the ability of catalysts to accelerate chemical reactions and selectivity is the ability of catalysts to direct reaction to yield particular products.

II. Activity is the ability of catalyst and selectivity is the ability of catalysts to accelerate chemical reactions. Select the correct term :

A. I

B. II

C. I and II both

D. none of these.

Answer: A

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2. On adding $AgNO_3$ solution into KI solution, a negatively charged coll oidal sol is obtained when they are in :

A. 100 mL of 0.1M $AgNO_3$ + 100 mL of 0.1 m KCl

B. 100 mLof 0.1 M $AgNO_3$ + 100 mL of 0.2 MKI

C. 100 mLm of 0.1 M $AgNO_3$ + 100 mL of 0.1 m KI0

D. 100 mL of 0.15 $AgNO_3$ + 100 mL of 0.15 M KI.

Answer: B

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3. In the lake tast for Al^{3+} ions, there is the formation of coloured 'floating lake'. It is due to :

A. Adsorption of litums by $\left[Al(OH)_4\right]^-$

B. Adsorption of litums by $Al(OH)_3$

C. Adsorption of litums by H_2O

D. None of the above.

Answer: B

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4. The automobule with catalytic converter must use unleaded gasoline because :

A. lead gasoline may give more fumes

B. automobiles with catalytic converter cannot run on leaded gasolines.

C. surface of the catalyst is rendered ineffective by the adsorption of lead.

D. Unleaded gasoline is cheaper.

Answer: C

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5. When zeolite, which is hydrated sodium aluminium silicate, is treated with hard water, the sodium ions are exchanged with

A. Ca^{2+} or Mg^{2+} ions in zeolite are replaced by Na^{+} ions in hard water.

B. Ca^(2+)$ions \in zeolitearereplacedby$Mg^(2+)` ions in hard water.

C. Na^{+} ions in zeloite are replaced by Ca^{2+} and Mg^{2+} ions in hard water.

D. None is correct.

Answer: C

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6. Which of the following will result in a colloidal sol ?

A. $Cu + HgCl_2 \rightarrow CuCl_2 + Hg$

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

C. 2Mg+CO2 to 2MgO+C

D. Cu+CuCl2 to Cu2Cl2

Answer: B

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7. Which is not the property of hydrophilic sols ?

A. High concentration of the dispersed phase can be easily attained.

B. Coagulaton is reversible.

C. The charge on the particles depends on the pH value of the dispersion medium.

D. Viscosity and the surface tension are the same as of the dispersion medium.

Answer: D

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8. Gold numbers of protective colloids A,B,C and D are $0.05, 0.01, 1.10$ and 0.005 respectively. The correct order of their protective powers is

A. $D < A < C < B$

B. $C < B < D < A$

C. $A < B < C < D$

D. $B < D < A < C$

Answer: C

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