



CHEMISTRY

BOOKS - MODERN PUBLICATION

SURFACE CHEMISTRY

Example

1. fill in the blanks- _____ is an alloy used for making shaving blades and bullets of guns and pistols.



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2. Which of the following is the correct electronic configuration of magnesium ?

A. 2,8

B. 8,2,1

C. 2,8,2

D. 2,10

Answer:



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3. 1g of charcoal adsorbs 100mL of 0.6 M CH_3COOH to form a monolayer and thereby molarity of acetic acid is reduced to 0.49 M. Calculate the surface area of the charcoal adsorbed by each

molecule of acetic acid. Surface area of charcoal =

$$3.01 \times 10^2 m^2 / g$$



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4. Which of the following represents the correct electron distribution in magnesium ion ?

A. (a) 2, 8

B. (b) 2, 8, 1

C. (c) 2, 8, 2

D. (d) 2, 8, 3

Answer:



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5. The following data were obtained for the adsorption of carbon monoxide gas on 3.0 g of charcoal at $0^{\circ}C$ and 1 atm pressure.

<i>Pressure (mm Hg)</i>	200	400
<i>Volume of gas adsorbed, x (reduced to STP)</i>	18.6	31.4

Calculate the values of the constants k and n using Freundlich adsorption equation.

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6. Give an example of one transparent and one opaque objects?

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7. State whether the statement is true or false- Chalk dissolves in water.

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8. In case chemisorption, why adsorption first increase and then decrease with temperature ?

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9. Give reasons why a finely divided substance is more effective as an adsorbent.

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10. A small amount of silica gel and a small amount of anhydrous calcium chloride are placed separately in two corners of a vessel containing water vapour. What phenomena will occur ?

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11. The atom of an element X has 7 electrons in its M shell. What is the atomic number of element X ?

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12. If an element M has mass number 24 and atomic number 12, how many neutrons does its atom contain ?

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13. The mass number of an element is 23 and it contains 11 electrons. What is the number of protons and neutrons in it ?
What is the atomic number of the element ?

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14. The mass number of an element is 18. It contains 7 electrons.

What is the number of protons and neutrons in it ? What is the atomic number of the element ?

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15. The ion of an element has 3 positive charges. The mass number of atom of this element is 27 and the number of neutrons is 14. What is the number of electrons in the ion ?

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

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17. The number of electrons in the atom of an element X is 15 and the number of neutrons is 16. Give representation of an atom of this element ?

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18. Why is silica gel used as a dehumidifier ?

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19. The atom of an element X has 7 electrons in its M shell. (a)
Write the electronic configuration of element X.

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20. Name the enzyme which converts glucose into alcohol.

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21. Name the enzyme which converts sucrose into glucose and fructose.

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22. In a coagulation experiment, 5 mL of As_2S_3 is mixed with distilled water and 0.1M solution of an electrolyte AB so that total volume is 10 mL. It was found that all solutions containing more than 4.6 mL of AB coagulate within 5 minutes. What is the flocculation value of AB for As_2S_3 sol. ?

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23. The coagulation of 100 mL of a colloidal solution of gold is completely prevented by the addition of 0.25 g of starch to it before adding 1 mL of 10% NaCl solution . Calculate the gold number of starch.

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24. Lyophilic colloids are more stable than lyophobic colloids. Explain.

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25. What valency will be shown by an element having atomic number 12 ?

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26. What valency will be shown by an element having atomic number 15 ?

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27. If $Z = 5$, what would be the valency of the element ? Also name the element.

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28. What is the number of valence electrons in a chloride ion, Cl^-

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29. The total number of electrons in a nitrogen atom is 7. Find the number of valence electrons in it.

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30. Which noble gas has less than 8 electrons in the valence shell of its atom ? What is this number ?

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31. What is the general name of the elements having 8 electrons in the valence shell of their atoms ?

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32. The electronic configuration of an element Z is 2, 8, 8. (a)

What is the atomic number of the element ?

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33. The electronic configuration of an element Z is 2, 8, 8. (b)

State whether element Z is a metal or a non-metal.

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34. The electronic configuration of an element Z is 2, 8, 8. (c)

What type of ion (if any) will be formed by an atom of element Z ?

Why ?

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35. Complete the following : The zig-zag motion of colloidal particles is called..... .

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36. What happens when a freshly precipitated $Fe(OH)_3$ is shaken with little amount of dilute solution of $FeCl_3$?

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37. Give two examples of colloidal solutions of liquid dispersed in solid. What is the name of the colloidal solution ?

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38. What does reciprocal of gold number indicate ?



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39. 50 mL of standard gold sol. needs 0.05 mg of gelatin for its protection from coagulation. Calculate gold number of gelatin.



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40. 100 mL of a colloidal solution is completely precipitated by addition of 5 mL of 1 M NaCl solution. Calculate the coagulation value of NaCl.



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41. What is the charge on the colloidal particles in the following :



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42. What is the charge on the colloidal particles in the following :

As_2O_3 sol

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43. What is the charge on the colloidal particles in the following :

Colloidal sol of silver ?

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44. Which of the following is most effective electrolyte in the

oagulation of $Fe_2O_3 \cdot H_2O / Fe^{3+}$ sol ? KCl,

$AlCl_3$, $MgCl_2$, $K_4[FeCN)_6]$

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45. Peptizing agent is added to convert precipitate into colloidal solution. Explain.

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46. Cottrell's smoke precipitator is fitted at the mouth of chimney used in factories. Give reasons..

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47. Why is colloidal gold used for intramuscular injection ?.

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48. What is colloidal solution ?



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49. Differentiate between peptization and coagulation.



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



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51. Give suitable explanations for the following:

Sky is blue in colour.

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52. Explain : A freshly formed precipitate of ferric hydroxide can be converted to a colloidal sol by shaking it with a small quantity of ferric chloride.

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53. Leather gets hardened after tanning. Why?

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54. In Haber's process, hydrogen is obtained by reacting methane with steam in presence of NiO as catalyst. The process is known as steam reforming. Why is it necessary to remove CO when ammonia is obtained by Haber's process?



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55. Addition of alum purifies water. Why?



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56. Out of $MgCl_2$ and $AlCl_3$ which one is more effective in causing coagulation of negatively charged sol and why?



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57. Out of sulphur sol and proteins, which one forms multimolecular colloids?



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58. Why are substances like platinum and palladium often used for carrying out electrolysis of aqueous solutions ?

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59. Why does physisorption decrease with the increase of temperature ?

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60. Why are powdered substances more effective adsorbent than their crystalline forms ?

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

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62. Why is the ester hydrolysis slow in the beginning and becomes faster after sometime ?.

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63. What is the role of desorption in the process catalysis ?.

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64. What modification can you suggest in the Hardy Schulze law?

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65. Why is it essential to wash the precipitate with water before estimating it quantitatively?

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66. Distinguish between the meaning of the terms adsorption and absorption. Give one example of each.

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67. What is the difference between physisorption and chemisorption ?

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68. Give reasons why a finely divided substance is more effective as an adsorbent.

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

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70. What is adsorption isotherm ?

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71. What do you understand by activation of adsorbent? How is it achieved?

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72. What is heterogeneous catalysis ? What role does adsorption play in heterogeneous catalysis ?

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73. Adsorption is an exothermic process. Explain.

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74. What are the various types of colloidal solutions based upon the physical states of dispersed phase and dispersion medium ? Give one example in each case.

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75. Discuss the effect of pressure and temperature on the adsorption of gases on solids.

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

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77. 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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78. What are enzymes?

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79. How are colloids classified on the basis of physical states of components.

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80. How are colloids classified on the basis of nature of dispersion medium.

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81. How are colloids classified on the basis of : interaction between dispersed phase and dispersion medium?

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82. Explain what is observed :- when a beam of light is passed through a colloidal sol.

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83. Explain what is observed :- an electrolyte, NaCl is added to hydrated ferric oxide sol.

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84. Explain what is observed :- electric current is passed through a colloidal sol?

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85. What are emulsions ? What are their different types ? Give one example of each type.

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86. What is demulsification ? Name two demulsifiers.

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87. Action of soap is due to emulsification and micelle formation comment.

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88. Give four examples of heterogeneous catalysis.

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89. What do you understand by activity and selectivity of a catalyst ? Give one example of each.



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90. Describe some features of catalysis by zeolites.

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91. What is shape selective catalysis?

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92. Explain the following terms: Electrophoresis

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93. Explain the following terms : Coagulation or flocculation.



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94. Explain the following terms: Dialysis

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95. Define the following term : Ligands.

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96. Give four uses of emulsions.

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97. What are micelles ? Give one example of a micellar system.

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98. Explain the terms with suitable examples: Alcosol

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99. Explain the terms with suitable examples: Aerosol

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100. Explain the terms with suitable examples: Hydrosol

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101. Comment on the statement that “colloid is not a substance but a state of substance.”



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102. Why is it important to have clean surface in surface studies ?



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103. Why is chemisorption referred to as activated adsorption ?



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104. What type of solutions are formed on dissolving different concentrations of soap in water ?



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



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



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107. Gelatin which is a peptide is added in ice creams. What can be its role ?



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108. What is collodion ?.



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109. Why do we add alum to purify water ?

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110. What happens when electric field is applied to colloidal solution ?

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111. What causes brownian motion in colloidal dispersion ?

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112. A colloid is formed by adding $FeCl_3$ in excess of hot water. What will happen if excess sodium chloride is added to this colloid?

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

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114. Why are medicines more effective in colloidal state ?

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115. Why does leather get hardened after tanning ?

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116. How does the precipitation of colloidal smoke take place in Cottrell precipitator ?

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117. How will you distinguish between dispersed phase and dispersion medium in an emulsion ?

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118. On the basis of Hardy-Schulze rule explain why the coagulating power of phosphate is higher than chloride.

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119. Why does bleeding stop by rubbing moist alum ?

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120. A freshly prepared $Fe(OH)_3$ precipitate is peptized by adding $FeCl_3$ solution . The charge on the colloidal particle is due to preferential adsorption of :

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121. Rate of physisorption always increases with decrease in temperature. Explain.

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122. What happens when dialysis is prolonged ?

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123. Why does the white precipitate of silver halide become coloured in the presence of dye eosin.

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124. What is the role of activated charcoal in gas mask used in coal mines ?

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125. How does a delta form at the meeting place of sea and river water ?

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126. Give an example where physisorption changes to chemisorption with rise in temperature. Explain the reason for change.

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

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128. What is the role of reproduction?

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129. How does a solid catalyst enhance the rate of combination of gaseous molecules ?

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

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131. SnO_2 forms a positively charged colloidal solution in acidic medium and a negatively charged colloidal solution in basic

medium. Explain.

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132. Why is chemical adsorption unimolecular while physical adsorption is multimolecular ?

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

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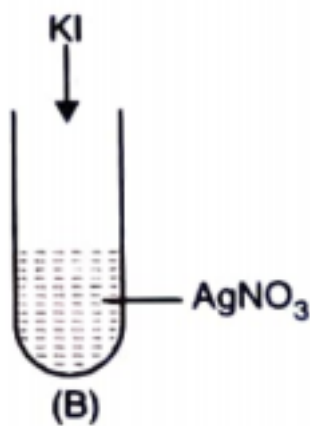
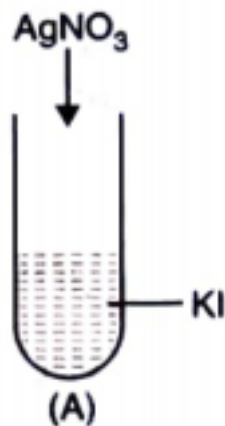
134. Why are medicines more effective in colloidal state ?

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135. On passing H_2S through an aqueous solution of SO_2 , a yellow turbidity is formed. Why ?

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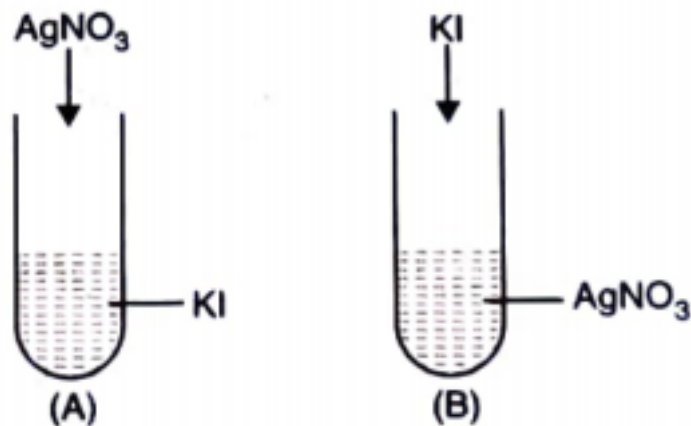
136. A colloidal solution of AgI is prepared by two different methods as shown below:



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

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137. A colloidal solution of AgI is prepared by two different methods as shown below:



Give reasons for the origin of charge.

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138. Why does the sun look red at the time of setting? Explain on the basis of colloidal properties.

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139. State whether the statement is true or false- Brass is an alloy made up of copper and tin metals.

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140. State whether the statement is true or false- Bronze is an alloy which is made up of Aluminium and Copper.

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141. The electronic configuration of an element Z is 2, 8, 8. (d)

What is special about the outermost electron shell of the atom of this element ?



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142. The electronic configuration of an element Z is 2, 8, 8. (e) Give

the name and symbol of element Z.



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Exercise

1. True or False : Physical adsorption increases with rise in temperature whereas chemical adsorption decreases with rise in

temperature.

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2. True or False : Chemisorption is irreversible while physisorption is reversible.

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3. True or False : Selectivity is the ability of a catalyst to direct the reaction to give a particular product.

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4. True or False : At low pressure, the extent of adsorption is directly proportional to pressure at constant temperature.

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5. True or False : $Al(NO_3)_3$ has higher coagulating power than $MgSO_4$ for $Fe(OH)_3$ sol.

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6. True or False : Gel is a system in which liquid is the dispersed phase and solid is the dispersion medium.

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7. the protective power of the lyophilic colloids is expressed in terms of gold number, a term introduced by Zsigmondy. Gold number is the number of milli - gram of the protective colloid which prevent the coagulation of 10 mL of red gold sol , when 1

mL of a 10 per cent solution of sodium chloride is added to it .
thus smaller the gold number of lyophilic colloid, the greater is
the protective power.

which of the following statement (S) is / are correct? higher the
gold number, more protective power of colloid, Lower the gold
number, more protective power, Higher the coagulation value,
more the coagulation power, lower the coagulation value, higher
the coagulation power.



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8. True or False : Greater the flocculation value of an electrolyte,
greater is its coagulating power.



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9. True or False : Adsorption is always multimolecular.



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10. True or False : Colloidal sols are always heterogeneous.



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11. Complete the missing links : Milk is an example of..... in
..... emulsion.



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12. The phenomenon in which adsorption and absorption takes
place simultaneously is called

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13. The nature of forces involved in physical adsorption are

.

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14. The formation of micelles takes place above a particular temperature called

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15. The movement of colloidal particles under the influence of an electric field is called

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16. The scattering of light by colloidal particles is called

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17. The swelling of gel in water is called

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18. is the process of Separating the crystalloids from colloids using an animal membrane.

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19. Colloidal solution of gold in water is called

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20. In whipped cream, the dispersion medium is..... and dispersed phase is

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21. In benzosol, the dispersion medium is

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22. The size of particles of colloidal solution is in the range of nm to

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23. A graph between the amount of gas adsorbed per gram of the adsorbent and equilibrium pressure of the adsorbate at constant temperature is called

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24. The rate of adsorption in general is in the beginning and then..... till equilibrium is attained .

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25. The formation of micelles takes place above a particular concentration called

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26. Choose the correct alternative : Adsorption is exothermic/endothermic process.

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27. Chemisorption always form unimolecular/multimolecular layer.

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28. According to Freundlich adsorption isotherm, x/m becomes independent of pressure at low/high pressure.

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29. The size of colloidal particles is less/more than that of true solution particles.

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30. Substances like gum, starch form lyophilic/lyophobic sols.

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31. The formation of micelles takes place above a particular temperature called

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32. What are Multimolecular colloids?



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33. True or False : Colloidal sols are always heterogeneous.

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34. What happens when ferric chloride is added to sodium hydroxide solution, which type of sol is formed?

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35. Gelatin (gold number 0.005-0.01) has more/less protecting power than albumin (gold number 0.1-0.2).

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36. The electronic configuration of an element Z is 2, 8, 8. (f)

Name the group of elements to which Z belongs.



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37. Name the dispersed phase and dispersion medium in fog.



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38. The particles of colloidal solution possess electrical charge which is responsible for the stability of these solutions. The charge on colloidal particles arises because of selective adsorption of ions which are common with their own lattice. The presence of charge on colloidal particles can be determined with the help of phenomenon known as electrophoresis. However, when some electrolyte is added, the charge -on the particles of

dispersed phase gets neutralized and precipitation takes place. This process is also called coagulation. The coagulation is given by Hardy Schulze rules. According to these rules the ions carrying the charge opposite to that of sol particles are effective and coagulating power of an electrolyte is directly proportional to the fourth power of the valency of the ion. Coagulation can also occur by mutual precipitation, by electrophoresis, by persistent dialysis or by heating or cooling.

What is Hardy Schulze rule ?

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39. What is Tyndall effect ? What is the cause of it ?

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40. Does the adsorption of a gas on the surface of solid increases or decreases with rise in temperature ?

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41. The cause of Brownian movement is

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42. Name the enzyme which converts starch into maltose.

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43. Which has a higher enthalpy of adsorption, physisorption or chemisorption ?

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44. What is adsorption isobar?

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45. Fill in the blanks- Bordeaux mixture is used for _____.

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46. Write Freundlich adsorption isotherm at intermediate pressure.

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47. Write Freundlich adsorption isotherm at high pressure.



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48. What is occlusion and occluded hydrogen ?



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49. Name the emulsion to which cold cream belongs to.



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50. Name the type of emulsion to which milk belongs to.



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51. Name the type of emulsion to which butter belong to.



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52. Fill in the blanks- German silver in making _____ and _____.



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53. Between absorption and adsorption, which one is surface phenomenon ?



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54. Give one example each of aerosol and solid foam



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55. Give one example each of sol and gel.

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56. What are emulsions ? Give an example of oil in water and water in oil emulsion.

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57. Out of $BaCl_2$ and KCl which one is more effective in causing coagulation of negatively charged colloidal sol. Give reason.

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58. Read the following passage and answer the questions.

Adsorption is surface phenomenon and its differ from absorption, Which occurs throughout the body of the substance which abosorbs. In physisorption, the attractive forces are mainly van der waals forces while in chemisorption actual bonding occuars between the particles of absorbent and absorbate. Generally, easily liquifying gases are absorbed more easily on the surface of a solid as compared to the gases which are liquified with difficulty. Adsorption increases with the increase in pressure and decreases as the temparature is increased.

Arrange the following gases in the decreasing order of the ease with which they are adsorbed on charcoal. H_2 , CH_4 , CO_2 and NH_3



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

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60. Given an example of shape selective catalyst.

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

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62. Define: Peptisation

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63. What is the effect of temperature on chemisorption ?

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64. Adsorption is an exothermic process. Explain.

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65. Name the dispersed phase and dispersion medium in milk.

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



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67. Write the reason for the stability of colloidal sols.

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68. Movement of dispersion medium under the influence of electric field is known as

- A. electro dialysis
- B. electrophoresis
- C. electroosmosis
- D. cataphoresis.

Answer:

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69. At CMC (Critical Micellisation Conc.) the surface molecules

- A. associate
- B. dissociate
- C. decompose
- D. become completely soluble.

Answer:



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70. Complete the missing links : Milk is an example of..... in
..... emulsion.

- A. emulsion

B. suspension

C. foam

D. sol.

Answer:



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71. What is Tyndall effect ? What is the cause of it ?

A. electric charge

B. scattering of light

C. absorption of light

D. none of these.

Answer:



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72. Fog is a colloidal solution of

- A. liquid dispersed in a gas
- B. gas dispersed in a gas
- C. solid dispersed in gas
- D. solid dispersed in liquid

Answer:



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73. Blood may be purified by

- A. coagulation

B. dialysis

C. electro-osmosis

D. filtration

Answer:



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74. Zigzag Random motion of colloidal particles is known as

A. Tyndall effect

B. Electrophoresis

C. Dialysis

D. Brownian movement

Answer:



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75. Fill ups

Blue colour of the sky is due to theof light.

- A. refraction of blue light by impurities in sea water
- B. scattering of light by water
- C. refraction of blue sky by water
- D. none of these.

Answer:



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76. The cause of Brownian movement is

- A. heat change in liquid state
- B. attractive force between colloidal particles and dispersion medium
- C. bombardment of the colloidal particles by the molecules of the dispersion medium
- D. interaction of charged particles

Answer:

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77. Emulsifying agent present in milk that makes it stable is

- A. maltose
- B. casein

C. lactose

D. none of these.

Answer:



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78. Cloud is an example of

A. liquid dispersed in gas

B. solid dispersed in gas

C. solid dispersed in liquid

D. none of these.

Answer:



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79. The colour of sky is due to

- A. absorption of light
- B. transmission of light
- C. scattering of light
- D. all of these

Answer:



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80. Express 8 in roman numerals.



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81. Explain the following- Uses of brass alloy.



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82. The efficiency of a protective colloid is described in terms of

- A. gold number
- B. flocculation number
- C. valency of counter ion
- D. Tyndall effect.

Answer:



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83. The dispersion medium in aerosol is

- A. water
- B. alcohol
- C. air
- D. benzene

Answer:



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84. The function of enzymes in the living system is to

- A. maintain pH
- B. catalyse biochemical process
- C. provide immunity

D. transport oxygen

Answer:



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85. The ultrafiltration Process of purification of colloidal solutions is based on:

- A. optical properties of colloids
- B. electrical properties of colloids
- C. magnetic properties of colloids
- D. size of colloids

Answer:



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86. In physical adsorption the forces associated are

- A. ionic
- B. covalent
- C. van der Waals
- D. hydrogen bonding

Answer:

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87. Milk is a colloidal solution of in

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88. Colloids can be purified by peptization. (True/False)



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89. The protective power of colloids is measured in the unit

..... .



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90. The curve showing the variation of adsorption with pressure at constant temperature is called



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91. Differentiate between absorption and adsorption.



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92. What do you understand by true solution, colloidal solution and suspension ? Give their differences .

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93. Comment on the statement that “colloid is not a substance but a state of substance.”

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94. An atom of element E contains 3 protons, 3 electrons and 4 neutrons : What could element E be

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95. How are colloids classified on the basis of : interaction between dispersed phase and dispersion medium?

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96. How will you prepare a collidal solution of gold?

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97. Explain electrophoresis. How is it helpful in causing coagulation of colloidal solutions ?

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98. Write two differences between sols and emulsions.



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99. Explain the following- Uses of bronze alloy.

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100. State whether the statement is true or false- Bronze alloy is used to make artificial jewellery.

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101. Electrical wires are made up of which alloy?

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102. State whether the statement is true or false- Bell metal is made of copper and aluminium.

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103. State whether the given statement is true or false- Gun metal is made up of phosphorus and tin metal.

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104. Explain the following- Uses of Gun metal.

 [Watch Video Solution](#)

105. State whether the statement is true or false- Magnesium alloy is made up of copper and zinc.

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106. State whether the statement is true or false- German silver alloy is used to make aircrafts and aeroplanes.

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107. Give three differences between lyophilic and lyophobic colloids.

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108. How will you justify that milk is an emulsion of oil in water with the help of dye test ?

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109. How will you justify that milk is an emulsion of oil in water with the help of dilution test ?

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110. Explain Tyndall effect.

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111. Explain the following terms: Dialysis



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112. Explain the following terms: Electrophoresis

 [Watch Video Solution](#)

113. Define Coagulation.

 [Watch Video Solution](#)

114. Explain the following: Peptization .

 [Watch Video Solution](#)

115. Define: Emulsification



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116. What do you understand by activity and selectivity of a catalyst ? Give one example of each.

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117. Explain how the phenomenon of adsorption finds application in the following process : production of vacuum.

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118. State whether the statement is true or false- The alloy used to make bells for schools and temples is called gun metal.

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119. Explain how the phenomenon of adsorption finds application in the following process : Froth floatation process.

 [Watch Video Solution](#)

120. What are micelles ? Give one example of a micellar system.

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121. State whether the statement is true or false- The alloy which is made up of 80% of copper and 20% of tin is called as gun metal.

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122. Magnet is made up of which alloy?

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123. An atom of element E contains 3 protons, 3 electrons and 4 neutrons : (b) What is its mass number ?

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124. What is meant by coagulation of a colloidal solution ? Describe briefly any three methods by which coagulation of lyophobic sols can be carried out.

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125. State whether the statement is true or false- The alloy which is used in the making of shaving blades and bullets of guns and pistols is called manganese steel.

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126. In the making of fire arms like guns and pistol, an alloy is used which is called as-

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127. Define enzyme catalysis. What is the reason for its specific action ?

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128. An atom of element E contains 3 protons, 3 electrons and 4 neutrons : (a) What is its atomic number ?

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129. Taking two examples of heterogeneous catalytic reactions, explain how a heterogeneous catalyst helps in the reaction.

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130. An atom of element E contains 3 protons, 3 electrons and 4 neutrons : (e) What type of ion, cation or anion, will be formed by an atom of element E ? Why ?

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131. Define the following term and give an example : Coagulation .



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132. Define the following term and give an example : Emulsion.



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133. An atom of element E contains 3 protons, 3 electrons and 4 neutrons : (c) Write the electronic configuration of the element E.



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134. An atom of element E contains 3 protons, 3 electrons and 4 neutrons : (d) State whether element E is a metal or non-metal.

Why ?

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135. Define the following term and give an example :
Electrophoresis .

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136. Define the following term and give an example : Gold
number.

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137. Give three differences between multimolecular colloids and
macromolecular colloids.

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138. 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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139. What do you mean by gold number ?

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140. What are emulsions ? Give an example of oil in water and water in oil emulsion.

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141. Write the dispersed phase and dispersion medium of the following colloidal system : Smoke.

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142. Name the dispersed phase and dispersion medium in milk.

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

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144. Write the difference between physisorption and chemisorption with respect to the following : Specificity .

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145. Write the difference between physisorption and chemisorption with respect to the following : Temperature dependence.

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146. What is the relationship between an atom containing 11 protons, 11 electrons and 11 neutrons, and another atom containing 11 protons, 11 electrons and 12 neutrons ?

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147. Write the difference between physisorption and chemisorption with respect to the following : Enthalpy change.

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148. What is the difference between oil/water (o/w) type and water/oil (w/o) type emulsions ? Given an example of each type.

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149. Write the equation of straight line for the Freundlich's adsorption isotherm.

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150. The nucleus of an atom has 5 protons and 6 neutrons. What would be the (a) atomic number

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151. Distinguish between the 'meaning of the terms adsorption and absorption. Give one example of each.

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152. hardy - Schulze law states that :

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153. Explain Tyndall effect.

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154. Define the following : Kraft temperature.

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155. Define the following : Critical micelles concentration.

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156. The nucleus of an atom has 5 protons and 6 neutrons. What would be the (b) mass number

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157. Give three differences between lyophilic and lyophobic colloids.

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158. Give three differences between multimolecular colloids and macromolecular colloids.

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159. What is the difference between physical and chemical adsorptions?

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160. In reference to Freundlich adsorption isotherm write the expression for adsorption of gases on solids in the form of an equation.

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161. Write an important characteristic of lyophilic sols.

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162. Based on type of particles of dispersed phase, give one example each of associate colloid and multimolecular colloid.

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163. How will you differentiate Lyophilic colloids from Lyophobic colloids?

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164. Hardy - Schulze law states that :

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165. Why does physisorption decrease with increase in temperature ? Explain.

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

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167. Explain Brownian movement.

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168. Describe one method of purification of colloidal solution.

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169. Explain the mechanism of the cleansing action of soaps

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170. Classify the type of colloid sol.in the following based on the physical state : smoke, milk, pumice stone, foam rubber, cheese, gem stones.



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171. What is the difference between true solution and colloidal solution?



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172. Write four applications of colloids.



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173. Write notes on Hardy Schulze Rule ?

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174. What is the difference between physisorption and chemisorption ?

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175. Why does bleeding stop by rubbing moist alum ?

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176. What are adsorption and absorption processes? Give one example to show the distinction between the two.

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177. What is homogeneous and heterogeneous catalysis ? Give one example of each.

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178. Why does leather get hardened after tanning ?

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179. Lyophilic colloids are more stable than lyophobic colloids. Explain.

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180. In Haber's process, hydrogen is obtained by reacting methane with steam in presence of NiO as catalyst. The process is known as steam reforming. Why is it necessary to remove CO when ammonia is obtained by Haber's process?

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181. What are emulsions ? What are their different types ? Give one example of each type.

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182. What is coagulation ?

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183. Differentiate between homogeneous and heterogeneous catalyst ?

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184. What are micelles ? How are they helpful?

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185. What is Tyndall effect ? What is the cause of it ?

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186. Explain Brownian movement.

 [Watch Video Solution](#)

187. What is homogeneous and heterogeneous catalysis ? Give one example of each.

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188. Which of the following is an emulsifying agent?

A. Milk

B. Butter

C. Gum

D. Lamp black

Answer:

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189. What is the difference between physisorption and chemisorption ?

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190. Explain why the solid catalyst is used in a finely divided form as heterogeneous catalysis.

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191. Differentiate between absorption and adsorption.

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192. Out of $MgCl_2$ and $AlCl_3$, which one is more effective in causing coagulation of negatively charged sol and why?



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193. Out of sulphur sol and proteins, which one forms multimolecular colloids?



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194. In making of aircrafts and aeroplanes, an alloy is used which is called as-



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195. There are bells in the schools and temples which you have seen many times. these bells are made up of a specific alloy. What is that alloy called?



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196. In making of utensils and idols, an alloy is used which is made up of 50% of copper, 35% of zinc, 15% of nickle. What is that alloy called?

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197. In the making of ornaments and idols, an alloy is used which is called as-

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198. Fill in the blanks- In making of magnets, an alloy is used which is called as _____

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199. What is the composition of alanko?



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200. What is the composition of Solder?



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201. Give suitable explanations for the following:

Sky is blue in colour.



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202. Classify colloids where the dispersion medium is water. State their characteristics and write an example of each of these classes.

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203. Explain what is observed :- when a beam of light is passed through a colloidal sol.

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204. Explain what is observed :- when a beam of light is passed through a colloidal sol.

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205. Explain what is observed when an electrolyte (say NaCl) is added to ferric hydroxide sol.

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206. Explain the following term giving a suitable example :
Aerosol .

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207. Define the following term and give an example : Emulsion.

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208. Explain the following term giving a suitable example :
Micelle .



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209. Write three distinct features of chemisorption which are not found in physisorption.



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210. Fill in the blanks- _____ is the key chemical compound used in the manufacture of soaps.



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211. What are the characteristics of the following colloids ? Give one example. Lyophobic sols.



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212. What are the characteristics of the following colloids ? Give one example. Emulsions ..

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213. Associated colloids :

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214. Which chemical compound is used for the manufacturing of soaps and also give its commercial name?

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215. Define the following term giving an example: Adsorption .



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216. Explain what is observed :- when a beam of light is passed through a colloidal sol.



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217. Define the following term and give an example : Emulsion.



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218. Define the following term and give an example : Peptization .



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219. Define the following term and give an example : Emulsion.

 [Watch Video Solution](#)

220. What are emulsions ? What are their different types ? Give one example of each type.

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221. Why does physisorption decrease with increase in temperature ? Explain.

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222. Alums purify muddy water by:



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223. The cause of Brownian movement is

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224. Define the following: O/W Emulsion.

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225. Define the following: Zeta potential.

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226. Define the following: Multimolecular colloids .



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227. Differentiate between physical adsorption and chemical adsorption.

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228. What is catalyst ? How does the phenomenon of adsorption explain the role played by catalyst ?

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229. What is electrophoresis ? What is its significance ?

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230. Discuss the phenomenon of dialysis and electro dialysis ?

 [Watch Video Solution](#)

231. What are protective colloids ?

 [Watch Video Solution](#)

232. What do you understand by activity and selectivity of a catalyst ? Give one example of each.

 [Watch Video Solution](#)

233. Define R.Q.What is its significance?

 [Watch Video Solution](#)

234. Discuss the term- emulsions and their types?

 [Watch Video Solution](#)

235. What do you mean by peptisation ?

 [Watch Video Solution](#)

236. What is homogeneous and heterogeneous catalysis ? Give one example of each.

 [Watch Video Solution](#)

237. Explain Brownian movement.

 [Watch Video Solution](#)

238. What are multimolecular, macromolecular and associated colloids? Give one example of each.

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239. What do you mean by gold number ?

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240. In thermal power stations, coal is burnt to produce steam for generation of electricity. The smoke produced is passed through electrostatic precipitators before allowing it to escape into the atmosphere. Answer the following question : Why is smoke passed through electrostatic precipitators in thermal power stations?



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241. In thermal power stations, coal is burnt to produce steam for generation of electricity. The smoke produced is passed through electrostatic precipitators before allowing it to escape into the atmosphere. Answer the following question : Which property of colloidal solution is used in an electrostatic precipitator?



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242. Fill in the blanks- Bordeaux mixture is made up of _____.



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243. Colloidal solutions are heterogeneous solutions which contain particles of intermediate size between those of true solutions and suspensions. These particles do not settle under gravity but settle on centrifugation. These particles are found to have charge. We notice many applications of these in our day to day life. Answer the following question : Colloidal medicines are used for intramuscular injections. Why?



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244. Colloidal solutions are heterogeneous solutions which contain particles of intermediate size between those of true solutions and suspensions. These particles do not settle under gravity but settle on centrifugation. These particles are found to have charge. We notice many applications of these in our day to

day life. Answer the following question : Name a colloidal solution of silver used as eye lotion.



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245. A colloidal solution is a type of mixture which consists of particles whose size varies between 1 and 1000 nanometres. In colloidal solution the particles are distributed evenly. During this process the particles do not settle down. This is one of the best know thing about colloidal solutions. Properties of colloids and their variation are a well-known area ever since the primitive age. The best example to prove their familiarity with us is that we know from very early times that coagulation of milk results in the formation of curd.

Physical properties of colloids

1. The nature of the colloidal solution is heterogeneous i.e. unlike.

These solutions dwell with two different phases :

- Dispersed medium Dispersed phase.

2. Despite the fact that colloidal dispersions are unlike in description (nature), yet the dispersed fragments are not detectable by the human eye. This is due to the microscopic size of the particles in the solution.

3. The colour of the colloidal dispersion is determined by particles in the solution based on their size. The wavelengths of light that is absorbed will be longer if the size of the particle is large.

4. As a result of its size, the colloidal fragments can easily be passed through a traditional filter paper. However, these particles can be filtered by using membranes such as animal, cellophane, and ultrafilters.

What are colloidal solution particle.



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246. Which of the following statements is not correct regarding physical adsorption ?

- A. It is not specific
- B. It forms monomolecular layers
- C. It has low heat of adsorption
- D. It is reversible.

Answer:



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247. The colloidal system in which the disperse phase and dispersion medium are both liquids is known as :

- A. a gel

B. an aerosol

C. an emulsion

D. a foam.

Answer:



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248. Freshly Prepared precipitates can be easily dispersed by shaking it with dispersion medium. This process is called

A. Peptisation

B. Electrophoresis

C. Dispersion

D. Dialysis.

Answer:



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249. the electrical charge on a colloidal particle is indicated by :

- A. Osmosis
- B. Electrolysis
- C. Dialysis
- D. Electrophoresis.

Answer:



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250. The number of phases in a colloidal system is

A. 1

B. 2

C. 3

D. 4

Answer:



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251. The process of separation of colloids by passing through semi-permeable membrane is called

A. Filtration

B. Electrophoresis

C. Dialysis

D. Ultrafiltration.

Answer:



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252. The size of colloidal particles is in the range of

- A. 0.1- 1 nm
- B. 1 nm - 100 nm
- C. 100 nm - 1000 nm
- D. 1000 - 10000 nm

Answer:



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253. An example of micelle is :

A. Sodium stearate

B. Gold sol.

C. Solution of NaCl

D. Ruby glass.

Answer:



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254. The average molecular mass of colloidal particles can be accurately determined by

A. Measurement of osmotic pressure

B. Tyndall effect

C. Brownian movement

D. Flocculation value.

Answer:

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255. Which of the following is most effective electrolyte in causing the flocculation of a negatively charged arsenious sulphide solution ?

A. KCl

B. $MgCl_2$

C. $K_3Fe(CN)_6$

D. $AlCl_3$

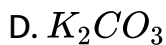
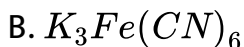
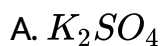
Answer:

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256. What are the components of coin metal alloy?

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257. Which of the following electrolytes will be most effective in causing the coagulation of a positively charged ferric hydroxide sol ?



Answer:

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258. Soaps essentially form a colloidal solution in water and remove the greasy matter by

- A. coagulation
- B. emulsification
- C. adsorption
- D. absorption.

Answer:



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259. On addition of 1 mL solution of 10% NaCl to 10 mL gold sol in the presence of 0.0250 g of starch, the coagulation is just prevented. Starch has the gold number :

A. 0.025

B. 0.025

C. 2.5

D. 25

Answer:



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260. Which of the following is an example of associated colloid ?

A. Protein + Water

B. Soap + Water

C. Rubber + Benzene

D. $As_2O_3 + Fe(OH)_3$.

Answer:



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261. Alums purify muddy water by:

- A. Dialysis
- B. Adsorption
- C. Coagulation
- D. Forming a true solution.

Answer:



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262. What are the composition of Durelumine?



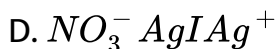
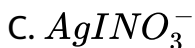
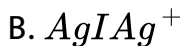
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263. What is the composition of Hydroleum metal alloy?



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264. When KI is added to silver nitrate solution, the sol formed may be written as :

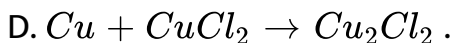
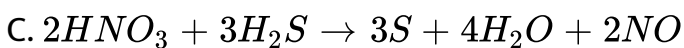
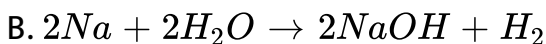
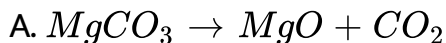


Answer:



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265. Which of the following reaction gives a colloidal sol ?



Answer:



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266. For adsorption of a gas on a solid, the plot of $\log x/m$ vs $\log P$

is linear with a slope equal to (n being a whole number)

A. k

B. $\log k$

C. n

D. $1/n$.

Answer:



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267. Blue colour of water in sea is due to

A. refraction of blue light by impurities in sea water

B. scattering of light by water

C. refraction of blue sky by water

D. none of these.

Answer:

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268. Which of the following is not correct regarding the adsorption of a gas on the surface of a solid ?

- A. On increasing temperature, adsorption increases continuously
- B. Enthalpy and entropy changes are negative
- C. Adsorption is more for specific substance
- D. It is reversible reaction.

Answer:

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269. Alum helps in purifying water by

- A. forming silicon complex with clay particles
- B. sulphate part which combines with dirt and removes it
- C. aluminium which coagulates the mud particles
- D. making mud water soluble.

Answer:

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

- A. the concentration of the reactant molecules at the active 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 the reaction.

D. adsorption lowers the activation energy of the reaction.

Answer:

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271. Which of the following characteristic 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. Adsorption on solid is reversible.

Answer:



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272. Rate of physisorption increases with

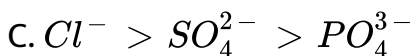
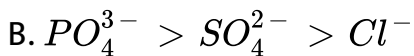
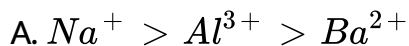
- A. decrease in temperature
- B. increase in temperature
- C. decrease in pressure
- D. decrease in surface area.

Answer:



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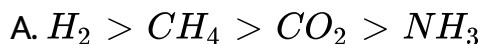
273. The coagulating power of an electrolyte for arsenious sulphide sol decreases in the order :

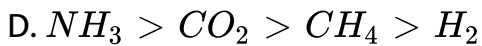
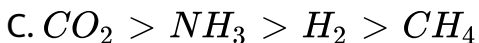
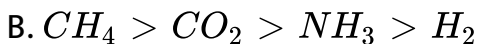


Answer:

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274. The volumes of gases H_2 , CH_4 , CO_2 and NH_3 adsorbed by 1 gm of activated charcoal at 298 K are in the order.





Answer:

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275. The disease kala azar is cured by ?

A. colloidal antimony

B. milk of magnesia

C. argyrols

D. colloidal gold

Answer:

276. Which of the following statements about zeolites is false ?

- A. They have open structure which enables them to take up small molecules.
- B. Zeolites are aluminosilicates having three dimensional network.
- C. Some of the SiO_4^{4-} units are replaced by AlO_4^{5-} and AlO_6^{9-} ion in zeolites.
- D. They are used as cation exchangers.

Answer:

277. Which of the following form micelles in aqueous solution above certain concentration ?

- A. Dodecyl trimethyl ammonium chloride
- B. Glucose
- C. Urea
- D. Pyridinium chloride

Answer:

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

- A. n

B. $1/n$

C. $\log K$

D. $-\log K$

Answer:



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279. The Langmuir adsorption isotherm is deduced using the assumption

- A. The adsorbed molecules interact with each other
- B. The adsorption takes place in multilayers,
- C. The adsorption sites are equivalent in their ability to adsorb the particles.
- D. The heat of adsorption varies with coverage.

Answer:

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

A. $\frac{x}{m} = f(P)$ at constant T

B. $\frac{x}{m} = f(T)$ at constant P

C. $p = f(T)$ at constant $\left(\frac{x}{m}\right)$

D. $\frac{m}{x} = p \times T$

Answer:

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

- A. coagulation value
- B. gold number
- C. critical miscelle concentration
- D. oxidation number

Answer:

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282. 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 physical adsorption

D. 1 in case of chemisorption

Answer:

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283. Which one of the following statements is incorrect about enzyme catalysts ?

A. Enzymes are mostly proteinous in nature.

B. Enzyme action is specific.

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

D. Enzymes are least reactive at optimum temperature.

Answer:

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284. Which of the following statement is correct for the spontaneous adsorption of a gas ?

- A. ΔS is negative and therefore, ΔH should be highly positive
- B. ΔS is negative and therefore, ΔH should be highly negative
- C. ΔS is positive and therefore, ΔH should be negative
- D. ΔS is positive and therefore, ΔH should be highly positive.

Answer:

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285. Which property of colloids is independent of the charge on colloidal particles ?

- A. Electrophoresis
- B. Electro-osmosis
- C. Tyndall effect
- D. Coagulation

Answer:



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286. Fog is a colloidal Solution of

- A. solid in gas

B. gas in gas

C. liquid in gas

D.

Answer:

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287. The coagulation values in millimoles per litre of the electrolytes used for the coagulation of As_2S_3 are given: I. (NaCl) = 52, II. ($BaCl_2$) = 0.69, III. ($MgSO_4$) = 0.22. The correct order of their coagulating power is

A. $I > II > III$

B. $II > I > III$

C. $III > II > I$

D. $III > I > II$

Answer:

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288. In an electrical field, the Particles a colloidal system move towards cathode. The Coagulation of the same sol is studied using K_2SO_4 (I), Na_3PO_4 (II), $K_4[Fe(CN_6)]$ (III) and NaCl (IV). Their coagulating power should be

- A. (I) > (II) > (III) > (IV)
- B. (III) > (II) > (I) > (IV)
- C. (III) > (I) > (II) > (IV)
- D. (IV) > (III) > (I) > (II)

Answer:



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289. Adsorption is accompanied by

- A. decrease in enthalpy and increase in entropy
- B. increase in enthalpy and increase in entropy
- C. decrease in enthalpy and decrease in entropy
- D. increase in enthalpy and decrease in entropy

Answer:



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290. The formation of micelles takes place only above

- A. Inversion temperature

B. Boyle temperature

C. Critical temperature

D. Kraft temperature

Answer:



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291. Colloidion is a 4% solution of which one of the following in alcohol-ether mixture ?

A. nitroglycerine

B. celluloseacetate

C. glycoldinitrate

D. nitrocellulose

Answer:

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292. Choose the incorrect statement in respect of physisorption ?

- A. It is not specific in nature
- B. It arises because of van der Waals forces.
- C. It is reversible in nature
- D. Enthalpy of adsorption is in the range $80-240 \text{ kJ mol}^{-1}$

Answer:

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293. In the adsorption of a gas on solid, Freundlich isotherm is obeyed. The slope of the plot is zero. The extent of adsorption is

- A. directly Proportional to the pressure of the gas
- B. inversely Proportional to the pressure of the gas
- C. directly Proportional to the square root of the pressure of the gas
- D. independent of the pressure of gas

Answer:



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294. Which one of the following is not explained by adsorption?

- A. When acetic acid solution is shaken with charcoal, the Concentration of the acid decreases.
- B. The white Precipitate of $Mg(OH)_2$ attains blue colour when Precipitated in the Presence of magneson reagent.
- C. The air becomes dry in the Presence of silica gel.
- D. When animal charcoal is shaken with coloured methylene blue Solution, the solution turns colourless.

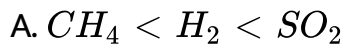
Answer:

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295. The correct ascending order of adsorption of the following Gases on the same mass of charcoal at the same temperature

and

Pressure is



Answer:



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296. Which of the following Statements is incorrect about physisorption?

A. It is reversible in nature.

B. It forms multilayer.

C. It involves high activation energy.

D. The extent of physisorption decreases with increase of temperature.

Answer:

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

A. $\frac{V_c}{V_s} = 1$

B. $\frac{V_c}{V_s} = -1$

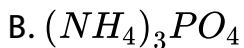
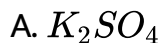
C. $\frac{V_c}{V_s} = 10^{-3}$

D. $\frac{V_c}{V_s} = 10^3$

Answer:

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



Answer:

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

- A. the adsorption at a single site on the surface may involve multiple molecules at the same time
- B. the mass of gas striking a given area of surface is proportional to the pressure of the gas.
- C. the mass of gas striking a given area of surface is independent of the pressure of the gas.
- D. the rate of dissociation of adsorbed molecules from the surface does not depend on the surface covered.

Answer:



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300. Gold numbers of protective colloids A, B, C and D are 0.50, 0.01, 0.10 and 0.005 respectively. The correct order of their protective powers is

A. $B < D < A < C$

B. $D < A < C < B$

C. $C < B < D < A$

D. $A < C < B < D$

Answer:



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

- A. It occurs because of van der Waals forces
- B. More easily liquefiable gases are adsorbed readily
- C. Under high pressure it results into multimolecular layer on adsorbent surface
- D. Enthalpy of adsorption is low and positive.

Answer:

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302. For a linear plot of $\log (x/m)$ versus $\log P$ in a Freundlich adsorption isotherm, which of the following statement is correct? (k and n are constants).

A. $\frac{x}{m} \propto p^1$

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

C. $\frac{x}{m} \propto p^0$

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

Answer:

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303. The coagulating power of electrolytes having ions Na^+ , Al^{3+} and Ba^{2+} for arsenic sulphide sol increases in the order



Answer:



304. 3g 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 0.042 N. The amount of acetic acid adsorbed (per gram of charcoal) is

- A. 42 mg
- B. 54 mg
- C. 36 mg
- D. 18 mg

Answer:

305. For a linear plot of $\log (x/m)$ versus $\log P$ in a Freundlich adsorption isotherm, which of the following statement is correct? (k and n are constants).

- A. both k and $1/n$ appear 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:

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306. On adding one mL of solution of 10% NaCl to 100 mL of gold sol in the presence of 0.25 g of starch, the coagulation is just prevented. The gold number of starch is

A. 0.25

B. 0.025

C. 2.5

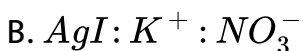
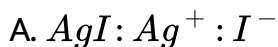
D. 25

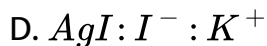
Answer:



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307. When an excess and a very dilute aqueous solution of KI is added to a very dilute aqueous solution of silver nitrate, the colloidal particles of silver iodide which are associated with Helmholtz double layer are





Answer:

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308. Which one of the following impurities present in colloidal solution cannot be removed by electro dialysis ?

A. Sodium chloride

B. Sodium chloride

C. Urea

D. Calcium chloride

Answer:



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309. The ion that is more effective for coagulation of As_2S_3 sol is



Answer:

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310. 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:

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311. Which of the following relation is/ are correct for Langmuir adsorption isotherm?

(i) $x/m = \text{constant}$ (at high pressure)

(ii) $x/m = \text{constant} \times p^{1/n}$ (at intermediate pressure)

(iii) $x/m = \text{constant} \times p^n$ (at lower pressure)

A. all are correct

B. all are wrong

C. (i) & (ii) are correct

D. (iii) is correct

Answer:



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312. The best coagulant for the precipitation of $Fe(OH)_3$ sol is

A. Na_2HPO_3

B. $NaNO_3$

C. Na_3PO_4

D. Na_2SO_4

Answer:



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313. Which is correct about physical adsorption ?

- A. High temperature and high pressure favour adsorption
- B. High temperature and low pressure favour adsorption
- C. Low temperature and high pressure favour adsorption
- D. Low temperature and low pressure favour adsorption.

Answer:



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

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

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

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

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

Answer:

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315. Negatively charged colloidal solution of clay in water will need for precipitation, the minimum amount of

A. aluminium sulphate

B. potassium sulphate

C. sodium hydroxide

D. hydrochloric acid

Answer:



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316. Identify the positively charged sol.

A. Haemoglobin (blood)

B. As_2S_3

C. Clay

D. Gold sols

Answer:



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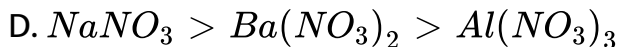
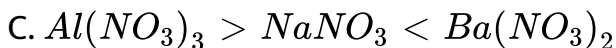
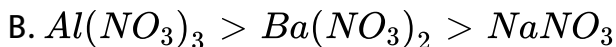
317. The stability of a lyophobic colloid is due to

- A. adsorption of covalent molecules on the colloid
- B. the size of the particles
- C. the charge on the particles
- D. Tyndall effect.

Answer:

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318. The amount of electrolytes required to coagulate a given amount of AgI colloidal solution (-ve charge) will be in the order



Answer:

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319. Gold sol can be prepared by

- A. hydrolysis of gold(III) chloride
- B. oxidation of gold by aqua regia
- C. peptization
- D. reduction of gold(III) chloride with formalin solution.

Answer:

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

A. $\frac{1}{n}, k$

B. $\frac{\log(1)}{n}, k$

C. $\frac{1}{n}, \log k$

D. $\log \frac{1}{n}, \log k$

Answer:



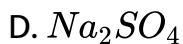
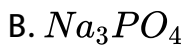
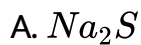
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321. What is the composition of bronze metal alloy?



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322. The electrolyte having maximum flocculation value for Ag/Ag^+ sol is



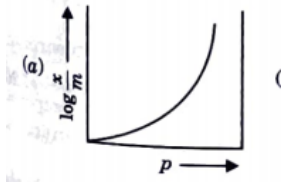
Answer:



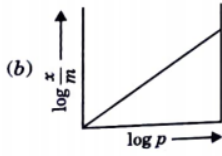
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323. Which of the following curves is in accordance with Freundlich adsorption isotherm?

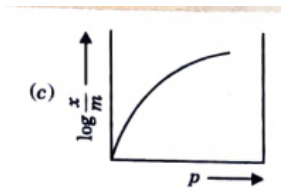
A.



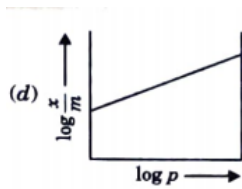
B.



C.



D.



Answer:



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324. Give appropriate answer for the following question- Which alloy is made up of 90% of Cu and 10% of Sn?



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325. 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 \AA

Answer:



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326. Enzymatic reactions are given in Column I and enzymes in Column II

<i>Column I</i>	<i>Column II</i>
(A) Maltose → Glucose	(i) Zymase
(B) Sucrose → Glucose + Fructose	(ii) Pepsin
(C) Glucose → Ethyl alcohol + CO ₂	(iii) Maltase
(D) Starch → Maltose	(iv) Invertase
(E) Proteins → Amino acids	(v) Diastase

Choose the correct matching of enzymatic reaction and enzyme that catalyses the correct reaction from the codes given below:

- A. (A) - (ii), (B) - (iv), (C)- (v), (D) - (iii), (E) - (i)
- B. (A)- (iii), (B)- (iv), (C) -(i), (D) - (v), (E) -(ii)
- C. (A) -(v), (B) - (iv), (C) - (ii), (D) - (i), (E) -(iii)
- D. (A) - (v), (B) -(iii), (C) - (iv), (D) - (ii), (E) -(i)

Answer:



327. In which one of the following properties, physisorption and chemisorption resemble each other?

- A. Force of attraction
- B. Enthalpy of adsorption
- C. Temperature effect
- D. Effect of surface area

Answer:



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328. Give appropriate answer of the following question- Which alloy is made up of 14% of Mn,85% of Fe?

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329. Name an alloy which is made up of Fe, Al, Ni, Co?

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330. Give an appropriate answer of the following question- Which alloy is used to make Fish plates of the railway tracks?

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331. Fill the blanks with appropriate answer- Fish plates in the railways tracks are made up of _____.

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332. Fill in the blanks- _____ is used for welding filling of cracked metallic bodies.

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333. Methylene 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 increases with increase of temperature.
- D. the adsorption is irreversible.

Answer:

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334. Fill in the blanks- _____ alloy is used to make electric heaters.

A. it is heterogeneous solution

B.

C.

D.

Answer:



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335. Fill in the blanks- Coin metal is used in the making of _____ and _____.



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336. Give reason for the following statement- Nichrome is an alloy.

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337. Fill in the blanks- Magnesium alloy is used in the making of _____ and _____

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338. Which of the following is/are not true in Freundlich adsorption isotherm ?

A. At high pressure, $\frac{x}{m} = Kp$

B. Plot of $\log(x/m)$ and $\log p$ is a straight line

C. At low pressure, $\frac{x}{m} = Kp$

D. in intermediate range of pressure, $\frac{x}{m} = Kp^{1/n}$ (n = whole number)

Answer:

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339. Fill in the blanks- Aquaregia is a mixture of _____ and _____.

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340. 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 increases with increasing temperature but chemisorption decreases with increasing temperature

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

Answer:



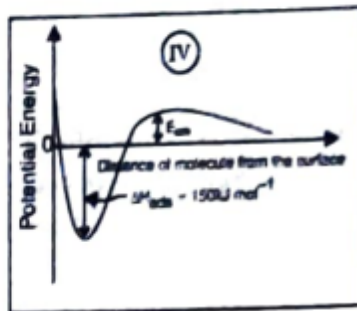
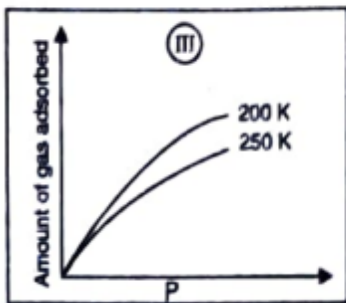
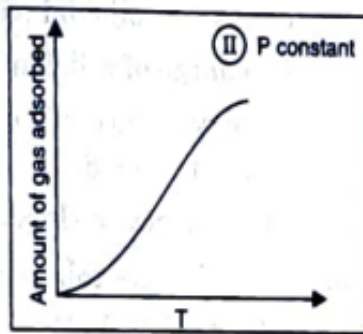
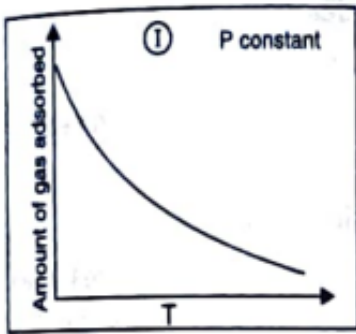
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341. The mixture of one parts of concentrated nitric acid and three parts of concentrated hydrochloric acid is called as-



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342. The given graphs/data I, II, III and IV represent general trends observed for different physisorption and chemisorption processes under mild conditions of temperature and pressure. Which of the following choice(s) about I, I, III and IV is(are) correct ?



A. I is physisorption and II is chemisorption

B. I is physisorption and III is chemisorption

C. IV is chemisorption and II is chemisorption

D. IV is chemisorption and III is chemisorption

Answer:

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343. When O_2 is adsorbed on a metallic surface, electron transfer occurs from the metal to O_2 . The TRUE statement(s) regarding this adsorption is (are)

A. O_2 is physisorbed

B. heat is released

C. occupancy of π_{2p}^* of O_2 is increased

D. bond length of O_2 is increased.

Answer:

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344. The size of colloidal particles is

- A. less than those of true solution
- B. more than those of suspension
- C. in the range 10 pm to 10^6 pm
- D. in the range 10 \AA to 1000 \AA

Answer:

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345. Which mixture is used to dissolve precious metal gold?



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346. Fill in the blanks with appropriate answer- Mixture of conc. nitric acid and conc. hydrochloric acid is known as _____.



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347. State whether the statement is true or false- Mixture of concentrated nitric acid and concentrated hydrochloric acid is known as meuretic acid.



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348. Explain the following terms-Aquaregia.



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349. Fill in the blanks- Gold metal can be dissolved only in _____.

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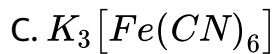
350. Fill in the blanks- Good quality electric wires are made up of _____ alloy.

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351. Which of the following electrolyte requires maximum concentration to cause coagulation of As_2S_3 sol ?

A. $AlCl_3$

B. $MgSO_4$



Answer:

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352. The nucleus of an atom has 5 protons and 6 neutrons. What would be the (c) the number of electrons

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353. The nucleus of an atom has 5 protons and 6 neutrons. What would be the (d) the number of valence electrons,

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354. Assertion : Small quantity of soap is required to prepare a stable emulsion. Reason : Soaps lowers the interfacial tension between oil and water.

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355. Assertion : Sea water looks blue. Reason : Due to scating of light by colloidal impurities present in sea water.

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356. Write the electronic configuration of the element with atomic number 17. Indicate the valency of the element.

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357. The atomic number of an element X is 16. (a) Write down the electronic configuration of X.



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358. The atomic number of an element X is 16. (b) What will be the valency of X ?



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359. What is the reason for the different atomic masses of the isotopes of an element ?



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360. State whether the statement is true or false- Phosgene is the commercial name for tri chloro methane.

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361. Match the column I with type of colloid given in column II.

Column I	Column II
(A) Starch sol	(p) Associated
(B) Soap sol	(q) Multimolecular
(C) Gelatin sol	(r) Macromolecular
(D) Gold sol	(s) Lyophilic

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362. Match list I with list II and select the correct answer using the code :

List I (Type of colloid)	List II (Example)
P. Liquid in solid	1. Hair cream
Q. Gas in liquid	2. Cheese
R. Liquid in liquid	3. Fog
S. Liquid in gas	4. Whipped cream

A.

(a) P Q R S
2 1 3 4

B.

(b) 1 3 2 4

C.

(c) 2 4 1 3

D.

(d) 1 4 2 3

Answer:

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363. Match list I of enzymatic reaction with enzyme given in list II:

List I	List II
P. Proteins \longrightarrow Amino acid	1. Zymase
Q. Glucose \longrightarrow Ethyl alcohol + CO_2	2. Lacto bacilli
R. Starch \longrightarrow Maltose	3. Pepsin
S. Milk \longrightarrow Curd	4. Diastase

A.

P Q R S
(a) 3 4 1 2

B.

(b) 4 1 3 2

C.

(c) 3 4 2 1

D.

(d) 3 1 4 2

Answer:



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364. An element has $Z = 7$. What is the valency of the element ?

Also name the element.



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365. What is the number of valence electrons in the atoms of an element having atomic number 13 ? Name the valence shell of this atom.



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366. Give the number of protons, neutrons and electrons in the chlorine having mass no 37 and atomic no 17

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367. The mass number of two atoms X and Y is the same (40 each) but their atomic numbers are different (being 20 and 18 respectively). X and Y are examples of :

- A. chemically similar atoms
- B. isotopes
- C. solid and liquid metals
- D. isobars

Answer:

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368. Elements having valency 'one' are :

- A. always metals
- B. always non metals
- C. always metalloids
- D. either metals or non-metals

Answer:



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369. For an element, $Z = 9$. The valency of this element will be :

- A. 4
- B. 2

C. 1

D. 3

Answer:



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370. The number of valence electrons in a sulphide ion, S^{2-} , is :

A. 16

B. 10

C. 9

D. 8

Answer:



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371. The atomic number of an element X is 8 and that of element Y is 4. Both these elements can exhibit a valency of :

A. 1

B. 2

C. 3

D. 4

Answer:

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372. What is the number of valence electrons in : (a) sodium ion,

Na^+

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373. 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. enthalpy of adsorption is low.
- D. it is a reversible process.

Answer:

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

- A. Water on silica gel

B. Water on calcium chloride

C. Hydrogen on finely divided nickel

D. Oxygen on metal surface

Answer:

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375. On the basis of data given below predict which of the following gases shows least adsorption on a definite amount of charcoal ?

Gas	CO ₂	SO ₂	CH ₄	H ₂
Critical temp./K	304	630	190	33

A. CO₂

B. SO₂

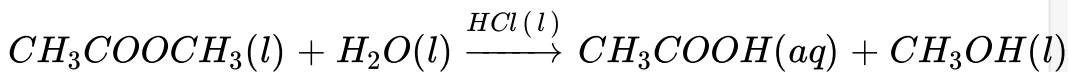
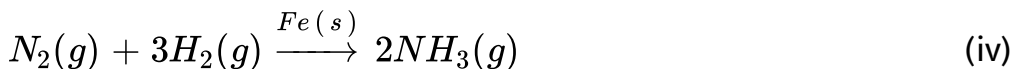
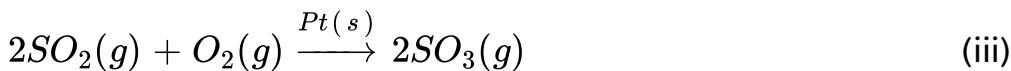
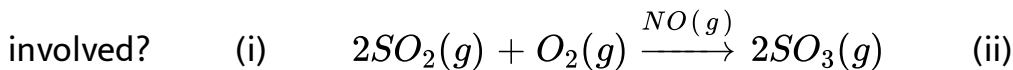
C. CH₄

D. H_2

Answer:

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376. In which of the following reactions heterogenous catalyse is



A. (ii),(iii)

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

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

D. (iv)

Answer:

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377. What is the number of valence electrons in : (b) oxide ion,
 O^{2-}

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378. Atom A has a mass number 209 and atomic number 82. Atom B has a mass number 209 and atomic number 83. (i) How many protons atom A has ?

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379. Method by which lyophobic sol can be protected.

A. By addition of oppositely charged sol.

B. By addition of an electrolyte.

C. By addition of lyophilic sol.

D. By boiling.

Answer:



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380. Freshly prepared precipitate sometimes gets converts colloidal solution by _____ .

A. coagulation

B. electrolysis

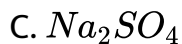
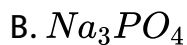
C. diffusion

D. peptisation .

Answer:

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



Answer:

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382. A colloidal system having a solid substances as a dispersed phase and a liquid as a dispersion, medium is classified as _____ .

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383. 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. form lyophilic colloids.
- D. are comparatively less in number.

Answer:



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384. Atom A has a mass number 209 and atomic number 82. Atom B has a mass number 209 and atomic number 83. (ii) How many protons atom B has ?



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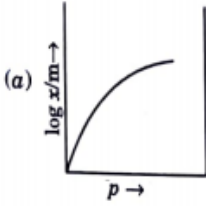
385. Atom A has a mass number 209 and atomic number 82. Atom B has a mass number 209 and atomic number 83. (iii) Are atoms A and B isotopes of the same element ?



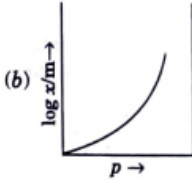
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386. Which of the following curves is in accordance with Freundlich adsorption isotherm?

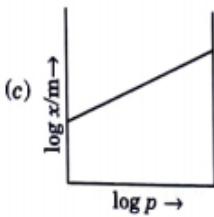
A.



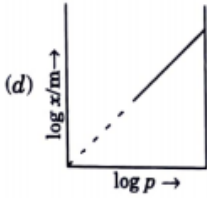
B.



C.



D.



Answer:

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387. Which of the following process is not responsible for the presence of electric charge on the sol particles ?

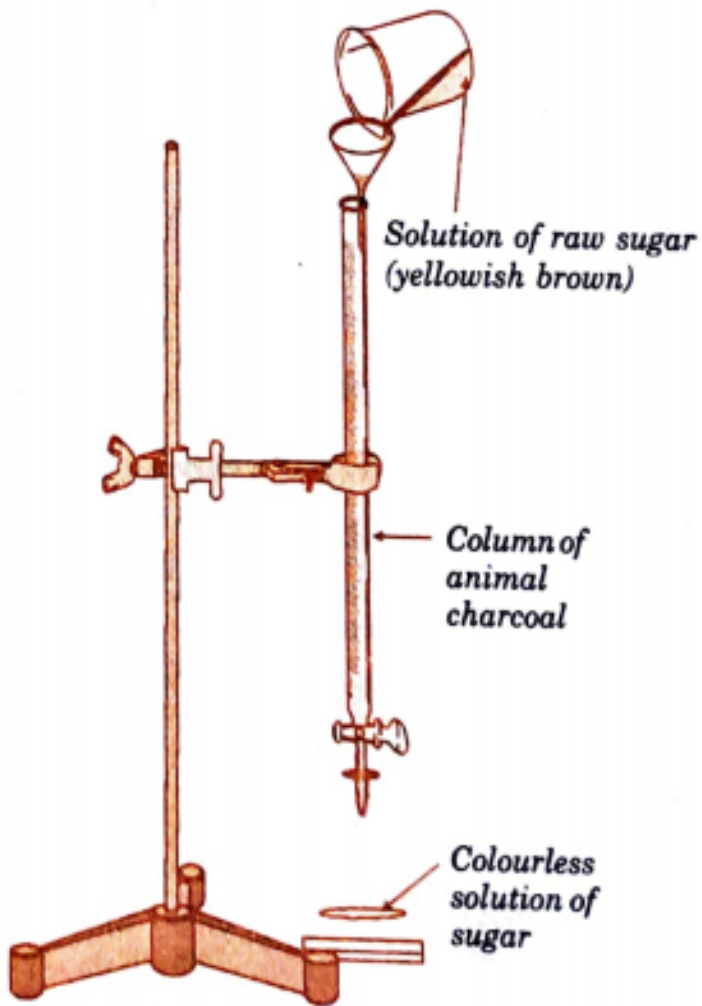
- A. Electron capture by sol particles.
- B. Adsorption of ionic species from solution.
- C. Formation of Helmholtz electrical double layer.
- D. Absorption of ionic species from solution.

Answer:



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388. Which of the following phenomenon is applicable to the process shown in the figure ?



- A. Absorption
- B. Adsorption
- C. Coagulation
- D. Emulsification

Answer:

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389. In the following questions two or more options may be correct. Which of the following options are correct ?

- A. Micelle formation by soap 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:

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390. What do the subscripts (lower figures) and superscripts (upper figures) represent in symbol representation of the element?

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391. what volume of oxygen would be required to burn completely 400 ml of acetylene [C₂H₂]?

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392. 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 Waals interaction.
- B. very weak van der Waals forces.
- C. very low critical temperature.
- D. very high critical temperature.

Answer:

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393. Which of the following statements are correct ?

- A. Mixing 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 amount of dispersed liquid can be added to emulsion without destabilising it.
- D. Brownian movement stabilises sols.

Answer:

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394. An emulsion cannot be broken by ____ and ____ .

A. heating

B. adding more amount of dispersion Medium

C. freezing

D. adding emulsifying agent

Answer:



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395. Which of the following substances will Precipitate the negatively charged emulsions ?

A. KCl

B. Glucose

C. Urea

D. NaCl

Answer:

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396. Which of the following colloids cannot be coagulated easily.

- A. Lyophobic colloids
- B. Irreversible colloids.
- C. Reversible colloids.
- D. Lyophilic colloids.

Answer:

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397. What happens when a lyophilic sol is added to a lyophobic sol?

- A. Lyophobic sol is protected.
- B. Lyophilic sol is protected.
- C. Film of lyophilic sol is formed over lyophobic sol.
- D. Film of lyophobic sol is formed over lyophilic sol.

Answer:

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398. If 6 liter of H_2 and 5.6 liter of Cl_2 are mixed . What will be composition by volume of the resulting gaseous mixture.

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399. What volume of propane is burnt for every 100 cm³ of oxygen in the reaction.

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400. Which of the following Phenomenon occurs when a chalk stick is dipped in ink ?

- A. adsorption of coloured substance
- B. adsorption of solvent
- C. absorption and adsorption both of solvent
- D. absorption of solvent

Answer:

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401. Match the items of Column I and Column II in the following questions. Method of formation of solution is given in Column I.

Match it with the type of solution given in Column II.

Column I	Column II
(a) Sulphur vapours passed through cold water	(i) Normal electrolyte solution
(b) Soap mixed with water above critical micelle concentration	(ii) Molecular colloids
(c) White of egg whipped with water	(iii) Associated colloid
(d) Soap mixed with water below critical micelle concentration	(iv) Macromolecular colloids

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402. Match the statement given in Column I with the phenomenon given in Column II.

Column I	Column II
(a) Dispersion medium moves in an electric field	(i) Osmosis
(b) Solvent molecules pass through semipermeable membrane towards solvent side	(ii) Electrophoresis
(c) Movement of charged colloidal particles under the influence of applied electric potential towards oppositely charged electrodes	(iii) Electroosmosis
(d) Solvent molecules pass through semipermeable membranes towards solution side	(iv) Reverse osmosis

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

Column I	Column II
(i) Protective colloid	(a) $\text{FeCl}_3 + \text{NaOH}$
(ii) Liquid - liquid colloid	(b) Lyophilic colloids
(iii) Positively charged colloid	(c) Emulsion
(iv) Negatively charged colloid	(d) $\text{FeCl}_3 + \text{hot water}$

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

Column I	Column II
(a) Solid in liquid	(i) Foam
(b) Liquid in solid	(ii) Sol
(c) Liquid in liquid	(iii) Gel
(d) Gas in liquid	(iv) Emulsion

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405. Match the items of Column I and Column II.

Column I	Column II
(a) Dialysis	(i) Cleansing action of soap
(b) Peptisation	(ii) Coagulation
(c) Emulsification	(iii) Colloidal sol formation
(d) Electrophoresis	(iv) Purification

406. Match the items of Column I and Column II.

Column I	Column II
(a) Butter	(i) dispersion of liquid in liquid
(b) Pumice stone	(ii) dispersion of solid in liquid
(c) Milk	(iii) dispersion of solid in liquid
(d) Paints	(iv) dispersion of liquid in solid

407. In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices. (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. (e) Assertion is incorrect but reason is correct. Assertion : An ordinary filter

Paper impregnated with collodion solution stops the flow of colloidal particles. Reason : Pore size of the filter paper becomes more than the size of colloidal Particle.

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408. Assertion : Colloidal solutions show colligative properties.

Reason: Colloidal particles are large in size.

- A. (a) Both assertion and reason are correct and reason is the correct explanation for the assertion.
- B. (b) Both assertion and reason are correct and reason is not the correct explanation for the assertion.
- C. (c) Assertion is correct but reason is incorrect.
- D. (d) Assertion is incorrect but reason is correct

Answer:

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409. Assertion : Colloidal Solutions do not show brownian motion. Reason : Brownian motion is responsible for stability of sols.

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

Reason : Greater the valency of the flocculating ion added greater is its power to cause precipitation (Hardy Schulze rule) .

A. (a) Both assertion and reason are correct and reason is the correct explanation for the assertion.

B. (b) Both assertion and reason are correct and reason is not the correct explanation for the assertion.

C. (c) Assertion is correct but reason is incorrect.

D. (d) Assertion is incorrect but reason is correct.

Answer:

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411. Assertion : Detergents with low CMC are more economical to use. Reason : Cleansing action of detergents involves the formation of micelles. These are formed when the concentration of detergents becomes equal to CMC .

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