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CHEMISTRY

BOOKS - VIKRAM PUBLICATION (ANDHRA PUBLICATION)

SURFACE CHEMISTRY

Vert Short Answer Questions

1. What is an interface ? Give one example.

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2. What is adsorption ? Give one example.

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3. What is absorption ? Give one example.

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4. Distinguish between adsorption and absorption. Give one example of each.

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5. The moist air becomes dry in the presence of silica gel. Give reason for this .

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6. Methylene blue solution when shakes with animal charcoal gives a colourless filtrate on filteration. Give the reason.

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

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8. What is desorption ?

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9. What is sorption.

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10. Amongst adsorption, absorption which is a surface phenomen and why ?

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11. What is the name given to the phenomenon when bopth absorption and

adsorption take place together ?

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12. Chalk stick dipped in an ink solution exhibits the surface of the stick retains the colour of the ink.

Explain the observations.

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13. Chalk stick dipped in an ink solution exhibits the Breaking the chalk stick, it is found still white from inside.

Explain the observations.

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

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15. Why is adsorption always exothermic?

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16. Give the signs of , when ammonia gas gets adsorbed on chorcoal.

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17. How many types of adsorption are known ? What are they ?

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18. What types of forces are involved in physisorption of a gas on solid ?

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19. What type of interaction occuring between gas molecules and a solid surface is responsible for chemisorption of a gas on solid.

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20. Why chemisorption is called activated adsorption ?

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21. What is difference between physisorption and chemisorption ?

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22. Out of physisorption and chemisorption , which can be reversed .

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23. How is adsorption of a gas related to its critical temperature ?

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24. The critical temperature of SO_2 is 630 K and that of CH_4 is 190 K . Which is adsorped easily on activated charcoal ? Why ?

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25. Easily liquefiable gases are readily adsorbed on solids . Why?

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26. Amongst SO_2,H_2 which will be adsorbed more readily on the surface of charcoal and why ?

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27. Compare the enthalpy of adsorption for physisorption and chemisorption.

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28. What is the magnitude of enthalpy of physical adsorption ? Give reason for this magnitude.

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29. What is the magnitude of enthalpy of chemisorption ? Give reason for this magnitude.

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30. Give any two applications of adsorption.

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31. Why physisorption suffers from lack of specificity ?

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32. What is an adsorption isotherm ? Write the equation of Freundlich adsorption isotherm.

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33. In the Freundlich adsorption isotherm, mention the conditions under which, following graph will be true ?

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34. What role does adsorption play in heterogenous catalysis ?

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35. What is the role of MnO_2 in the preparation of O_2 from $KClO_3$?

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36. Define "promoters" and "poisons" in the phenamenon of catalysis ?

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37. What is homogeneous catalysis ? How is it different from heterogeneous catalysis ?

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38. Give two examples for homogeneous catalytic reactions.

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39. Give two examples for heterogeneous catalysis.

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40. Give two examples which indicate the selectivity of heterogeneous catalysts.

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41. Why zeolites are treated as shape selective catalysts ?

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42. Which zeolite catalyst is used to convert alcohols directly into gasoline ?

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43. What are enzymes ? What is their role in human body ?

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44. Can catalyst increase the yield of reaction ?

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45. Name any two enzyme catalyzed reactions. Give the reactions

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46. Name the enzymes obtained from soyabean source.

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47. Name the enzymes used in Decomposition of urea into ammonia.

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48. Name the enzymes used in Conversion of proteins into peptides in stomach.

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49. What enzymes are obtained from yeast ?

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50. At what ranges of temperature and pH, enzymes are active ?

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51. Represent diagrammatically the mechanism of the enzyme catalyis.

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52. Name any two industrially important heterogeneous catalytic reactions mentioning the catalysts used.

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53. What is a colloidal solution ? How is it different from a true solution with respect to dispersed particle size and homogeneity ?

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54. Name the dispersed phase and a dispersion medium in the fog colloidal systems.

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55. Name the dispersed phase and a dispersion medium in the smoke colloidal systems.

Watch Video Solution

56. Name the dispersed phase and a dispersion medium in the milk colloidal systems.

Watch Video Solution

57. What are lyophilic and lyophobic sols ? Give one example for each type.

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58. Explain the terms aerosol with suitable examples.

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59. Explain the terms hydrosol with suitable examples.

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60. Explain why lyophilic colloids are relatively more stable than lyophobic colloids ?

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61. Give two examples of colloidal solutions of liquids dispersed in solid. What is the name given to the colloidal solution ?

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62. What is the dlfferenee between multmolecular and macromolecular colloids ? Give one example for each.

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63. What are micelles ? Give one example.

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64. How do micelles differ from a normal colloidal solutions ?

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65. Give two examples of associated colloids.

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

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67. Give two examples of lyophobic sols.

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68. Give examples of colloidal system of Liquid in solid .

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69. Give examples of colloidal system of Gas in solid.

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70. What type of substances form lyophobic sols ?

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71. What is critical micelle concentration (CMC) and kraft temperature (T_k)?

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72. Who lyophobic colloids are called irreversible colloids ?

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73. How a colloidal sol of arsenous sulphide is prepared ?

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74. What is Peptization ?

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75. What is dialysis ? How is dialysis can be made fast ?

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76. What is collodion solution ?

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77. How an ultrafilter paper is prepared from ordinary filter paper ?

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78. What is dall effect ?

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79. Under what conditions is tyndall effect observed ?

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80. Can Tyndall effect be used to distinguish between a colloidal solution and a true

solution ? Explain.

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81. Sky appears blue in colour. Explain.

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82. What is Brownian movement.

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83. What is the main cause for charge on a colloidal solution ?

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84. What is electrokinetic potential or zeta potential ?

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85. Write the chemical formula of positively charged and negatively charged hydrated

ferrlc oxide colloidal solutions.

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86. Give the order of coagulating power of Cl, SO_4^{2-}, PO_4^{3-} in the coagulation of positive sols.

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87. Amongst Na^+, Ba^{2+}, Al^{3+}, which coagulates negative sol readily and why ?

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88. A colloidal solution of AgI is positively charged when prepared from a solution containing excess of Ag^+ ions and negatively charged when prepared from a solution containing excess of I^- ions Explain.

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89. What is electrophoresis ?

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90. What is electro osmosis ?

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91. What is coagulation ?

Watch Video Solution

92. Define flocculation value.

Watch Video Solution

93. State Hardy-Schulze rule .

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94. Coagulation takes place when sodium chloride solution is added to a colloidal solution of hydrated ferric oxide. Explain.

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95. How are lyophobic solutions protected from phenomenon of coagulation.

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96. What is protective colloid ?

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97. What is an emulsion ? Give two examples.

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98. How emulsions are classified ? Give one example for each type of emulsion.

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99. What is an emulsifying agent ?

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100. What is demulsification ? Name two demulsifiers.

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101. How is artificial rain produced ?

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102. Bleeding from fresh cut can be stopped by applying alum. Give reasons.

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103. Deltas are formed at the points where river enters the sea. Why ?

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104. Name any two applications of colloidal solutions.

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105. How can aerial pollution by colloidal particles of smoke be prevented ? Explain.

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106. Alum is used to purify water obtained from natural sources. Explain.

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107. Why medicines are more effective in colloidal state ?

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108. How rubber is obtained from latex ?

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

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110. Define the term adsorbate and adsorbent .

Watch Video Solution

111. What is Gold number ?

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Short Answer Questions

1. What is adsorption ? Discuss the mechanism of adsorption of gases on solids.

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2. What are different types of adsorption ? Give any four differences between characteristics of these different types.

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3. What do you understand by the term absorption .

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4. What do you understand by the term Adsorption.

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5. What do you understand by the term Adsorption and Adsorbate

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

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7. How can the constants k and n of the Freundlich adsorption equation be calculated ?

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8. How does the extent of adsorption depend upon Increasing the surface area per unit mass of adsorption.

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9. How does the extent of adsorption depend upon Increasing temperature of the system.

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10. How does the extent of adsorption depend upon Increasing pressure of the gas.

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11. What is catalysis ? How is catalysis classified ? Give two examples for each type of catalysis.

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12. What role does adsorption play in heterogenous catalysis ?

Watch Video Solution

13. Discuss some features of catalysis by zeolites.

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14. Give brief account of mechanism of enzyme catalysis with suitable diagrams.

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15. Discuss the factors that influence the catalytic activity of enxymes.

Watch Video Solution

16. Name any six enzyme catalysed reaction.

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

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

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

Watch Video Solution

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

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21. What is the difference between a colloidal sol, get, emulsion and a foam ?

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22. What are lyophilic and lyophobic sols ? Give one example for each type.

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23. Name a substance whose molecules consist of lyophilic as well as lyophobic parts. Give its use in our daily life.

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24. Describe Bredig's arc method of preparation of colloids with a neat diagram.

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25. Name any four examples of preparation of colloids by chemical methods with necessary chemical equations.

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26. Describe the purification of colloidal solution by the phenomenon of dialysis with a neat diagram.

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27. Explain the formation of micelles with a neat sketch.

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

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29. Explain the phenomenon of Brownian movement giving reasons for the occurrence of this phenomenia.

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30. Name the four positively charged sols.

Watch Video Solution

31. Name the four negatively charged sols.

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32. Explain the terms helmholtz electrical double layer and zeta potential. What are significaoi,ies in the colloidal solutions ?

Watch Video Solution

33. Explain with a neat sketch the phenomenon of electrophoresis.

Watch Video Solution

34. What is electrophoresis ?

Watch Video Solution

35. Explain the Coagulation.

Watch Video Solution

36. What is dall effect ?

Watch Video Solution

37. Explain the phenomenon observed

When a beam of light is passed through a colloidal sol.

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38. Explain the phenomenon observed

An electrolyte, NaCI is added to hydrated ferric oxide.

Watch Video Solution

39. Explain the phenomenon observed

An eleetrlc current is passed through a colloidal solution.

Watch Video Solution

40. Describe cottrell smoke precipitator with a neat diagram.

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41. Amoung NaCl, Na_2SO_4 , Na_3PO_4 electrolytes , Na_3PO_4 which is more effective for coagulation of hydrated ferric oxide sol and why ?

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42. Discuss how a lyophilic colloids protect a lyophobic colloids.

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43. Discuss the use of colloids in Purification of drinking water .

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44. Discuss the use of colloids in Tanning.

Watch Video Solution

45. Discuss the use of colloids in Medicines.

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46. Define Gold Number.

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47. How do emulsifiers stabilize emulsion ? Name two emulsifiers.

Watch Video Solution

48. Explain any 2 methods for the preparation of colloids.

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49. What are emulsion ? How are they classified ? Describe the applications of emulsions.

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50. What is adsorption ? Explain different types of adsorptions with suitable examples.

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Long Answer Question

1. Explain the terms absorption, adsorption and sorption. Describe the different types of adsorption.

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2. Discuss the characteristics of physical adsorption.

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3. Compare and contrast the phenomenon of physisorption abd chemisorpion.

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4. What is an adsorption isotherm? Discuss the phenomenon of adsorption of gases on solids with the help of Freundllich adsorption isotherm.

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5. Give any two applications of adsorption.

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6. What is catalysis ? How is catalysis classified ? Give two examples for each type of catalysis.

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7. Discuss the mechanism of heterogeneous catalysts.

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8. What are enzymes ? Give examples ?

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9. What are colloidal solutions ?

Watch Video Solution

10. How are colloids classified on the basis of the nature of interaction between a dispersed phase and a dispersion medium ? Describe an important characteristic of each class. Which of the sols need stabilising agents for preservation ?

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11. What are micelles ? Discuss the mechanism of micelle formation and cleaning action of

soap.

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12. Describe the properties of colloids with necessary diagrams wherever necessary.

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13. How emulsions are classified ? Give one example for each type of emulsion.

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Intext Questions

1. Write any two characteristics of Chemisorption.

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

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3. Why are finely powdered substances more effective adsorbents than their non powdered crystal forms ?

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4. Hydrogen used in Haber's process 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 formed in steam

reforming when ammonia is obtained by Haber's process ?

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5. Why is ester hydrolysis slow iin the beginning but is fast after sometime ?

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6. What is role of desorption in the process of adsorption catalysis .

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

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8. Why is it essential to wash the precipitate in gravimetric chemical analysis with wash liquid before drying and weighing it quantitatively ?

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