CHEMISTRY

BOOKS - R G PUBLICATION

SURFACE CHEMISTRY

Exercise

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

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2. Define shape-selective catalysis. Give an example of such catalyst.

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3. What is observed when a beam of light is passed through a colloidal solution?

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4. What are lyophobic colloids? Give one example.

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5. Liquid-liquid sols are known as_____.

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6. Fill in the blanks: The curve showing the variation of absorption with pressure at

constant temperature is called_____.

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7. Explain the following terms giving one example in each case. Emulsification.

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8. Explain the following terms giving one example in each case. Coagulation.

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9. Describe the following terms. Dialysis

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10. Define Electrophoresis?

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11. Give one example of biochemical catalyst.

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

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13. Give the decreasing order of flocculating power of the following ions in the coagulation of a negative sol.

Na^+, Ba^{2+}, Al^{3+}

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14. Explain what is observed when: An electrolyte is added to hydrated ferric oxide sol.

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15. Explain what is observed when: Direct electric current is passed through colloidal sol.

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16. Mention any two factors which distinguish physisorption from chemisorption.

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

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18. Define Electrophoresis?

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19. Explain the terms

Dialysis

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20. Explain the terms with suitable examples:

Aerosol

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

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22. Define homogeneous and heterogeneous catalysis. Give one suitable example each of the two catalysis.

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23. Explain the following observations: Sky appears blue in colour.

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24. Explain the following observations: Delta's are formed where river meets the sea.

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25. Explain the following observations

Alum/ferric chloride solution is applied to stop bleeding.

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26. Explain the following observations

Mist or fog is formed in winter.

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27. Mention two industrial applications of colloids.

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28. When adsorption takes place

A. δH is negative but ΔS is positive

B. ΔH is positive but ΔS is negative

C. ΔG becomes negative

D. ΔG becomes zero.

Answer:

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29. During physisorption if temperature is increased then.

A. There will not further adsorption

B. Physisorption changes to chemisorption

C. There will be desorption

D. Amount of physisorption will increase

Answer:

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30. When carbon monooxide reacts with hydrogen in presence of Ni catalyst producing

A. Methane and water

B. Formaldehyde

C. Methanol

D. Formic acid

Answer:

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31. The maximum temperature at which enzyme works in human body is

A. $30^{\circ} C$

B. $35^{\circ} C$

C. $37^{\circ} C$

D. $40^{\circ} C$

Answer:

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32. Difference between colloids and crystalloids

A. Diameter

B. Particles size

C. Radius

D. Solubility

Answer:

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33. Milk is -

A. Fat dispersed in milk

B. Fat dispersed in water

C. Water dispersed in fat

D. Water dispersed is oil

Answer:

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34. The extra stability of lyophilic colloids is due to-

A. Charge on their particles.

B. A layer of medium of dispersion on their particles.

C. The smaller size of their particles

D.

Answer:

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35. On adding few drops of dil HCl to freshly precipitated Ferric Hydroxide, a red coloured colloidal solution is obtained. This phenomenenon is known as-

A. Peptization

B. Dialysis

C. Protective action

D. None of the above

Answer:

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36. Tyndall effect in colloidal solution is due to-

A. Scattering of light

B. Reflection of light

C. Absorption oflight

D. Presence of charge on the particles

Answer:

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37. The sky looks blue due to-

A. Dispension effect

B. Reflection

C. Scattering

D. Refraction

Answer:

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38. Which one of the following substancces give a positively chaged sol?

A. Gold

B. A metal sulphide

C. Ferrice hydroxide

D. Fe_2O_3

Answer:

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39. Which of the following has maximum value of flocculating power?

A. Pb^{2+}

B. Pb^{4+}

C. Sr^{2+}

D. Na^{+}

Answer:

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40. Which property of colloidal suspension is used to determine the nature of charge on the particles?

A. Dialysis

B. Electro phoresis

C. Ultra filtration

D. Electro osmosis

Answer:

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41. The function of emulsifying agent is-

A. To decrease the inter facial tension between two liquids of emulsion

B. To separate the liquids by forming a boundary between them.

C. Decrease the stability of the emulsion

D. None of the above

Answer:

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42. Fill in the blanks: The phenomenon in which absorption & adsorption takes place simultaneously is called_____.

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43. Fill in the blanks

When adsorption attains equilibrium position then T ΔS became ___ΔH.

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44. What is adsoption?

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45. What will happen when methylene blue is adsorbed an charcoal?

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46. Why adsorption accompanied by decrease in entropy?

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47. Give reason why a finely divided substance is more effective as an adsorbent.

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48. Between physisorption and chemisorption which require more activation energys and why?

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49. What is Freundlich adsorption isotherm?

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50. The concept of adsorption is used metallurgical porcess? How?

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51. Why is adsorption always exothermic?

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52. What is a promoter? Give example

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

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54. Write one use of ZSM-5

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55. What are enzymes? Write in brief the mechanism of enzyme Catalysis

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56. Which enzyme convert milk into curd?

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57. Define Co-enzyme. Give one example.

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

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59. Why lyophilic colloids are reversible?

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60. Describe the following terms. Critical Micelle concentration

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61. What is the function of peptizing agent?

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62. Name the methods used for purification of colloidal solution.

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63. In what way colligative proparties are applicable to colloidal particles?

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64. To show Tyndal effect the value of refractive indices of the dispersed phase and the dispersion medium must be ___

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65. What will happen when KI solution is added to $AgNO_3$ solution .

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66. A delta is formed at the meeting point of sea water and river water why?

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67. Write the conditions to observe the Tyndall effect.

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

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69. Distinguish between adsoption and absorption. Why does adsorption takes place?

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70. Explain the thermodynamic conditions for adsorption.

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71. Write three characteristics of physorption.

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

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73. Explain the following terms giving a suitable example in each case: Homogeneous catalysis.

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74. Explain why a catalyst remain unchanged in mass and chemical composition at the end of the reaction?

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75. What is meant by shape-selective catalysis?

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76. Write three important characteristics of enzyme catalytic reaction.

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77. Describe lock and key theory of enzyme catalysis.

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

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79. Define colloids.What is the range of size of colloidal particles?

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80. Classify colloids in terms of the type of the particles of the dispersed phase. Give example of each type.

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81. CMC for soap is 10^{-4} and $10^{-3} mol L^{-1}$. What do you mean? What is Kraft temperature?

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82. What are associated colloids? Briefly describe the cleansing action of soap

83. Write with chemical reaction how gold sol and ferric hydroxide sol prepared.

84. Write short notes on peptization.

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85. How colloids are purified by electro dialysis?

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86. Write short notes on

Tyndal effect

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87. Write short notes on

Brownian motion

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88. Write short notes on

Zeta potential.

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89. Write a note on Hardy Schulze rule.

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90. Write short notes on

Emulsion

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

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

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93. How coagulation of lyophilic sol is carried out?

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94. Describe protactive power of lyophilic sol.

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95. Write two application of colloid in the purification of drinking water and in photographic plates & film.

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96. What is observed when a beam of light is passed through a colloidal solution?

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97. Explain what is observed an electrolyte, NaCl is added to hydrated ferric oxide sol.

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98. Explain what is observed electric current is passed through a colloidal sol?

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99. How are the following colloidal solutions prepared?

Sulphur in water

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100. How are the following colloidal solutions prepared?

Gold in water.

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101. Write the dispersed phase and dispersion medium of the following colloidal systems.

Smoke

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102. Write the dispersed phase and dispersion medium of the following colloidal systems.

Milk

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103. Explain the following

Adsoption of a gas on surface solid is generally accompanied by decrease in entropy, still it is spontaneous process.

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104. Explain the following: Same substance can act both colloids and crystalloids.

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105. Distinguish between micelles and colloidal particles. Give one example of each.

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106. Write two features of solid catalyst.

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107. What do you observe when adsorption takes place from solution phase.

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108. What do you mean by coagulation of colloidal solution? Describe briefly two methods by which coagulation of lyophobic sols can be carried out.

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