



CHEMISTRY

BOOKS - CBSE COMPLEMENTARY MATERIAL

CHEMISTRY (HINGLISH)

SURFACE CHEMISTRY

Multiple Choice Questions 1 Mark

1. Rate of physisorption increases with :

A. decrease in temperature

B. increase in temperature

C. decrease in pressure

D. decrease in surface area

Answer: A



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2. The colloidal system consisting of a liquid adsorbete in a solid adsorbent is termed as:

A. aerosol

B. foam

C. emulsion

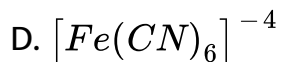
D. Gel

Answer: D



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3. Which of the following has least coagulating value for positive sol ?



Answer: D



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4. Which can adsorb larger volume of hydrogen gas ?

A. Colloidal solution of platinum

- B. finely divided nickel
- C. finely divided platinum
- D. colloidal Fe $(OH)_3$

Answer: A



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5. What is the emulsifier in milk ?

- A. albumin
- B. soap
- C. gelatin
- D. caesin

Answer: D



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6. Which of the following gases adsorb more

A. N_2

B. H_2

C. O_2

D. CO_2

Answer: D



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7. Cottrell precipitator works on the principle of :

A. distribution law

B. addition of electrolyte

C. Le-chattelier principle

D. Neutralisation of charge on colloids

Answer: D



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8. The formation of micelles takes place only above

A. inversion temperature

B. Boyle temperature

C. critical temperature

D. Kraft temperature

Answer: D



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9. All colloidal solutions show :

- A. very high osmotic pressure
- B. high osmotic pressure
- C. low osmotic pressure
- D. no osmotic pressure

Answer: C



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10. Alum purifies muddy water by

- A. dialysis

B. adsorption

C. coagulation

D. forming a pure solution

Answer: C



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

A. soap in water

B. protein in water

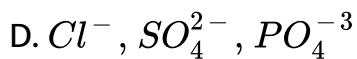
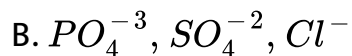
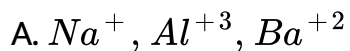
C. rubber in benzene

D. $AgNO_3$ in water

Answer: A

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12. The coagulating power of an electrolyte for blood decrease in the order.



Answer: C

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13. A catalyst do not change :

- A. gibbs energy of reaction
- B. enthalpy of reaction
- C. equilibrium constant
- D. Activation energy of reaction

Answer: A::B::C



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14. Bredig's arc method cannot be used for the preparation of colloidal sol of :

- A. Cu
- B. Mg
- C. Ag
- D. Na

Answer: B::D

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15. Which is the method of purification of colloidal solution ?

A. ultrafiltration

B. electrodialysis

C. bredig's arc method

D. dialysis

Answer: A::B::D

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16. Match the column and choose correct option:

- | | |
|-------------------|--------------------|
| (A) Smoke | <i>P.</i> foam |
| (B) Butter | <i>Q.</i> emulsion |
| (C) Hair cream | <i>R.</i> aerosol |
| (D) Whipped cream | <i>S.</i> gel |

A. A-P, B-S, C-Q, D-R

B. A-R, B-Q, C-S, D-P

C. A-R, B-S, C-Q, D-P

D. A-S, B-P, C-R, D-Q

Answer: C



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Matching Column Type

Column 1

(A) Soap in water

1. (B) Starch gelatin

(C) Gold sol

(D) Cellulose nitrate in alcohol

Column 2

P. Associated colloid

Q. Lyophilic colloid

R. Collodion

S. Lyophobic colloid

A. A-R, B-S, C-Q, D-P

B. A-P, B-Q, C-S, D-R

C. A-R, B-S, C-P, D-Q

D. A-P, B-Q, C-R, D-S

Answer: B



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Fill In The Blanks Take Question

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

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2. Starch is an example of colloids.

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Assertion And Reason Type Question

1. Assertion : Lyophilic sols are more stable than Lyophobic sols.

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

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

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



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3. Assertion : Lyophilic sols are more stable than Lyophobic sols.

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



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Very Short Answer Type Questions 1 Mark

1. Why does a gas mixed with another gas not form a colloidal system ?



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2. Why are adsorbate particles attracted and retained on the surface of adsorbent ?



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3. Explain the terms sorption and desorption .



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4. "Chemisorption is highly specific." Illustrate with an example .

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5. "Adsorbents in finely divided form are more effective ." Why ?

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6. Name two compounds used as adsorbent for controlling humidity .

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7. Mention one shape selective catalyst used to convert alcohol directly into gasoline .

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8. Generally high temperature is favourable for chemisorption . '

Why ?

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9. Name the catalyst used in the following process :

(a) Haber's process for the manufacture of NH_3 gae.

(b) Ostwald process for the manufacture of nitric acid .

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10. Which group elements show maximum catalytic activity for hydrogenation reactions ?

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11. Why gas masks are used by miners in coal mines while working ?

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12. Write the chemical reaction involved in the preparation of sulphur sol.

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13. What are optimum temperature and pH for the enzymes to act best ?

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14. What are the physical states of dispersed phase and dispersion medium in foam rubber?

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15. What is the composition of colloidal solution ?

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16. Why do colloidal particles show Brownian movement ?

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17. State the sign of entropy change involved when the molecules of a substance get adsorbed on a solid surface .

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18. Why does sky appear blue to us ?

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19. What happens when hydrated ferric oxide and arsenious sulphide sols are mixed in almost equal proportion ?

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

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21. How is take test for aluminium ion based upon adsorption ?

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22. Mention the two conditions for the formation of micelles.

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23. How is Brownian movement responsible for the stability of sol ?

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24. Which of the following is more effective in coagulating positively charged hydrated ferric oxide sol: (i) KCl, (ii) $CaSO_4$,

(iii) $K_3[Fe(CN)_6]$?

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25. State the purpose of impregnating the paper with colloidal solution .

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26. Mention one use of ZSM-5 catalyst.

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

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28. Explain the terms : (i) CMC, (ii) Kraft temperature (T_k).

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Short Answer I Type Questions 2 Marks

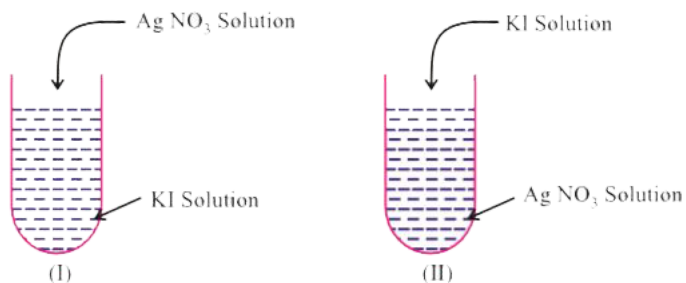
1. Explain the effect of temperature on the extent of physical and chemical adsorption .

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2. Define the term peptization and mention its cause.

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3. What will be the charge on colloidal solutions in the following cases ?



Give reasons for the origin of charge

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4. Write the factor upon which the catalytic reaction of shape - selective cata -lyst depends ?

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5. Mention two example of emulsifying agents for o/w emulsions and w/o emulsions.

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6. A Small amount of silica gel and that of anhyd. . . $CaCl_2$ are placed separately in two comers of vessel confaining water vapour. What phenomena will occur ?

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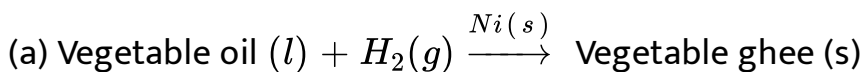
7. Write the difference between adsorption and absorption .

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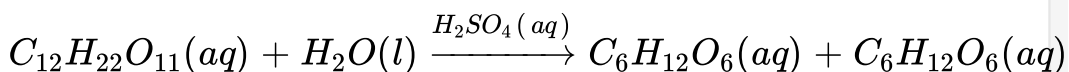
8. Write differences between physisorption and chemisorption.

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9. Classify the following reactions as homogeneous and heterogeneous catalysis :



(b)



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10. In what ways these are different : (a) a sol and gel (b) a gel and an emulsion ?

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11. State 'Hardy Schulze Rule' with one example.

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12. What is an emulsifying agent ? What role does it play in forming an emulsion ?

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13. Define the terms:

(a) Helmholtz electrical double layer

Zeta potential

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14. Mention the two necessary condition for the observation of Tyndall effect

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15. Account for the following :

(a) Artifical rain can be caused by spraying electrified sand on the clouds.

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16. Write chemical equations for the preparation of sols:

(a) Gold sol by reduction

(b) Hydrated ferric oxide sol by hydrolysis.

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17. How can the two emulsion can be distinguished :

(a) oil in water type (o/w) and

(b) water in oil type (w/o)

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18. Why does leather get hardened after tanning ?

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

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20. What happens when dialysis is prolonged?



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Short Answer li Type Questions 3 Marks

1. Write the difference between :

(a) catalysts and enzymes



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2. Write the difference between :

(b) promoters and poisons



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3. Write the steps of 'Modern Adsorption Theory of Heterogenous Catalysis'

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4. Mention two important features of solid catalysts and explain then with the help of suitable example .

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5. How are the following colloids different with respect to dispersed phase and dispersion medium ? Give one example of each

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

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6. What happens:

(a) By persistent dialysis of a sol .



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7. What happens when river water meets the sea water



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8. What happens when alum is applied on cuts during bleeding ?



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9. Distinguish between multimolecular , macromolecular and associated colloids with the help of one example of each .

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10. (a) Which property of colloids is responsible for the sun to look red at the time of setting ?

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11. C_2H_2 on addition with H_2 forms ethane in presence of palladium catalyst but if reaction is carried in the presence of barium sulphate and quinoline , the product is ethene and not ethane . Why ?

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Long Answer Type Questions 5 Marks

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



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2. Write short notes on the following :

(a) Tyndall Effect



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3. Write short notes on the following

(b) Brownian Movement



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4. Write short notes on the following

(c) Hardy Schulze Rule



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