

1. Give two examples of emulsions.
2. To treat which disease is colloidal antimony used?
3. Name two industrial processes in which heterogeneous catalysts are employed.
4. Name the zeolite catalyst which converts alcohol to gasoline (petrol).
5. What are micelles?
6. What is ZSM-5?
7. What is collodion?
8. Give an example of an associated colloid.
9. How can we quicken the process of dialysis?
10. What do  $x$  and  $m$  represent in the following expression?

$$\left(\frac{x}{m}\right) = kp^{1/n}$$

29. Is adsorption exothermic or endothermic?
30. Is chemisorption reversible or irreversible?

#### Short-Answer Questions

1. What are the factors that influence the adsorption of a gas on solid?
2. Discuss the role of adsorption in heterogeneous catalysis.
3. Why is adsorption always exothermic?
4. Discuss the effect of pressure and temperature on the adsorption of gases on solids.
5. What are emulsions? Describe different types of emulsions. Give an example of each type.
6. Give four uses of emulsions.
7. Explain the following terms with suitable examples.  
(a) Alcosol                      (b) Aerosol                      (c) Hydrosol
8. A heterogeneous catalyst is often used in the form of a finely divided powder rather than as something with a smooth surface. Why?
9. Define the terms adsorption, adsorbate and adsorbent.
10. A particular mass of charcoal adsorbs a larger volume of ammonia than of hydrogen at a given temperature. Why?
11. What is the Tyndall effect?
12. Explain the term 'electrophoresis'. State two of its applications.
13. What is the Hardy-Schulze law?
14. Explain what is observed when  
(a) a beam of light is passed through a colloidal solution,  
(b) the electrolyte, NaCl, is added to a colloidal solution of  $\text{Fe}(\text{OH})_3$ , and  
(c) electric current is passed through a colloidal solution.
15. Describe Bredig's arc method.

#### Long-Answer Questions

1. Distinguish between adsorption and absorption giving suitable examples.
2. What is the difference between physisorption and chemisorption?
3. What is an adsorption isotherm? Discuss the Freundlich adsorption isotherm.
4. On the basis of the energy released during adsorption, how can you distinguish between physisorption and chemisorption?
5. What are enzymes? Describe the lock-and-key theory.
6. Give four examples of heterogeneous catalysis.
7. What is shape-selective catalysis?
8. Explain how zeolites and enzymes act as catalysts.

9. How are colloidal solutions classified on the basis of the nature of interaction between the dispersed phase and dispersion medium?
10. What do you mean by multimolecular, macromolecular and associated colloids? How do they differ from each other?
11. Is the action of soap due to emulsification and micelle formation? Comment.
12. What are lyophilic and lyophobic colloids? Discuss the essential difference between them.
13. How can a colloidal solution and true solution of the same colour be distinguished from each other?
14. Explain the following terms.
 

(a) Electrophoresis	(b) Coagulation	(c) Dialysis	(d) Tyndall effect
(e) Brownian motion			
15. Explain the following observations.
  - (a) Lyophilic colloids are more stable than lyophobic colloids.
  - (b) Coagulation takes place when sodium chloride solution is added to a colloidal solution of ferric hydroxide.
  - (c) The sky is blue.
16. What do you mean by the coagulation of a colloidal solution? What is the role of electrolytes in causing flocculation of colloidal solutions.
17. What do you understand by the protection of colloids?

Multiple-Choice Questions

1. The rate of physisorption increases with
 

(a) decrease in temperature	(b) increase in temperature
(c) decrease in pressure	(d) decrease in surface area
2. Which one of the following statements is incorrect?
  - (a) Chemical adsorption is reversible in nature.
  - (b) Physical adsorption is due to van der Waals forces.
  - (c) Physical adsorption is reversible in nature.
  - (d) Activation energy plays an important role in chemical adsorption.
3. Which of the following equations represent (s) Freundlich's adsorption isotherm?
 

(a) $\frac{x}{m} = \left(\frac{1}{a}\right) + \left(\frac{bp}{a}\right)$	(b) $\frac{x}{m} = kC^{1/n}$
(c) $\log \frac{x}{m} = \log k + n \log p$	(d) $\log \frac{x}{m} = \log k + \frac{1}{n} \log C$
4. Which of the following gases will be adsorbed most easily?
 

(a) N <sub>2</sub>	(b) H <sub>2</sub>	(c) O <sub>2</sub>	(d) CO <sub>2</sub>
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5. According to the adsorption theory of catalysis, the speed of the reaction increases because [CBSE]
  - (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 of like molecules becomes high
  - (c) adsorption produces heat, which increases the speed of the reactions
  - (d) adsorption lowers the activation energy of the reaction
6. The function of an enzyme in an enzyme-catalysed reaction is to [CBSE]
 

(a) transport oxygen	(b) conduct catalytic biochemical reactions
(c) provide immunity	(d) provide energy
7. Zeolites are
 

(a) enzyme catalysts	(b) liquid catalysts
(c) shape-selective catalysts	(d) nonspecific catalysts
8. Which of the following is a true solution? [PMT]
 

(a) Cement	(b) Muddy water	(c) CuSO <sub>4</sub> solution	(d) Milk
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