



# CBSE 12th Chemistry

## Chapter-5 (Surface Chemistry)

### Unsolved Important Questions

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#### SECTION A

*(Each question in this section carry 1 mark)*

- Q.1. What causes Brownian movement in a colloidal solution?**
- Q.2. What is an emulsion?**
- Q.3. Give the example each of 'oil of water' and 'water in oil' emulsion.**
- Q. 4. Write the main for reason for the stability of colloidal sols.**
- Q.5. Write one similarity between Physisorption and Chemisorption.**
- Q.6. Of physisorption and chemisorption which type of adsorption has a higher enthalpy of adsorption?**
- Q.7. What is the 'coagulation' process?**
- Q.8. What is meant by 'shape selective catalysis'.**
- Q.9. Define 'peptization'.**
- Q.10. What is the effect of temperature on chemisorption?**
- Q.11. What is the reason for the stability of colloidal sols?**
- Q.12. What type of colloid is formed when a liquid is dispersed in a solid? Give an example.**

## SECTION B

(Each question in this section carry 2 marks)

**Q.13.** Name the two group into which phenomenon of catalysis can be divided. Give an example of each group with the chemical equation involved.

**Q.14.** What is meant by coagulation of colloidal solution? Describe briefly and three methods by which coagulation of lyophobic sols can be carried out.

**Q.15.** Write the dispersed phase and dispersion medium of the following colloidal system:

(i) Smoke

(ii) Milk

**Q.16.** What are lyophobic and lyophobic colloids? Which of these sols can be easily coagulated on the addition of small amounts of electrolytes?

**Q.17.** Write the differences between physisorption and chemisorption with respect to the following:

(i) Specificity

(ii) Temperature dependence

(iii) Reversibility and

(iv) Enthalpy change

**Q.18.** What is meant by coagulation of a colloidal solution? Name any method by which coagulation of lyophobic sols can be carried out.

**Q.19.** Describe the following:

(i) Tyndall effect

(ii) Shape-selective catalysis

**Q.20.** Define the following terms:

(i) Lyophilic colloid

(ii) Zeta potential

(iii) Associated colloids

## SECTION C

(Each question in this section carry 3 marks)

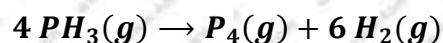
- Q.21.** What are lyophilic and lyophobic sols? Give one example of each type. Which one of these two types of sols is easily coagulated and why?
- Q.22.** How are the following colloids different from each other in respect of dispersion medium and dispersed phase? Give one example of each type.
- (i) An aerosol
  - (ii) A hydrosol
  - (iii) An emulsion
- Q. 23.** What is the difference between multimolecular and macromolecular colloids? Give one example of each type. How are associated colloids different from these two types of colloids?
- Q.24.** Explain how the phenomenon of adsorption finds application in each of the following processes:
- (i) Production of vacuum
  - (ii) Heterogeneous catalysis
  - (iii) Froth Floatation process
- Q.25.** (a) In reference to freundlich adsorption isotherm write the expression for adsorption of gases on solids in the form of an equation.
- (b) Write an important characteristic of lyophilic sols.
- Q.26.** Give reasons for the following observations:
- (i) Leather gets hardened after tanning.
  - (ii) Lyophilic sol is more stable than lyophobic soil.
  - (iii) It is necessary to remove CO when ammonia is prepared by Haber's process.
- Q.27.** Write one difference in each of the following:
- (i) Lyophobic sol and Lyophilic sol
  - (ii) Solution and Colloid
  - (iii) Homogeneous catalysis and Heterogeneous catalysis

- Q.28. Explain the following terms giving a suitable example for each:**  
(i) Aerosol  
(ii) Emulsion  
(iii) Micelle
- Q.29. What are the characteristics of the following colloids? Give one example of each.**  
(i) Multimolecular colloids  
(ii) Lyophobic sols  
(iii) Emulsions
- Q.30. What are emulsions? What are their different types? Give one example of each type.**
- Q.31. Write any three differences between physisorption and chemisorption.**
- Q.32. Write one difference in each of the following :**  
(a) Multimolecular colloid and Associated colloid  
(b) Coagulation and Peptization  
(c) Homogeneous catalysis and Heterogeneous catalysis.
- Q.33. (a) Write the dispersed phase and dispersion medium of milk.  
(b) Write one similarity between physisorption and chemisorption.  
(c) Write the chemical method by which  $Fe(OH)_3$  sol is prepared from  $FeCl_3$ .**
- Q.34. Classify colloids where the dispersion medium is water. State their characteristics and write an example of each of these classes.**

## SECTION D

*(Each question in this section carry 5 marks)*

- Q.35. (a) Explain the following terms:**  
(i) Rate of a reaction  
(ii) Activation energy of a reaction
- (b) The decomposition of phosphine,  $PH_3$ , proceeds according to the following equation:**



**It is found that the reaction follows the following rate equation:**

$$Rate = k[PH_3].$$

The half-life of  $PH_3$  is 37.9 s at  $120^{\circ}C$ .

- (i) How much time is required for  $3/4$ th of  $PH_3$  to decompose?
- (ii) What fraction of the original sample of  $PH_3$  remains behind after 1 minute?

**Q.36** (a) Explain the following terms:

- (i) Order of a reaction
  - (ii) Molecularity of a reaction
- (b) The rate of a reaction increases four times when the temperature changes from 300 K to 320 K. Calculate the energy of activation of the reaction, assuming that it does not change with temperature. ( $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$ )

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