



# 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 there different types? Give one example of each type.**

**Q.31. Write any three difference 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.**

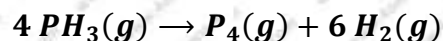
## SECTION D

*(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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