THE GURUKUL INSTITUTE

PLOT 5C, 2ND FLOOR, GANAPATI COMPLEX, SEC-13, OPP. JAIPURIA SCHOOL, VASUNDHARA, GHAZIABAD (U.P)

SURFACE CHEMISTRY

1. Explain the following term giving a suitable example: Emulsification.
2. How does chemical adsorption of a gas on a solid vary with temperature?
3. Define enthalpy of adsorption.
4. How does the addition of alum purify water?
5. In what way is a sol different from a gel?
6. State one difference between an emulsion and a sol?
7. What is meant by term peptization?
8. What happens when an electric field is applied to a colloidal solution?
9. Colloidal solutions can be held in water and in air as media. What distinctive names are given to these two types of sols?
10. Of NH_3 and N_2 which gas will be adsorbed more readily on the surface of charcoal and why?
11. Give an example of heterogeneously catalyzed reaction.
12. How does soap help in washing clothes?
13. Why do colloidal solutions exhibit Tyndall effect?
14. How is dialysis carried out? Mention its one application?
15. What is cause of Brownian movement observed in colloidal solution?
16. How can colloidal solution of sulphur in water can be prepared?
17. Indicate a chemical reaction involving a homogeneous catalyst?
18. Explain the term with a suitable example: Dialysis.
19. How are the following sols produced?
    a. Sulphur
    b. Collodion
20. What is adsorption? how does adsorption gas on a solid surface vary with
    a. Temperature b. pressure?

    Illustrate with the help of appropriate graphs.
21. Why do lyophilic sols not require any stabilizing agent for their preservation? How is colloidal sulphur in water prepared?
22. Describe and explain what is observed when
    a. A beam of light passed through a colloidal solution of As_2S_3.
    b. An electric current is passed through a colloidal solution.
23. Taking two examples of heterogeneously catalytic reaction, explain how a heterogeneous catalyst helps in the reaction.
24. Explain the following terms:
    i. Electro-dialysis
    ii. Phases of a colloidal solution
25. Show by a graphic diagram how at a constant pressure a rise in temperature will influence adsorption of gas on a solid when
    i. No compound formation occurs
    ii. Chemisorption takes place.
26. A sol may be prepared by a precipitation reaction. Give on such example. How can we find the nature of electric charge on the sol particles?
27. What are emulsions? How are they classified? State an application of emulsification.
28. What is the difference between a colloidal solution and emulsion? Give one example of each type. What is the role of emulsifier in forming emulsion?

29. a. How is physically adsorbed mass of a gas on a unit mass of adsorbent related to pressure of the gas?
    b. How do enzymes catalyse reactions? What role is played by co-enzymes?
30. What is the difference between a colloidal solution and emulsion? Give one example of each type. What is the role of emulsifier in forming emulsion?
31. Describe the following types of colloids, giving an example for each:
    a. Multimolecular colloids
    b. Macromolecular colloids
32. List four applications of adsorption.
33. Explain the following observations:
    a. Lyophillic colloid is more stable than lyophobic colloid.
    b. Coagulation takes place when sodium chloride solution is added to a colloidal solution of ferric hydroxide.
    c. Sky appears blue in colour.
34. Write three distinct differences between physical adsorption and chemisorption.
35. How do size of particles of adsorbent, pressure of gas and prevailing temperature influence the extent of adsorption of a gas on a solid?
36. Explain the following :
    a. Same substance can act both as colloids and crystalloids.
    b. Artificial rain is caused by spraying salt over clouds.
    c. When a beam of light is passed through a colloidal sol, the path of the beam gets illuminated.
37. What are the two types of emulsions and how do they differ from one another? Give one example of each.
38. Which one of the following electrolytes is more effective for the coagulation of $Fe(OH)_3$ sol and why? NaCl, Na_2SO_4, Na_3PO_4
39. Explain each of the following terms:
    a. Chemisorption
    b. Kraft temperature (T_k)
40. What is meant by 'shape-selective catalysis'? How is it used in obtaining gasoline from alcohol? Name the catalyst used in this process?
41. a. Write the equation representing adsorption of a solute from solution by a solid adsorbent.
    b. Describe Bredig's arc method for making colloidal solution.