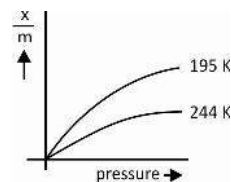


UNIT - 5 : SURFACE CHEMISTRY

One mark questions:	
1. What is term sorption?	K
2. Adsorption is always exothermic. Why?	U
3. Give reason: A finely divided substance is more effective as an adsorbent.	U
4. Out of physisorption and chemisorption which one leads to multimolecular adsorption?	U
5. Write the expression for Freundlich adsorption isotherm.	K
6. Activated charcoal is used in gas masks. Why?	U
7. Hydrogen free from CO is preferred in the manufacture of ammonia by Haber's process. Give reason.	U
8. Which property of the catalysts is illustrated in the example given $\text{CO}_{(g)} + 3\text{H}_{2(g)} \xrightarrow{\text{Ni}} \text{CH}_{4(g)} + \text{H}_2\text{O}_{(g)} \quad \text{and} \quad \text{CO}_{(g)} + 3\text{H}_{2(g)} \xrightarrow{\text{Cu}} \text{HCHO}$	U
9. Give an example for shape selective catalyst which converts alcohols into gasoline.	K
10. What is shape-selective catalysis?	K
11. Name the colloidal system in which gas is a dispersed phase and liquid is a dispersion medium.	K
12. What is the dispersed phase in emulsion.	K
13. Name the dispersion medium in aerosol.	K
14. Lyophilic sols are more stable than lyophobic sols. Give reason.	U
15. What is peptization?	K
16. What is the principle of dialysis?	K
17. What is Tyndall effect?	K
18. What is electro kinetic potential or zeta potential?	K
19. What is electro-osmosis?	K
20. State Hardy-Schulze Rule.	K
21. In the coagulation of negative sol, arrange the following ions in ascending order of their flocculating power: Ba^{2+} , Na^+ , Al^{3+}	U
22. What are protective colloids?	K
23. What happens when an emulsion is centrifuged?	U
24. Mention the role of alum in the purification of drinking water.	U
Two mark questions:	
1. Distinguish between adsorption and absorption.	U
2. Hydrogen is adsorbed on nickel. Which is the adsorbent and adsorbate?	U

3. How does (i) enthalpy (ii) entropy change during adsorption of gas on a solid?	U
4. Between sulphur dioxide (critical temperature 630 K) and methane (critical temperature 190 K), which gas is adsorbed more on 1 g of activated charcoal. Give reason.	U
5. Two isotherms drawn for physical adsorption is shown. Comment on the effect of temperature and pressure on the extent of adsorption of a gas.	A
6. $\frac{x}{m} = kp^{\frac{1}{n}}$ is the expression for Freundlich isotherm. For what value of $\frac{1}{n}$ will the expression show that i) adsorption become independent of pressure ii) adsorption vary directly with pressure.	A
7. What are promoters? Give an example.	K
8. What is homogeneous catalysis? Give an example.	K
9. What is heterogeneous catalysis? Give an example.	K
10. Explain the mechanism of enzyme catalysis.	U
11. For enzyme catalysis, between vitamin and metal ions which one of these will be an example for : i) a coenzyme ii) an activator.	U
12. Give two differences between lyophilic and lyophobic colloids?	K
13. What are the two conditions required for the formation of micelles.	U
14. Name the chemical reaction that leads to the formation of i) Gold sol from $\text{AuCl}_{3(\text{aq})}$ and H-CHO. ii) $\text{Fe}(\text{OH})_3$ sol from FeCl_3 and H_2O .	U
15. Explain the preparation of colloids by using Bredig's arc method.	U
16. Explain how a precipitate gets converted into a sol during peptization.	K
17. What is ultrafiltration? Explain how a filter paper is converted into an ultrafilter paper using an example?	U
18. Explain dialysis.	K
19. Write two conditions which must be satisfied to observe Tyndall effect.	U
20. Name the phenomenon in which colloidal particles are in zig – zag motion. Give reason for the zig-zag motion.	K
21. i) What is coagulation or flocculation value? ii) Between Na_3PO_4 and Na_2SO_4 , which one of the electrolyte will have maximum coagulating value for AgI / Ag^+ sol?	K
22. What is electrophoresis?	K
23. How are delta regions formed?	A



Three mark questions:	
1. Mention any three factors affecting adsorption of gases on solids.	K
2. Write three characteristics of physisorption.	K
3. Write three characteristics of chemisorption.	K
4. Distinguish between physisorption and chemisorptions based on i) reversibility ii) enthalpy of adsorption iii) specificity.	U
5. Write three applications of adsorption.	A
6. Explain the mechanism of heterogeneous catalysis starting from adsorption to desorption on the basis of adsorption theory.	U
7. Distinguish macromolecular and multimolecular colloids based on type of particles of dispersed phase. Give one example for each.	U
8. Based on the type of particles of dispersed phase, how are these classified? i) Sulphur sol. ii) Soap in water iii) starch sol.	U
9. Explain the cleansing action of soaps.	U
10. Write three characteristics of enzyme catalysis.	K
11. What is the enzyme for the following biochemical processes? i) Starch into maltose ii) Proteins into peptides (in stomach) iii) Milk into curds	U
12. a) Give reason: i) When AgNO_3 solution is added to KI solution a negative charged AgI sol is obtained. ii) When FeCl_3 is added to excess of hot water positively charged sol is obtained. b) Name the experiment which confirms the presence of charge on colloidal particles.	U
13. What is coagulation of a sol? Name the two methods by which a lyophobic sol can be coagulated.	K
14. Name the two types of emulsions? What type of emulsion is milk?	K
15. How do emulsifiers stabilize emulsion? Name two emulsifiers.	K
16. What is the role of i) the charcoal in production of high vacuum ii) the silica gel in controlling humidity in a closed system iii) eosin in detecting end point in precipitation titrations?	A
17. Give reason: i) Medicines in colloidal state are more effective. ii) Alum stops bleeding from a small cut.	

iii) Colloidal solutions give lower values for colligative properties than a true solution of same concentration.	A
18. Name the process / method involved in	
i) Purification of sol by placing it suitably in an electric field.	
ii) Animal hide (skin) containing positively charged colloidal particles is dipped in tannin which has negatively charged colloidal particles.	
iii) A freshly prepared precipitate is shaken with small quantity of electrolyte to get a sol.	A
19. What is observed ?	
(i) when a beam of light is passed through a colloidal sol.	
(ii) an electrolyte, NaCl is added to hydrated ferric oxide sol	
(iii) electric current is passed through a colloidal sol.	U