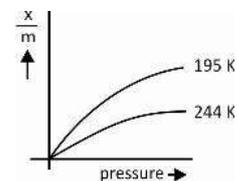


UNIT - 5 : SURFACE CHEMISTRY

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. $\frac{x}{m} = kp^n$ 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?	U
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.	

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