XII UNIT 5

Surface Chemistry

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CHEMISTRY MANTRA
105 Dilbagh Nagar Extension Jalandhar

Unit 5
Surface Chemistry
Short Answer Questions–

Q.1 What is desorption?
Answer: The process of removing an adsorbed substance from the surface on which it is adsorbed is called desorption.
Q.2 What is sorption?
Answer: Both adsorption and absorption are simultaneously called sorption.
Q.3 What are physical and chemical adsorption?
Answer: When accumulation of gas on solid surface occurs on account of weak van der Waals forces the adsorption is termed as physical adsorption. When gas molecules or atoms are held to the solid surface by chemical bonds the adsorption is termed as chemisorptions.
Q.4 What is adsorption isotherm?
Answer: The curve which describes the variation in the amount of gas adsorbed by the adsorbent with pressure at constant temperature is called adsorption isotherm.
Q.5 Under what condition Freundlich adsorption isotherm fails?
Answer: At high pressure Freundlich adsoption isotherm fails.
Q.6 What is the use of adsorption in metallurgy?
Answer: In metallurgy adsorption is used for concentration of ore is concentrated by separating it from silica and other earthy matter by the method of froth floatation using pine oil and frothing agent.
Q.7 What is the principle of separation of inert gases from its mixture?
Answer: The separation of inert gases from a mixture is based on the difference in degree of adsorption of gases by the coconut charcoal.
Q.8 Which catalysis involves adsorption?
Answer: Heterogeneous catalysis involves adsorption of substrate on the surface of adsorbent.
Q.9 Why silica and alumina gels are used for removing moisture and controlling humidity?
Answer: Alumina and silica are good adsorbents. They can absorb even small amount of moisture present in atmosphere.
Q.10 Which substance is used in gas mask?
Answer: Activated charcoal or mixture of adsorbents is used as adsorbent in gas mask.
Q.11 How is a high vacuum produced?
Answer: Traces of air are adsorbed by charcoal from a vessel and high vacuum is produced.
Q.12 How does adsorption of a gas on a solid surface vary with temperature?

Answer: Adsorption of gas on solid surface decreases with rising temperature.

Q.13 Give two uses of adsorption.

Answer: Two uses of adsorption
(i) Control of humidity (ii) Producing high vacuum.

Q.14 What is physisorption?

Answer: When the gas molecule or atoms are held together by weak van der Waals forces on the solid surface it is called physisorption.

Q.15 Adsorption is exothermic. Why?

Answer: During adsorption there is always decrease in residual force on the surface i. e., there is decrease in surface energy which appears as heat.

Q.16 What is a catalyst?

Answer: The chemical substance which alters the rate of a chemical reaction but chemically and quantitatively remains unchanged is called catalyst.

Q.17 Define promoters and poisons with example.

Answer: Substance which enhances the activity of a catalyst is called promoter while substance which decreases the activity of catalyst is called poison. e-g- In Haber's process molybdenum acts as promoter and carbon monoxide acts as poison for the catalyst.

Q.18 What do you mean by selectivity of catalyst?

Answer: The selectivity of a catalyst means its ability to direct a reactant to yield a particular product.

Q.19 Define activity of catalyst.

Answer: The ability of a catalyst to absorb the reactant molecule to give a product is called activity of a catalyst.

Q.20 What are zealots?

Answer: Zeolites are shape selective catalysts. These are actually microporous alumino silicates with three dimensional network structure.