Set – 1

Table 5.1: Comparison of Physisorption and Chemisorption

Physisorption	Chemisorption
1. It arises because of van der Waals' forces.	1. It is caused by chemical bond formation.
2. It is not specific in nature.	2. It is highly specific in nature.
3. It is reversible in nature.	3. It is irreversible.
4. It depends on the nature of gas. More easily liquefiable gases are adsorbed readily.	4. It also depends on the nature of gas. Gases which can react with the adsorbent show chemisorption.
5. Enthalpy of adsorption is low (20-40 kJ mol^{-1})in this case.	5. Enthalpy of adsorption is high (80-240 kJ mol^{-1}) in this case.

Q1. Forces present in physisorption and chemisorption are

A. Vanderwaals force, chemical bonds
B. Ionic bonds, covalent bonds
C. Chemical bonds, vanderwaals force
D. Hydrogen bond, covalent bond

Ans. (A)

Q2. Which of the following conditions are favourable for physisorption

A. High temperature, more surface area
B. Low temperature, more surface area
C. Low temperature, less surface area
D. High temperature, less surface area

Ans. (B)

Q3. What happens if we increase temperature of a chemisorption process

A. Rate of chemisorption increases
B. Rate of chemisorption decreases
C. Rate remains same
D. Cannot say

Ans. (A)

Q4. Which of the following are favourable conditions for the chemisorption process?

A. High temperature, more surface area
B. Low temperature, more surface area
C. Low temperature, less surface area
D. High temperature, less surface area

Ans. (a)

Q5. What are the characteristics of the physisorption process?

A. Irreversible, low enthalpy of adsorption
B. Irreversible, high enthalpy of adsorption
C. Reversible, low enthalpy of adsorption
D. Reversible,high enthalpy of adsorption

Ans. (C)

Q6. What are the characteristics of the chemisorption process?

A. Irreversible, low enthalpy of adsorption
B. Irreversible, high enthalpy of adsorption
C. Reversible, low enthalpy of adsorption
D. Reversible,high enthalpy of adsorption

Ans. (B)

Set – 2

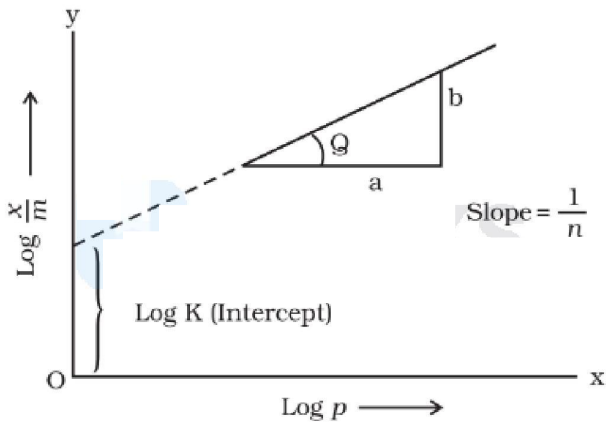

Fig. 5.2: Freundlich isotherm

Q1. The slope of the freundlich isotherm

A. 1/n
B. logK
C. log(x/m)
D. Log p

Ans. (A)

Q2. The correct relation for freundlich isotherm is

A. log(x/m)=logk + nlog(p)
B. log(x/m)=logk + (1/n)log(p)
C. log(x/m)=logk + n^2(log p)
D. log(x/m)=logk - (1/n)log(p)

Ans. (B)

Set – 3

Table 5.2: Some Enzymatic Reactions

Enzyme	Source	Enzymatic reaction
Invertase	Yeast	Sucrose → Glucose and fructose
Zymase	Yeast	Glucose → Ethyl alcohol and carbon dioxide
Diastase	Malt	Starch → Maltose
Maltase	Yeast	Maltose → Glucose
Urease	Soyabean	Urea → Ammonia and carbon dioxide
Pepsin	Stomach	Proteins → Amino acids

Q1. The enzyme which converts proteins to amino acids is

A. Urease
B. Diastase
C. Zymase
D. Pepsin

Ans. (D)

Q2. The source of the enzyme Urease is

A. Soyabean
B. Yeast
C. Malt
D. Stomach

Ans. (A)

Q3. Identify the enzymes whose sources are same

A. Invertase, maltase, pepsin
B. Invertase, urease, Zymase
C. Invertase, Zymase,Maltase
D. Pepsin,maltase, zymase

Ans. (C)

Q4. Starch is converted into Maltose by

A. Diastase
B. Invertase
C. Maltase
D. Urease

Ans. (A)

Set – 4

Table 5.3: Some Industrial Catalytic Processes

Process	Catalyst
1. Haber's process for the manufacture of ammonia $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$	Finely divided iron, molybdenum as promoter; conditions: 200 bar pressure and 723-773K temperature. Now-a-days, a mixture of iron oxide, potassium oxide and alumina is used.
2. Ostwald's process for the manufacture of nitric acid. $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$ $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$ $4NO_2(g) + 2H_2O(l) + O_2(g) \rightarrow 4HNO_3(aq)$	Platinised asbestos; temperature 573K.
3. Contact process for the manufacture of sulphuric acid. $2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$ $SO_3(g) + H_2SO_4(aq) \rightarrow H_2S_2O_7(l)$ oleum $H_2S_2O_7(l) + H_2O(l) \rightarrow 2H_2SO_4(aq)$	Platinised asbestos or vanadium pentoxide (V_2O_5); temperature 673-723K.

Q1. The catalyst for Ostwald's process for manufacture of HNO3 is

A. Platinised asbestos
B. Finely divided iron
C. Vanadium Pentoxide
D. Mo

Ans. (A)

Q2. Finely divided iron is used as catalyst for which of following reaction

A. Ostwald's process
B. Contact process
C. Haber's process
D. None of the above

Ans. (C)

Q3. Platinised asbestos is used as catalyst for which of following reactions

A. Ostwald's process, contact process
B. Contact process, Haber's process
C. Habers's process, Ostwald's Process
D. None of the above

Ans. (A)

Set – 5

Table 5.4: Types of Colloidal Systems

Dispersed phase	Dispersion medium	Type of colloid	Examples
Solid	Solid	Solid sol	Some coloured glasses and gem stones
Solid	Liquid	Sol	Paints, cell fluids
Solid	Gas	Aerosol	Smoke, dust
Liquid	Solid	Gel	Cheese, jellies
Liquid	Liquid	Emulsic...	Milk, hair cream, butter
Liquid	Gas	Aerosol	Fog, mist, cloud, insecticide sprays
Gas	Solid	Solid sol	Pumice stone, foam rubber
Gas	Liquid	Foam	Froth, whipped cream, soap lather

Q1. Which of the following is an aerosol

A. Milk
B. Froth
C. Pumice
D. Smoke

Ans. (D)

Q2. What are the dispersed phases of Emulsion and solid sol

A. Solid, liquid
B. Liquid, solid

C. Solid , solid
D. Liquid, liquid

Ans. (B)

Q3. What are the dispersed mediums of Gel and foam

A. Solid, liquid
B. Liquid, solid
C. Solid , solid
D. Liquid, liquid

Ans. (A)

Q4. Gem stone is a

A. Aerosol
B. Gel
C. Emulsion
D. Solid sol

Ans. (D)

Q5. Identify the following substances Cheese, foam rubber are

A. Solid sol, gel
B. Gel, solid sol
C. Emulsion, sol
D. Foam, solid sol

Ans. (B)

Set – 6

Positively charged sols	Negatively charged sols
Hydrated metallic oxides, e.g., $Al_2O_3.xH_2O$, $CrO_3.xH_2O$ and $Fe_2O_3.xH_2O$, etc.	Metals, e.g., copper, silver, gold sols.
Basic dye stuffs, e.g., methylene blue sol.	Metallic sulphides, e.g., As_2S_3, Sb_2S_3, CdS sols.
Haemoglobin (blood)	Acid dye stuffs, e.g., eosin, congo red sols.
Oxides, e.g., TiO_2 sol.	Sols of starch, gum, gelatin, clay, charcoal, etc.

Q1. Which of the following are positively charged solutions Haemoglobin, Eosin, Gum, Methylene blue sol

A. Haemoglobin, Gum
B. Methylene Blue sol, Haemoglobin
C. Eosin, Gum
D. Gum, Methylene blue sol

Ans. (B)

Q2. Classify the following TiO2sol, charcoal

A. Positively charged solution, negatively charged solution
B. Negatively charged solution, positively charged solution
C. Negatively charged solutions
D. Positively charged solutions

Ans. (A)