

## SOLUTION TEST-B

1. Kraft temperature is the temperature at which the micelle is formed.

**The correct answer is (iii)**

2.  $\frac{x}{m} = kP^{1/n}$  (at constant T)

$\frac{x}{m}$  is a function of temperature at constant P

$\frac{x}{m} = \frac{1}{PT}$  is not related to adsorption.

**The correct answer is (iv)**

3.  $2\text{AuCl}_3 + 3\text{HCHO} + 3\text{H}_2\text{O} \rightarrow 2\text{Au} + 6\text{HCl} + 3\text{HCOOH}$

**The correct answer is (iv)**

4. Both assertion and reason are correct and reason explain the assertion correctly.

**The correct answer is (i)**

5. Assertion is correct, Reason is also correct but explanation is wrong. CO combines with the iron catalyst irreversibly to form  $\text{Fe}(\text{CO})_5$ .

CO act as a catalytic poison.

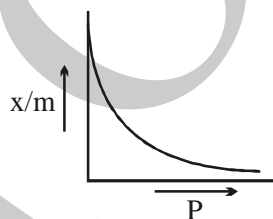
**The correct answer is (ii)**

6. Negative

7. Critical micelle concentration is the minimum concentration above which the micelles are formed.

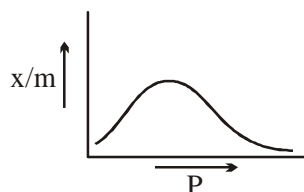
8. Adsorption isobar is the graph between  $\frac{x}{m}$  and temperature at constant pressure.

### Physiosorption



Physical adsorption decreases with increasing temperature.

### Chemisorption



Chemical adsorption first increases with increase in temperature. Once the gas molecules acquires sufficient energy of activation, then adsorption decreases.

9. (i) Emulsions can be broken into constituent liquids by heating, freezing, centrifuging, changing pH, etc. The process is called de-cmulsification.  
 (ii) Dialysis is a process of removing a dissolved substance from a colloidal solution by means of diffusion through suitable semipermeable membrane.

10. (i) By oxidation  

$$\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 3\text{S}(\text{sol}) + 2\text{H}_2\text{O}$$
  
 (ii) By hydrolysis  

$$\text{FeCl}_3 + 3\text{H}_2\text{O} \rightarrow \text{Fe}(\text{OH})_3 + 3\text{HCl}$$

(sol)  
or  
 $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$

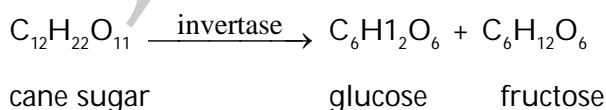
11. Emulsions are colloids in which dispersed phase and dispersion medium both are liquids.

There are two types of emulsions:

- (i) Oil in water type: Dispersed phase → Oil and dispersion medium → water  
 Example: Milk  
 (ii) Water in oil type: Dispersed phase → Water and dispersion medium → Oil  
 Example: Cold cream
12. (i) (a) The wavelength of the light used should be comparable to the size of the particle.  
 (b) The ratio of the refractive indices of two medium should be as high as possible.  
 (ii) ZSM-5 is a shape selective catalyst used in the conversion of methanol into gasoline.
13. (i)  $\frac{x}{m}$  becomes constant at high pressure due to dynamic equilibrium involving adsorption and desorption.  
 (ii)  $T_1 < T_2 < T_3$   
 (iii) It is defined as the graph between extent of adsorption  $\frac{x}{m}$  versus pressure at constant temperature.

14. Enzymes are biological catalysts and catalyze various biochemical reactions. Example: Invertase optimum temperature → 37°C

pH → 7.2 – 7.4



15. (i) Gel → Cheese, Jellies  
 Aerosol → Smoke, Fog  
 (ii) Activated charcoal is a fine black powder with large surface area, more porous and results in more adsorption of gases on its surface.

(iii)

Lyophilic sol	Lyophobic sol
(a) The dispersed phase has very strong affinity for dispersion medium	(a) The dispersed phase has very little affinity for the dispersion medium
(b) These sols are stable and reversible	(b) These sols are unstable and irreversible.

(iv) Brownian movement is due to the unbalanced impact of the molecules of the dispersion medium on the molecules of the dispersed phase.

(v) Protective colloids are lyophilic colloids which when added protects the lyophobic sol from coagulation on addition of small amount of an electrolyte.

Example of protective colloid is starch sol, gelatin.

