

PREVIOUS YEARS' QUESTIONS

EXERCISE-II

1. Gold numbers of protective colloids A, B, C and D are 0.50, 0.01, 0.10 and 0.005 respectively. The correct order of their protective power is :-
[AIEEE-2008]
- (1) $D < A < C < B$ (2) $C < B < D < A$
(3) $A < C < B < D$ (4) $B < D < A < C$
2. Which of the following statements is incorrect regarding physisorptions ? [AIEEE-2009]
- (1) Under high pressure it results into multi molecular layer on adsorbent surface
(2) Enthalpy of adsorption ($\Delta H_{\text{adsorption}}$) is low and positive
(3) It occurs because of Van der Waal's forces
(4) More easily liquefiable gases are adsorbed readily
3. Among the electrolytes Na_2SO_4 , CaCl_2 , $\text{Al}(\text{SO}_4)_3$ and NH_4Cl , the most effective coagulating agent for Sb_2S_3 sol is : [IIT-2009]
- (1) Na_2SO_4
(2) CaCl_2
(3) $\text{Al}_2(\text{SO}_4)_3$
(4) NH_4Cl
4. The correct statement(s) pertaining to the adsorption of a gas on a solid surface is (are) - [IIT-2011]
- (1) Adsorption is always exothermic
(2) Physisorption may transform into chemisorption at high temperature
(3) Physisorption increases with increasing temperature but chemisorption decreases with increasing temperature
(4) Chemisorption is more exothermic than physisorption, however it is very slow due to higher energy of activation
5. According to Freundlich adsorption isotherm, which of the following is correct ? [AIEEE-2012]
- (1) $\frac{x}{m} \propto p^0$
(2) $\frac{x}{m} \propto p^1$
(3) $\frac{x}{m} \propto p^{1/n}$
(4) All the above are correct for different ranges of pressure
6. If x is the mass of the gas adsorbed on mass m of the absorbent at pressure p, Freundlich adsorption isotherm gives a straight line on plotting :- [AIEEE-2012 (Online)]
- (1) $\frac{x}{m}$ vs p (2) $\log \frac{x}{m}$ vs $\log p$
(3) $\log \frac{x}{m}$ vs p (4) $\frac{x}{m}$ vs $\frac{1}{p}$
7. Fog is a colloidal solution of :- [AIEEE-2012 (Online)]
- (1) Gaseous particles dispersed in a liquid
(2) Solid particles dispersed in a liquid
(3) Liquid particles dispersed in gas
(4) Solid particle dispersed in gas
8. The coagulating power of electrolytes having ions Na^+ , Al^{3+} and Ba^{2+} for arsenic sulphide sol increases in the order :- [JEE (MAIN) 2013]
- (1) $\text{Al}^{3+} < \text{Ba}^{2+} < \text{Na}^+$ (2) $\text{Na}^+ < \text{Ba}^{2+} < \text{Al}^{3+}$
(3) $\text{Ba}^{2+} < \text{Na}^+ < \text{Al}^{3+}$ (4) $\text{Al}^{3+} < \text{Na}^+ < \text{Ba}^{2+}$
9. The migration of dispersion medium under the influence of an electric potential is called : [JEE (MAIN) 2013 (Online)]
- (1) Electrophoresis (2) Cataphoresis
(3) Electroosmosis (4) Sedimentation
10. Smoke is an example of : [JEE (MAIN) 2013 (Online)]
- (1) Solid dispersed in solid
(2) Solid dispersed in gas
(3) Gas dispersed in solid
(4) Gas dispersed in liquid
11. For a linear plot of $\log(x/m)$ versus $\log p$ in a Freundlich adsorption isotherm, which of the following statements is correct ? (k and n are constants) [JEE (MAIN) 2016]
- (1) $\log(1/n)$ appears as the intercept
(2) Both k and $1/n$ appear in the slope term
(3) $1/n$ appears as the intercept
(4) Only $1/n$ appears as the slope
12. Gold numbers of some colloids are : Gelatin : 0.005 – 0.01, Gum Arabic : 0.15 – 0.25 ; Oleate : 0.04 – 1.0, Starch : 15 – 25. Which among these is a better protective colloid ? [JEE (MAIN) 2016 (Online)]
- (1) Oleate (2) Gelatin
(3) Gum-Arabic (4) Starch

13. A particular adsorption process has the following characteristics: (i) It arises due to van der Waals forces and (ii) it is reversible. Identify the correct statement that describes the above adsorption process : **[JEE (MAIN) 2016 (Online)]**

- (1) Enthalpy of adsorption is greater than 100 kJ mol^{-1}
- (2) Energy of activation is low.
- (3) Adsorption is monolayer
- (4) Adsorption increases with increase in temperature.

14. For a linear plot of $\log(x/m)$ versus $\log p$ in a Freundlich adsorption isotherm, which of the following statements is correct ? (k and n are constants) **[JEE (MAIN) 2016 (Offline)]**

- (1) $\log (1/n)$ appears as the intercept
- (2) Both k and $1/n$ appear in the slope term
- (3) $1/n$ appears as the intercept
- (4) Only $1/n$ appears as the slope

15. The Tyndall effect is observed only when following conditions are satisfied :- **[JEE (MAIN) 2017]**

- (a) The diameter of the dispersed particles is much smaller than the wavelength of the light used.
- (b) The diameter of the dispersed particle is not much smaller than the wavelength of the light used.
- (c) The refractive indices of the dispersed phase and dispersion medium are almost similar in magnitude.
- (d) The refractive indices of the dispersed phase and dispersion medium differ greatly in magnitude.

- (1) (a) and (d) (2) (b) and (d)
- (3) (a) and (c) (4) (b) and (c)

16. Among the following, correct statement is :

[JEE-Main (online)2017]

- (1) One would expect charcoal to adsorb chlorine more than hydrogen sulphide.
- (2) Brownian movement is more pronounced for smaller particles than for bigger-particles.
- (3) Hardy Schulze law states that bigger the size of the ions, the greater is its coagulating power
- (4) Sols of metal sulphides are lyophilic

17. Adsorption of a gas on a surface follows Freundlich

adsorption isotherm. Plot of $\log \frac{x}{m}$ versus $\log p$ gives

a straight line with slope equal to 0.5, then :

[JEE-Main (online)2017]

($\frac{x}{m}$ is the mass of the gas adsorbed per gram of

adsorbent)

- (1) Adsorption is proportional to the square of pressure.
- (2) Adsorption is independent of pressure.
- (3) Adsorption is proportional to the pressure.
- (4) Adsorption is proportional to the square root of pressure.

18. Which one of the following is not a property of physical adsorption **[JEE-Main (online)2018]**

- (1) Unilayer adsorption occurs
- (2) Greater the surface area, more the adsorption
- (3) Lower the temperature, more the adsorption
- (4) Higher the pressure, more the adsorption

PREVIOUS YEARS QUESTIONS				ANSWER KEY				Exercise-II			
Que.	1	2	3	4	5	6	7	8	9	10	
Ans.	3	2	3	1,2,4	4	2	3	2	3	2	
Que.	11	12	13	14	15	16	17	18			
Ans.	4	2	2	4	2	2	4	1			