Surface Chemistry

Q.No.1:
The coagulating power of electrolytes having ions Na^+, Al^{3+} and Ba^{2+} for arsenic sulphide sol increases in the order :

JEE 2013

   A. $Al^{3+} < Ba^{2+} < Na^+$

   B. $Na^+ < Ba^{2+} < Al^{3+}$

   C. $Ba^{2+} < Na^+ < Al^{3+}$

   D. $Al^{3+} < Na^+ < Ba^{2+}$

Q.No.2: For a linear plot of log (x/m) versus log p in Freundlich adsorption isotherm, which of the following statements is correct? (k and n are constants.)

JEE 2016

   A. $1/n$ appears as the intercept.

   B. Only $1/n$ appears as the slope.

   C. log $(1/n)$ appears as the intercept.

   D. Both k and $1/n$ appear in the slope term.

Q.No.3: The Tyndall effect is observed only when following conditions are satisfied :
(a) The diameter of the dispersed particles is much smaller than the wavelength of the light used.
(b) The diameter of the dispersed particles 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.
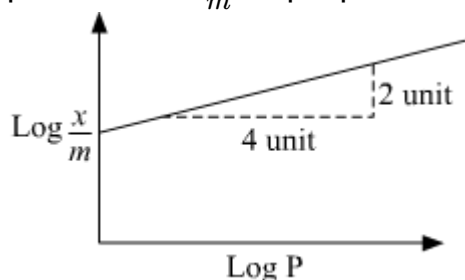**JEE 2017**

   A. (b) and (d)

   B. (a) and (c)

   C. (b) and (c)

D. (a) and (d)

Q.No.4: When metal 'M' is treated with NaOH, a white gelatinous precipitate 'X' is obtained, which is soluble in excess of NaOH. Compound 'X' when heated strongly gives an oxide which is used in chromatography as an adsorbent. The metal 'M' is : **JEE 2018**

    A. Al

    B. Fe

    C. Zn

    D. Ca

Q.No.5: Adsorption of a gas follows Freundlich adsorption isotherm. In the given plot, x is the mass of the gas adsorbed on mass m of the adsorbent at pressure P. $\frac{x}{m}$ is proportional to:

JEE 2019

    A. P^2

    B. $P^{\frac{1}{4}}$

    C. $P^{\frac{1}{2}}$

    D. P

Q.No.6: The correct match between Item I and Item II is:

Item I	Item II
(A) Benzaldehyde	(P) Mobile phase
(B) Alumina	(Q) Adsorbent
(C) Acetonitrile	(R) Adsorbate

JEE 2019

    A. (A) → (Q); (B) → (P); (C) → (R)

    B. (A) → (R); (B) → (Q); (C) → (P)

    C. (A) → (Q); (B) → (R); (C) → (P)

    D. (A) → (P); (B) → (R); (C) → (Q)

Q.No.7: For coagulation of arsenious sulphide sol, which one of the following salt solution will be most effective? **JEE 2019**
- **A.** $BaCl_2$
- **B.** $AlCl_3$
- **C.** NaCl
- **D.** Na_3PO_4

Q.No.8: The temporary hardness of water is due to: **JEE 2019**
- **A.** Na_2SO_4
- **B.** NaCl
- **C.** $Ca(HCO_3)_2$
- **D.** $CaCl_2$

Q.No.9: Which of the following is not an example of heterogeneous catalytic reaction? **JEE 2019**
- **A.** Ostwald's process
- **B.** Combustion of coal
- **C.** Hydrogenation of vegetable oils
- **D.** Haber's process

Q.No.10: Haemoglobin and gold sol are examples of: **JEE 2019**
- **A.** positively and negatively charged sols, respectively
- **B.** positively charged sols
- **C.** negatively charged sols
- **D.** negatively and positively charged sols, respectively