

Questions with Answer Keys

MathonGo

Q1 (20 July 2021 Shift 1)

The conditions given below are in the context of observing Tyndall effect in colloidal solutions:

- (A) The diameter of the colloidal particles is comparable to the wavelength of light used.
- (B) The diameter of the colloidal particles is much smaller than the wavelength of light used.
- (C) The diameter of the colloidal particles is much larger than the wavelength of light used.
- (D) The refractive indices of the dispersed phase and the dispersion medium are comparable.
- (E) The dispersed phase has a very different refractive index from the dispersion medium.

Choose the most appropriate conditions from the options given below:

- (1) (A) and (E) only
- (2) (C) and (D) only
- (3) (A) and (D) only
- (4) (B) and (E) only

Q2 (20 July 2021 Shift 2)

100ml of 0.0018% (w/v) solution of Cl^- ion was the minimum concentration of Cl^- required to precipitate a negative sol in one h. The coagulating value of Cl^- ion is ____ (Nearest integer)

Q3 (22 July 2021 Shift 1)

When silver nitrate solution is added to potassium iodide solution then the sol produced is :

- (1) AgI/I^-
- (2) AgI/Ag^+
- (3) KI/NO_3^-
- (4) $\text{AgNO}_3/\text{NO}_3^-$

Q4 (25 July 2021 Shift 2)

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Match List I with List II :

List-I

Example of colloids

(a) Cheese

(b) Pumice stone

(c) Hair cream

(d) Cloud

List-II

Classification

(i) dispersion of liquid in liquid

(ii) dispersion of liquid in gas

(iii) dispersion of gas in solid

(iv) dispersion of liquid in solid

Choose the most appropriate answer from the options given below

(1) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(2) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)

(3) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

(4) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

Q5 (27 July 2021 Shift 1)

CO₂ gas adsorbs on charcoal following Freundlichadsorption isotherm. For a given amount of charcoal, the mass of CO₂ adsorbed becomes 64 times when the pressure of CO₂ is doubled.The value of n in the Freundlich isotherm equation is $\times 10^{-2}$. (Round off to the Nearest Integer)

Q6 (27 July 2021 Shift 2)

Given below are two statement : one is labelled as Assertion **A** and the other is labelled as Reason **R**.Assertion **A** : SO₂(g) is adsorbed to a large extent than H₂(g) on activated charcoal. Reason **R** : SO₂(g) has a higher critical temperature than H₂(g). In the light of the above statements, choose the most appropriate answer from the options given below.(1) Both **A** and **R** are correct but **R** is not the correct explanation fo **A**

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(2) Both **A** and **R** are correct and **R** is the correct explanation of **A**.

(3) **A** is not correct but **R** is correct.

(4) **A** is correct but **R** is not correct.

Questions with Answer Keys

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Answer Key

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Q1 (1)

Q2 (1)

Q3 (1)

Q4 (4)

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Q5 (17)

Q6 (2)

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Q1

The phenomenon of scattering of light by colloidal particles as a result of which the path of the beam becomes visible is called a tyndall effect. smaller the diameter and similar the magnitude of refractive indices, lesser is the scattering and hence the tyndall effect and viced-versa. The diameter of the dispersed phase particle should not be smaller than the wavelength of light used because they won't be able to scatter the light so, therefore, the diameter of the dispersed particles should be equal or not much smaller than the wavelength of the light used.

(2) The refractive indices (i.e. the ratio of the velocity of light in vacuum to the velocity of light in any medium) of the dispersed phase and the dispersion medium should differ greatly in magnitude than only the particles will be able to scatter the light and tyndall effect will be observed. On the other hand, if the refractive indices of the dispersed phase and dispersion medium are almost similar in magnitude, then there will be no scattering of light and hence, therefore, no tyndall effect effect is observed.

Hence answer A and E are correct.