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CHEMISTRY · JEE MAIN

Surface Chemistry

Chapter-wise previous year questions, with answer key

59	2020–2024	7
PYQS	PAPERS	TOPICS

Adsorption · Colloids and Emulsions · Catalysis · Adsorption Isotherms · Colloids · Coagulation · Emulsions and Gels

1. Attempt each question on paper first — they're grouped by topic, newest papers first.
2. Check yourself against the answer key at the end.
3. Got one wrong? Tap “Step-by-step solution” under it for the full working.

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Adsorption · 14 PYQs

Q1 JEE Main 2024 · 4 Apr · Shift 2

The adsorbent used in adsorption chromatography is/are -

A. silica gel

B. alumina

C. quick lime

D. magnesia

Choose the most appropriate answer from the options given below :

(A) C and D only

(B) A only

(C) B only

(D) A and B only

Step-by-step solution ▸ prepwiser.in/questions/A55Gn6PASh

Q2 JEE Main 2024 · 31 Jan · Shift 1

'Adsorption' principle is used for which of the following purification method?

(A) Chromatography

(B) Sublimation

(C) Distillation

(D) Extraction

Step-by-step solution ▸ prepwiser.in/questions/K6uA4Va0bC

Q3 JEE Main 2023 · 12 Apr · Shift 1

Four gases A, B, C and D have critical temperatures $5.3, 33.2, 126.0$ and $154.3\mathrm{K}$ respectively. For their adsorption on a fixed amount of charcoal, the correct order is:

(A) D > C > B > A

(B) C > B > D > A

(C) D > C > A > B

(D) C > D > B > A

Step-by-step solution ▸ prepwiser.in/questions/z4jFbL8PZm

Q4 JEE Main 2023 · 10 Apr · Shift 1

The enthalpy change for the adsorption process and micelle formation respectively are

(A) $\Delta \mathrm{H}_{\mathrm{ads}} > 0 \mathrm{and} \Delta \mathrm{H}_{\mathrm{mic}} < 0$

(B) $\Delta \mathrm{H}_{\mathrm{ads}} > 0 \mathrm{and} \Delta \mathrm{H}_{\mathrm{mic}} > 0$

(C) $\Delta \mathrm{H}_{\mathrm{ads}} < 0 \mathrm{and} \Delta \mathrm{H}_{\mathrm{mic}} < 0$

(D) $\Delta \mathrm{H}_{\mathrm{ads}} < 0 \mathrm{and} \Delta \mathrm{H}_{\mathrm{mic}} > 0$

Step-by-step solution ▸ prepwiser.in/questions/X6ZOepMi1f

Q5 JEE Main 2023 · 6 Apr · Shift 1

For the adsorption of hydrogen on platinum, the activation energy is $30 \mathrm{kJ mol}^{-1}$ and for the adsorption of hydrogen on nickel, the activation energy is $41.4 \mathrm{kJ mol}^{-1}$. The logarithm of the ratio of the rates of chemisorption on equal areas of the metals at $300\mathrm{K}$ is _____ (Nearest integer)

Given: $\ln 10 = 2.3$

$\mathrm{R} = 8.3 \mathrm{JK}^{-1} \mathrm{mol}^{-1}$

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/hBMyRqY-yg

Q6 JEE Main 2023 · 1 Feb · Shift 1

Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R

Assertion A: Amongst $\mathrm{He}, \mathrm{Ne}, \mathrm{Ar}$ and Kr; $1\mathrm{g}$ of activated charcoal adsorbs more of Kr.

Reason R: The critical volume $\mathrm{V_c}\ \left(\mathrm{cm^3 mol^{-1}}\right)$ and critical pressure $\mathrm{P_c}$ (atm) is highest for Krypton but the compressibility factor at critical point $\mathrm{Z_c}$ is lowest for Krypton.

In the light of the above statements, choose the correct answer from the options given below

(A) Both A and R are true and R is the correct explanation of A

(B) A is false but R is true

(C) Both A and R are true but R is NOT the correct explanation of A

(D) A is true but R is false

Step-by-step solution ▸ prepwiser.in/questions/pNTLGb5iwP

Q7 JEE Main 2023 · 30 Jan · Shift 1

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) : In expensive scientific instruments, silica gel is kept in watch-glasses or in semipermeable membrane bags.

Reason (R) : Silica gel adsorbs moisture from air via adsorption, thus protects the instrument from water corrosion (rusting) and / or prevents malfunctioning.

In the light of the above statements, choose the correct answer from the options given below :

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)

(B) (A) is true but (R) is false

(C) (A) is false but (R) is true

(D) Both (A) and (R) are true but (R) is not the correct explanation of (A)

Step-by-step solution ▸ prepwiser.in/questions/PAg6IUMs_i

Q8 JEE Main 2023 · 24 Jan · Shift 2

The number of statement/s which are the characteristics of physisorption is _____

A. It is highly specific in nature

B. Enthalpy of adsorption is high

C. It decreases with increase in temperature

D. It results into unimolecular layer

E. No activation energy is needed

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/yKCl-thcqo

Q9 JEE Main 2022 · 27 Jul · Shift 1

Given below are two statements. One is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : Activated charcoal adsorbs SO_2 more efficiently than CH_4.

Reason R : Gases with lower critical temperatures are readily adsorbed by activated charcoal.

In the light of the above statements, choose the correct answer from the options given below.

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

(B) Both A and R are correct but R is NOT the correct explanation of A.

(C) A is correct but R is not correct.

(D) A is not correct but R is correct.

Step-by-step solution ▸ prepwiser.in/questions/cVXpVaf5ld

Q10 JEE Main 2022 · 30 Jun · Shift 1

100 mL of 0.3 M acetic acid is shaken with 0.8 g of wood charcoal. The final concentration of acetic acid in the solution after adsorption is 0.125 M. The mass of acetic acid adsorbed per gram of carbon is _____ $\times 10^{-4}$ g.

(Given : Molar mass of acetic acid = 60 g mol^{-1})

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/YTfo386tWM

Q11 JEE Main 2022 · 24 Jun · Shift 2

When 200 mL of 0.2 M acetic acid is shaken with 0.6 g of wood charcoal, the final concentration of acetic acid after adsorption is 0.1 M. The mass of acetic acid adsorbed per gram of carbon is _____ g.

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/gsM0eLobFr

Q12 JEE Main 2021 · 26 Aug · Shift 1

Which one of the following is correct for the adsorption of a gas at a given temperature on a solid surface?

(A) $\Delta H > 0, \Delta S > 0$

(B) $\Delta H > 0, \Delta S < 0$

(C) $\Delta H < 0, \Delta S < 0$

(D) $\Delta H < 0, \Delta S > 0$

Step-by-step solution ▸ prepwiser.in/questions/vhx8i071F3

Q13 JEE Main 2021 · 27 Jul · Shift 2

Given below are two statement : one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : $SO_2(g)$ is absorbed to a large extent than $H_2(g)$ on activated charcoal.

Reason R : $SO_2(g)$ has a higher critical temperature than $H_2(g)$.

In the light of the above statements, choose the most appropriate answer from the options given below.

(A) Both A and R are correct but R is not the correct explanation of A.

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

(C) A is not correct but R is correct.

(D) A is correct but R is not correct.

Step-by-step solution ▸ prepwiser.in/questions/ukIp0zoYtd

Q14 JEE Main 2020 · 2 Sep · Shift 2

Amongst the following statements regarding adsorption, those that are valid are

(a) ΔH becomes less negative as adsorption proceeds
(b) On a given adsorbent, ammonia is adsorbed more than nitrogen gas
(c) On adsorption, the residual force acting along the surface of the adsorbent increases
(d) With increase in temperature, the equilibrium concentration of adsorbate increases

(A) (c) and (d)

(B) (a) and (b)

(C) (d) and (a)

(D) (b) and (c)

Step-by-step solution ▸ prepwiser.in/questions/awzOS_DEn6

Colloids and Emulsions · 2 PYQs

Q15 JEE Main 2022 · 25 Jul · Shift 2

For micelle formation, which of the following statements are correct?

A. Micelle formation is an exothermic process.

B. Micelle formation is an endothermic process.

C. The entropy change is positive.

D. The entropy change is negative.

(A) A and D only

(B) A and C only

(C) B and C only

(D) B and D only

Step-by-step solution ▸ prepwiser.in/questions/j_fD7uwEVm

Q16 JEE Main 2021 · 16 Mar · Shift 2

The INCORRECT statements below regarding colloidal solutions is :

(A) The flocculating power of Al^{3+} is more than that of Na^{+}.

(B) A colloidal solutions shows Brownian motion of colloidal particles.

(C) An ordinary filter paper can stop the flow of colloidal particles.

(D) A colloidal solutions shows colligative properties.

Step-by-step solution ▸ prepwiser.in/questions/U-KtQXyUkX

Catalysis · 4 PYQs

Q17 JEE Main 2023 · 11 Apr · Shift 2

The number of correct statements about modern adsorption theory of heterogeneous catalysis from the following is _____

A. The catalyst is diffused over the surface of reactants.

B. Reactants are adsorbed on the surface of the catalyst.

C. Occurrence of chemical reaction on the catalyst's surface through formation of an intermediate.

D. It is a combination of intermediate compound formation theory and the old adsorption theory.

E. It explains the action of the catalyst as well as those of catalytic promoters and poisons.

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/WeHBmXWOT0

Q18 JEE Main 2021 · 31 Aug · Shift 1

The major component/ingredient of Portland Cement is :

(A) tricalcium aluminate

(B) tricalcium silicate

(C) dicalcium aluminate

(D) dicalcium silicate

Step-by-step solution ▸ prepwiser.in/questions/nfUfGVaj3b

Q19 JEE Main 2021 · 18 Mar · Shift 1

Match List - I with List - II

List - I (process)	**List - II (catalyst)**
(a) Deacron's process	(i) ZSM-5
(b) Contact process	(ii) $CuCl_2$
(c) Cracking of hydrocarbons	(iii) Particles 'Ni'
(d) Hydrogenation of vegetable oils	(iv) V_2O_5

Choose the most appropriate answer from the options given below :

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

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

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

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

Step-by-step solution ▸ prepwiser.in/questions/SZcJFet8--

Q20 JEE Main 2020 · 8 Jan · Shift 2

For the following Assertion and Reason, the correct option is

Assertion : For hydrogenation reactions, the catalytic activity increases from Group 5 to Group 11 metals with maximum activity shown by Group 7-9 elements.

Reason : The reactants are most strongly adsorbed on group 7-9 elements.

(A) Both assertion and reason are true and the reason is the correct explanation for the assertion.

(B) The assertion is true, but the reason is false.

(C) Both assertion and reason are true but the reason is not the correct explanation for the assertion.

(D) Both assertion and reason are false.

Step-by-step solution ▸ prepwiser.in/questions/Zrqhed38yV

Adsorption Isotherms · 6 PYQs

Q21 JEE Main 2023 · 30 Jan · Shift 2

The graph of $\log \frac{x}{m}$ vs $\log p$ for an adsorption process is a straight line inclined at an angle of 45° with intercept equal to 0.6020. The mass of gas adsorbed per unit mass of adsorbent at the pressure of 0.4atm is _____ $\times 10^{-1}$ (Nearest integer).

Given: $\log 2 = 0.3010$

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/HemEnuhWjZ

Q22 JEE Main 2021 · 31 Aug · Shift 2

CH_4 is absorbed on 1g charcoal at 0°C following the Freundlich adsorpiton isotherm 10.0 mL of CH_4 is adsorbed at 100 mm of Hg, whereas 15.0 mL is adsorbed at 200 mm of Hg. The volume of CH_4 adsorbed at 300 mm of Hg is 10^x mL. The value of x is _____ $\times 10^{-2}$.

(Nearest integer) [Use $\log_{10}2 = 0.3010$, $\log_{10}3 = 0.4771$]

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/AWEJp6J5iA

Q23 JEE Main 2021 · 27 Jul · Shift 1

CO_2 gas adsorbs on charcoal following Freundlich adsorption isotherm. For a given amount of charcoal, the mass of CO_2 adsorbed becomes 64 times when the pressure of CO_2 is doubled. The value of n in the Freundlich isotherm equation is _____ $\times 10^{-2}$. (Round off to the Nearest Integer)

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/1XOQxTgcYf

Q24 JEE Main 2021 · 25 Feb · Shift 1

In Freundlich adsorption isotherm at moderate pressure, the extent of adsorption $\left(\frac{x}{m}\right)$ is directly proportional to P^x. The value of x is :

(A) ∞

(B) zero

(C) 1

(D) $\frac{1}{n}$

Step-by-step solution ▸ prepwiser.in/questions/EYVFjV1rEn

Q25 JEE Main 2020 · 6 Sep · Shift 2

For Freundlich adsorption isotherm, a plot of log (x/m) (y-axis) and log p (x-axis) gives a straight line. The intercept and slope for the line is 0.4771 and 2, respectively. The mass of gas, adsorbed per gram of adsorbent if the initial pressure is 0.04 atm, is _____ $\times 10^{-4}$ g.
(log 3 = 0.4771)

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/T269RwS5Ei

Q26 JEE Main 2020 · 2 Sep · Shift 1

The mass of gas adsorbed, x, per unit mass of adsorbate, m, was measured at various pressures, p. A graph between $\log \frac{x}{m}$ and log p gives a straight line with slope equal to 2 and the intercept equal to 0.4771. The value of $\frac{x}{m}$ at a pressure of 4 atm is :
(Given log 3 = 0.4771)

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/AiSCsf9KW2

Colloids · 21 PYQs

Q27 JEE Main 2023 · 13 Apr · Shift 2

Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A : The diameter of colloidal particles in solution should not be much smaller than wavelength of light to show Tyndall effect.
Reason R : The light scatters in all directions when the size of particles is large enough.
In the light of the above statements, choose the correct answer from the options given below:

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

(B) A is true but R is false

(C) Both A and R are correct but R is NOT the correct explanation of A

(D) A is false but R is true

Step-by-step solution ▸ prepwiser.in/questions/UTiFKQxxeM

Q28 JEE Main 2023 · 13 Apr · Shift 1

What happens when a lyophilic sol is added to a lyophobic sol?

(A) Film of lyophobic sol is formed over lyophilic sol.

(B) Lyophilic sol is dispersed in lyophobic sol.

(C) Film of lyophilic sol is formed over lyophobic sol.

(D) Lyophobic sol is coagulated

Step-by-step solution ▸ prepwiser.in/questions/jJon4sh8eb

Q29 JEE Main 2023 · 6 Apr · Shift 2

The number of colloidal systems from the following, which will have 'liquid' as the dispersion medium, is _____.

Gem stones, paints, smoke, cheese, milk, hair cream, insecticide sprays, froth, soap lather

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/TkeoUy6_ua

Q30 JEE Main 2023 · 24 Jan · Shift 1

Statement I : For colloidal particles, the values of colligative properties are of small order as compared to values shown by true solutions at same concentration.

Statement II : For colloidal particles, the potential difference between the fixed layer and the diffused layer of same charges is called the electrokinetic potential or zeta potential.

In the light of the above statements, choose the correct answer from the options given below

(A) Both Statement I and Statement II are false

(B) Statement I is true and Statement II is false

(C) Both Statement I and Statement II are true

(D) Statement I is false but Statement II is true

Step-by-step solution ▸ prepwiser.in/questions/P9ll3iBLjj

Q31 JEE Main 2022 · 29 Jul · Shift 1

$100\mathrm{mL}$ of $5\%\ (\mathrm{w/v})$ solution of NaCl in water was prepared in $250\mathrm{mL}$ beaker. Albumin from the egg was poured into NaCl solution and stirred well. This resulted in a/an :

(A) Lyophilic sol

(B) Lyophobic sol

(C) Emulsion

(D) Precipitate

Step-by-step solution ▸ prepwiser.in/questions/CIwZ62PxUG

Q32 JEE Main 2022 · 27 Jul · Shift 2

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) : Dissolved substances can be removed from a colloidal solution by diffusion through a parchment paper.

Reason (R) : Particles in a true solution cannot pass through parchment paper but the colloidal particles can pass through the parchment paper.

In the light of the above statements, choose the correct answer from the options given below :

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

(B) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(C) (A) is correct but (R) is not correct

(D) (A) is not correct but (R) is correct

Step-by-step solution ▸ prepwiser.in/questions/AdahPB7DWq

Q33 JEE Main 2022 · 26 Jul · Shift 2

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : Finest gold is red in colour, as the size of the particles increases, it appears purple then blue and finally gold.

Reason R : The colour of the colloidal solution depends on the wavelength of light scattered by the dispersed particles.

In the light of the above statements, choose the most appropriate answer from the options given below.

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

(B) Both A and R are true but R is NOT the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

Step-by-step solution ▸ prepwiser.in/questions/Ku1gy9eiqJ

Q34 JEE Main 2022 · 28 Jun · Shift 1

The Zeta potential is related to which property of colloids?

(A) Colour

(B) Tyndall effect

(C) Charge on the surface of colloidal particles

(D) Brownian movement

Step-by-step solution ▸ prepwiser.in/questions/l0p3JD-_ps

Q35 JEE Main 2022 · 25 Jun · Shift 1

Incorrect statement for Tyndall effect is :

(A) The refractive indices of the dispersed phase and the dispersion medium differ greatly in magnitude.

(B) The diameter of the dispersed particles is much smaller than the wavelength of the light used.

(C) During projection of movies in the cinemas hall, Tyndall effect is noticed.

(D) It is used to distinguish a true solution from a colloidal solution.

Step-by-step solution ▸ prepwiser.in/questions/KS3EnTNW7b

Q36 JEE Main 2021 · 27 Aug · Shift 2

Lyophilic sols are more stable than lyophobic sols because :

(A) there is a strong electrostatic repulsion between the negatively charged colloidal particles.

(B) the colloidal particles have positive charge.

(C) the colloidal particles have no charge.

(D) the colloidal particles are solvated.

Step-by-step solution ▸ prepwiser.in/questions/ug4ygipZuM

Q37 JEE Main 2021 · 27 Aug · Shift 1

Tyndall effect is more effectively shown by :

(A) true solution

(B) lyophilic colloid

(C) lyophobic colloid

(D) suspension

Step-by-step solution ▸ prepwiser.in/questions/v62On7f-3a

Q38 JEE Main 2021 · 25 Jul · Shift 2

Match List I with List II :

List-I Example of colloids	List - II Classification
(a) Cheese	(i) dispersion of liquid in liquid
(b) Pumice stone	(ii) dispersion of liquid in gas
(c) Hair cream	(iii) dispersion of gas in solid
(d) Cloud	(iv) dispersion of liquid in solid

Choose the most appropriate answer from the options given below

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

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

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

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

Step-by-step solution ▸ prepwiser.in/questions/p3JLJBgPwE

Q39 JEE Main 2021 · 22 Jul · Shift 2

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

(A) AgI / I^-

(B) AgI / Ag^+

(C) KI / NO_3^-

(D) $AgNO_3$ / NO_3^-

Step-by-step solution ▸ prepwiser.in/questions/d-rHqpeE6u

Q40 JEE Main 2021 · 20 Jul · 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 :

(A) (A) and (E) only

(B) (C) and (D) only

(C) (A) and (D) only

(D) (B) and (E) only

Step-by-step solution ▸ prepwiser.in/questions/Wa2qZJ16ek

Q41 JEE Main 2021 · 18 Mar · Shift 2

The charges on the colloidal CdS sol and TiO_2 sol are, respectively :

(A) positive and positive
(B) positive and negative
(C) negative and negative
(D) negative and positive

Step-by-step solution ▸ prepwiser.in/questions/_-UpBb8tQ6

Q42 JEE Main 2021 · 17 Mar · Shift 1

A colloidal system consisting of a gas dispersed in a solid is called a/an :

(A) foam
(B) aerosol
(C) solid sol
(D) gel

Step-by-step solution ▸ prepwiser.in/questions/nOBxklMUdL

Q43 JEE Main 2021 · 26 Feb · Shift 2

The nature of charge on resulting colloidal particles when $FeCl_3$ is added to excess of hot water is :

(A) neutral
(B) sometimes positive and sometimes negative
(C) positive
(D) negative

Step-by-step solution ▸ prepwiser.in/questions/G8YMqZcFY_

Q44 JEE Main 2021 · 25 Feb · Shift 2

Which one of the following statements is FALSE for hydrophilic sols?

(A) They do not require electrolytes for stability.
(B) The sols cannot be easily coagulated.
(C) These sols are reversible in nature.
(D) Their viscosity is of the order of that of H_2O.

Step-by-step solution ▸ prepwiser.in/questions/AwPwJ3lvJW

Q45 JEE Main 2020 · 4 Sep · Shift 2

A sample of red ink (a colloidal suspension) is prepared by mixing eosin dye, egg white, HCHO and water. The component which ensures stability of the ink sample is :

(A) HCHO
(B) Water
(C) Eosin dye
(D) Egg white

Step-by-step solution ▸ prepwiser.in/questions/i-LyooHU8Y

Q46 JEE Main 2020 · 3 Sep · Shift 1

Tyndall effect is observed when:

(A) The diameter of dispersed particles is similar to the wavelenght of light used.
(B) The diameter of dispersed particles is much smaller than the wavelength of light used.
(C) The diameter of dispersed particles is much larger than the wavelength of light used.
(D) The refractive index of dispersed phase is greater than that of the dispersion medium.

Step-by-step solution ▸ prepwiser.in/questions/rMZmc5XNgC

Q47 JEE Main 2020 · 2 Sep · Shift 1

Which of the following is used for the preparation of colloids?

(A) Van Arkel Method

(B) Bredig's Arc Method

(C) Mond Process

(D) Ostwald Process

Step-by-step solution ▸ prepwiser.in/questions/-Y2waM09X7

Coagulation · 11 PYQs

Q48 JEE Main 2024 · 5 Apr · Shift 2

Coagulation of egg, on heating is because of :

(A) Denaturation of protein occurs

(B) Biological property of protein remains unchanged

(C) Breaking of the peptide linkage in the primary structure of protein occurs

(D) The secondary structure of protein remains unchanged

Step-by-step solution ▸ prepwiser.in/questions/JCGN350VkD

Q49 JEE Main 2023 · 15 Apr · Shift 1

20mL of $0.5\text{M}\,\text{NaCl}$ is required to coagulate 200mL of As_2S_3 solution in 2 hours. The coagulating value of NaCl is _____ .

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/jCIuYk1K39

Q50 JEE Main 2023 · 10 Apr · Shift 2

Ferric chloride is applied to stop bleeding because -

(A) FeCl_3 reacts with the constituents of blood which is a positively charged sol.

(B) Blood absorbs FeCl_3 and forms a complex.

(C) Cl^- ions cause coagulation of blood.

(D) Fe^{3+} ions coagulate blood which is a negatively charged sol.

Step-by-step solution ▸ prepwiser.in/questions/-WuqXhV-oZ

Q51 JEE Main 2023 · 8 Apr · Shift 2

Coagulating value of the electrolytes AlCl_3 and NaCl for As_2S_3 are 0.09 and 50.04 respectively. The coagulating power of AlCl_3 is x times the coagulating power of NaCl. The value of $\underline{x}$ is _____.

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/TuYCVsLRbI

Q52 JEE Main 2023 · 29 Jan · Shift 1

Which of the following salt solutions would coagulate the colloid solution formed when $\mathrm{FeCl_3}$ is added to NaOH solution, at the fastest rate?

(A) 10 mL of 0.15 mol dm^{-3} $CaCl_2$

(B) 10 mL of 0.2 mol dm^{-3} $AlCl_3$

(C) 10 mL of 0.1 mol dm^{-3} Na_2SO_4

(D) 10 mL of 0.1 mol dm^{-3} $Ca_3(PO_4)_2$

Step-by-step solution ▸ prepwiser.in/questions/OBd7kBgO_1

Q53 JEE Main 2022 · 29 Jun · Shift 2

A 42.12% (w/v) solution of NaCl causes precipitation of a certain sol in 10 hours. The coagulating value of NaCl for the sol in 2 hours is :

[Given : Molar mass : Na = 23.0 g mol^{-1} ; Cl = 35.5 g mol^{-1}]

(A) 36 m mol L^{-1}

(B) 36 mol L^{-1}

(C) 1440 mol L^{-1}

(D) 1440 m mol L^{-1}

Step-by-step solution ▸ prepwiser.in/questions/28DT8R-HL1

Q54 JEE Main 2021 · 20 Jul · Shift 2

100 ml 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)

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/BYI3hmkFdC

Q55 JEE Main 2021 · 17 Mar · Shift 2

For the coagulation of a negative sol, the species below, that has the highest flocculating power is :

(A) Na^+

(B) Ba^{2+}

(C) PO_4^{3-}

(D) SO_4^{2-}

Step-by-step solution ▸ prepwiser.in/questions/jiONXxsB9i

Q56 JEE Main 2021 · 24 Feb · Shift 2

Most suitable salt which can be used for efficient clotting of blood will be :

(A) $Mg(HCO_3)_2$

(B) $NaHCO_3$

(C) $FeCl_3$

(D) $FeSO_4$

Step-by-step solution ▸ prepwiser.in/questions/p1KWrdRW_k

Q57 JEE Main 2020 · 8 Jan · Shift 1

As per Hardy-Schulze formulation, the flocculation values of the following for ferric hydroxide sol are in the order :

(A) $AlCl_3 > K_3[Fe(CN)_6] > K_2CrO_4 > KBr = KNO_3$

(B) $K_3[Fe(CN)_6] < K_2CrO_4 < KBr = KNO_3 = AlCl_3$

(C) $K_3[Fe(CN)_6] < K_2CrO_4 < AlCl_3 < KBr < KNO_3$

(D) $K_3[Fe(CN)_6] > AlCl_3 > K_2CrO_4 > KBr > KNO_3$

Step-by-step solution ▸ prepwiser.in/questions/Jn7yR6fK_n

Q58 JEE Main 2020 · 7 Jan · Shift 2

The flocculation value of HCl for arsenic sulphide sol.
is 30 m mol L^{-1} If H_2SO_4 is used for the flocculatiopn of arsenic sulphide, the amount in grams, of H_2SO_4 in 250 ml required for the above purposed is _____.
(molecular mass of H_2SO_4 = 98 g/mol)

Numerical answer — enter the value.

Step-by-step solution ▸ prepwiser.in/questions/JTmvs958A_

Emulsions and Gels · 1 PYQs

Q59 JEE Main 2022 · 24 Jun · Shift 1

Given below are two statements :
Statement I : Emulsions of oil in water are unstable and sometimes they separate into two layers on standing.
Statement II : For stabilisation of an emulsion, excess of electrolyte is added.
In the light of the above statements, choose the most appropriate answer from the options given below :

(A) Both Statement I and Statement II are correct.

(B) Both Statement I and Statement II are incorrect.

(C) Statement I is correct but Statement II is incorrect.

(D) Statement I is incorrect but Statement II is correct.

Step-by-step solution ▸ prepwiser.in/questions/T18o0L5Nh5

Answer key — Surface Chemistry

Numbers match the question numbers above. For full working, open the solution link under each question.

1 **D**	2 **A**	3 **A**	4 **D**	5 **2**	6 **D**	7 **A**	8 **2**
9 **C**	10 **13125**	11 **2**	12 **C**	13 **B**	14 **B**	15 **C**	16 **C**
17 **3**	18 **B**	19 **A**	20 **B**	21 **16**	22 **128**	23 **17**	24 **D**
25 **48**	26 **48**	27 **A**	28 **C**	29 **5**	30 **B**	31 **A**	32 **C**
33 **A**	34 **C**	35 **B**	36 **D**	37 **C**	38 **D**	39 **A**	40 **A**
41 **D**	42 **C**	43 **C**	44 **D**	45 **D**	46 **A**	47 **B**	48 **A**
49 **50**	50 **D**	51 **556**	52 **B**	53 **D**	54 **1**	55 **B**	56 **C**
57 **B**	58 **0**	59 **C**					