

X

NPTEL

reviewer4@nptel.iitm.ac.in ▼

Courses » Molecules in Motion

Announcements

Course

Ask a Question

Progress

Mentor

FAQ

Unit 7 - Week 6

Course outline

How to access the portal

Week 1 :

Week 2 :

Week 3 :

Week 4 :

Week 5

Week 6

- Lecture 26 :
Molecular motion in Liquids (Contd.)
- Lecture 27 :
Molecular motion in Liquids (Contd.)
- Lecture 28 :
Molecular motion in Liquids (Contd.)
- Lecture 29 :
Molecular motion in Liquids (Contd.)
- Lecture 30 :
Molecular motion in Liquids (Contd.)
- Feedback For Week 6
- Quiz : Week 6
Assignment 6 final
- Lecture Material

Week 7

Week 8

Download Videos

Assignment Solution

Interactive Session with Students

Week 6 Assignment 6 final

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2018-09-26, 23:59 IST.

1) 1 point
What is the ionic strength and mean ionic activity coefficient of 1.00 mmol.kg⁻¹ CaCl₂ at 2

- a) 1×10^{-3} and 0.05
- b) 3×10^{-3} and 0.88
- c) 3×10^{-2} and 0.55
- d) 2×10^{-3} and 0.88

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

2) 1 point

The Kohlrausch's law of Weak Electrolytes CANNOT be applied to find which of the following?

- a) To calculate the molar conductance at infinite dilution of acetic acid
- b) To calculate the degree of dissociation of ammonium hydroxide
- c) To calculate the dissociation constant of hydrocyanic acid
- d) To calculate the molar conductance at infinite dilution of sodium hydroxide

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

d)

3) 1 point

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -

A project of



In association with



Funded by

Government of India
Ministry of Human Resource Development

Powered by



The ionic strength of salt M_2X_3 dissolved in water which is understood to be $M_2^{3+}X_3^{2-}$ of molality m is one of the following, the m^0 is introduced for the dimensionless ionic strength.

- a) $9 m/m^0$
- b) $12m/m^0$
- c) $6m/m^0$
- d) $15m/m^0$

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

d)

4)

1 point

Compute the degree of dissociation and percent dissociation of acetic acid in its 0.1 M solution. Given: $K_a = 1.8 \times 10^{-5}$

- a) 9.01×10^{-5} ; 90.1 %
- b) 0.134; 1.34 %
- c) 1.34; 13.4 %
- d) 9.01×10^{-3} ; 9.01 %

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

5)

1 point

Which of the following statements is INCORRECT?

- a) Ions of small ionic radii have large hydrodynamic radii because they drag solvent molecules through the solution as they migrate.
- b) The size of the hydrated ion increases down the group and hence, the ionic mobility decreases down the group.
- c) Metal ions are heavily hydrated in aqueous medium because the ion – dipole coulombic interactions between the ionic charge and the dipole on the water molecule extend beyond the primary hydration sphere.
- d) The enthalpy of hydration increases as z^2/r , therefore the enthalpy of hydration decreases down the group.

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

6)

1 point

Which is the correct expression of κ (specific conductivity) of a strong electrolyte with ν number of ions in the chemical formula, having a molar concentration of c , moving in the solution medium with speed of s passing through the window of area, A , in the time interval, Δt ?

a) $\kappa = svcN_A$

b) $\kappa = zuF$

c) $\kappa = svc$

d) $\kappa = zuvcF$

 a) b) c) d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

d)

7)

1 point

The flux of ions (of one kind having ν number of ions in the chemical formula) of a strong electrolyte with molar concentration, c mol/l, passing through the window of area, A , with speed, s , in the time interval, Δt , can be given as:

a) $J(\text{ions}) = svcN_A$

b) $J(\text{ions}) = s\Delta tA \times \nu cN_A$

c) $J(\text{ions}) = svc$

d) $J(\text{ions}) = \frac{s\Delta tA \times \nu c}{A\Delta t}$

 a) b) c) d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a)

8)

1 point

Why do H^+ ions show exceptionally high ionic mobility (and hence high conductivity) compared to other monovalent cations in aqueous medium?

a) Due to smaller ionic radius of the H^+ ionsb) Due to lower hydration of the H^+ ionsc) Because the mobility of H^+ ions is equivalent to the mechanism of proton transfer from the first to the last oxygen atom of the chain of hydrogen bonded water moleculesd) Due to higher hydration of the H^+ ions a) b) c) d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

c)

9)

1 point

Calculate the molar ionic conductivity of acetate ions in aqueous solution at 25 °C when its mobility at the given temperature is $4.24 \times 10^{-8} \text{ m}^2 \text{ s}^{-1} \text{ V}^{-1}$.

- a) $4.09 \text{ Sm}^2 \text{ mol}^{-1}$
- b) $40.9 \text{ Sm}^2 \text{ mol}^{-1}$
- c) $0.409 \text{ Sm}^2 \text{ mol}^{-1}$
- d) $409 \text{ Sm}^2 \text{ mol}^{-1}$

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a)

10)

1 point

What is the drift speed of the Rb^+ ion in aqueous solution at 25 °C when the potential difference between two electrodes placed set 8.00 mm in the solution is 35.0 V? [Given: mobility of Rb^+ ions in water at 25 °C = $7.92 \times 10^{-8} \text{ m}^2 \text{ s}^{-1} \text{ V}^{-1}$]

- a) $4.81 \times 10^{-7} \text{ ms}^{-1}$
- b) $4.81 \times 10^5 \text{ ms}^{-1}$
- c) $4.81 \times 10^{-5} \text{ ms}^{-1}$
- d) $48.1 \times 10^{-5} \text{ ms}^{-1}$

- a)
- b)
- c)
- d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

c)

Previous Page

End