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Courses » Molecules in Motion

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Unit 8 - Week 7

Course outline

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Molecular motion in Liquids (Contd.)

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● lecture 33 :
Molecular motion in Liquids (Contd.)

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Molecular

Week 7 Assignment 7

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

Which of the statement is correct?

- a) Activity coefficient is directly proportional to the ionic strength
- b) Activity coefficient is inversely promotional to the ionic strength
- c) Activity coefficient is directly proportional to the square root of the ionic strength
- d) Logarithm of activity coefficient is directly proportional to the square root of ionic strength

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

d)

2) 1 point

What do the parameters A and B signify in the final Debye-Hückel-Onsager Equation for the molar conductivity (A_m) of any uni-univalent electrolyte, where, c is the concentration in mol/L?

$$A_m = A_m^0 - [A + B A_m^0] \sqrt{c}$$

- a) A , accounts for the asymmetry effect; B , for the electrophoretic effect
- b) A , accounts for the electrophoretic effect; B , for the asymmetry effect
- c) Both the parameter, A and B , accounts for the electrophoretic effect
- d) Both the parameter, A and B , accounts for the asymmetry effect

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No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

3)

Asymmetric effect is due to the presence of

- a) Magnetic field,
- b) Electric field
- c) Conc. difference
- d) None of these

1 point

a)

b)

c)

d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

4)

For high dielectric substances, effect of ionic atmosphere will be

- a) Higher
- b) Lower
- c) Remains same
- d) None of these

1 point

a)

b)

c)

d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

5)

In Wien effect ions move so fast that it cannot form ionic atmosphere. This effect is observed when the order of the electric field (E) is:

- a) $E < 10^{-7} \text{V/m}$
- b) $E > 10^7 \text{V/m}$
- c) $E \leq 10^{-5} \text{V/m}$
- d) $E \geq 10^{-6} \text{V/m}$

1 point

a)

b)

c)

d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

6)

1 point

The dielectric constants (ϵ_r) of water (H_2O , $\epsilon_r = 80$), and that of alcohol ($\epsilon_r = 24$), the energy of interaction for alcohol will be:

- a) 2 times greater
- b) 3.3 times greater
- c) 3.3 times lower
- d) 2 times lower

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

7)

1 point

The Λ_m° for weak electrolyte can be obtained from

- a) Debye-Huckel-Onsagar equation
- b) Ostwald's dilution law
- c) By the extrapolation of Λ vs $c^{1/2}$ curves
- d) None of these

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

8)

1 point

Time dependent spread of solute inhomogeneity in a solvent medium can be best explained through:

- a) Fick's First Law of Diffusion
- b) Walden's Rule
- c) Fick's Second Law of Diffusion
- d) Kohlrausch's Law

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

c)

9)

1 point

Which of the following statements is NOT in agreement with the Walden's Rule?

- a) The product of the solvent viscosity, η_0 , and limiting molar conductivity, Λ_m° , is constant for same ions in different solvents
- b) Walden's rule is an empirical observation arising from the combination of Nernst-Einstein and Stokes-Einstein Relations
- c) The accuracy of the Walden's rule is more for small ions
- d) The accuracy of the Walden's rule is lost due to the solvation of the ions

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

c)

10)

1 point

The Diffusion Equation from Fick's Second Law shows that the rate of change of concentration of solute molecules in a solvent medium is proportional to the curvature of the plot of solute concentration, c , with respect to distance, x , in the solvent region. If the curvature is zero then it implies that:

- a) The concentration of the solute changes rapidly with time
- b) The concentration of the solute is invariant with time
- c) The distribution of solute molecules is highly wrinkled
- d) The concentration of the solute decreases linearly with time

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

No, the answer is incorrect.

Score: 0

Accepted Answers:

b)

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