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) Which of the statement is correct?
   a) Activity coefficient is directly proportional to the ionic strength
   b) Activity coefficient is inversely proportional 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

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   d)

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

   $\Lambda_a = \Lambda_a^e - \left[ A + B A_a^e \right] \sqrt{c}$

   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

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 
   d)
3) **Asymmetric effect is due to the presence of**
   a) Magnetic field,  
   b) Electric field  
   c) Conc. difference  
   d) None of these

   - 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

   - 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 V/m  
   b) E>10^-7 V/m  
   c) E≤10^-8 V/m  
   d) E≥10^-6 V/m

   - No, the answer is incorrect.
6) The dielectric constants ($\varepsilon$) of water (H$_2$O, $\varepsilon = 80$), and that of alcohol ($\varepsilon = 24$), 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

No, the answer is incorrect.

Score: 0
Accepted Answers: b)

7) The $\lambda_n^0$ for weak electrolyte can be obtained from
   a) Debye-Hückel-Onsager equation
   b) Ostwald's dilution law
   c) By the extrapolation of $A$ vs $c$ $1/2$ curves
   d) None of these

No, the answer is incorrect.

Score: 0
Accepted Answers: b)

8) 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

No, the answer is incorrect.
9) Which of the following statements is NOT in agreement with the Walden's Rule?
   a) The product of the solvent viscosity, $\eta_s$, and limiting molar conductivity, $\Lambda_m^\infty$, 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

   No, the answer is incorrect.

10) 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

   No, the answer is incorrect.