



EASTERN UNIVERSITY, SRI LANKA

THIRD EXAMINATION IN SCIENCE –SPECIAL REPEAT

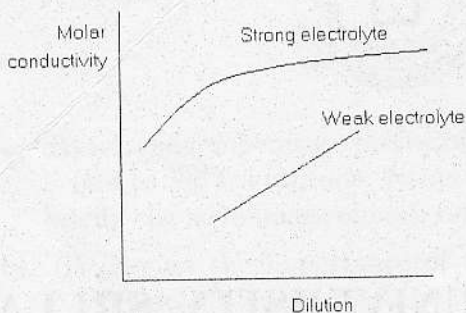
FIRST SEMESTER 2004-2005 (DECEMBER 2006)

CH 303 ELECTROCHEMISTRY

Time allowed: ONE Hour

Candidate must NOT start writing their answers until told to do so

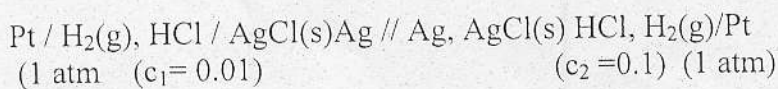
1. (a) Explain the shape of the following (variation of molar conductivity (π) vs dilution) curve for strong and a weak electrolyte.



- (b) How can you determine molar conductivity at infinite dilution (Λ^∞) of CH_3COOH by using known values of Λ^∞ of strong electrolyte?
(molar conductivity of NaCl , HCl and CH_3COONa are 126.4×10^{-4} , 426.1×10^{-4} and $91.0 \times 10^{-4} \Omega^{-1}\text{m}^2\text{mol}^{-1}$ respectively)
- (c) Conductivity of a saturated aqueous solution of silver chloride is $1.980 \times 10^{-4} \text{ Sm}^{-1}$. The conductivity of the water used to prepare the solution is $1.78 \times 10^{-5} \text{ Sm}^{-1}$, calculate
(i) the solubility
(ii) the solubility product of silver chloride.
 λ^∞ for Ag^+ and Cl^- are $6.35 \times 10^{-3} \text{ Sm}^2\text{mol}^{-1}$ and $7.55 \times 10^{-3} \text{ Sm}^2\text{mol}^{-1}$ respectively. All are at 25°C .

2. (a) Calculate the molar conductivity of sodium sulphate solution at infinite dilution.
($\Lambda^\infty_{\text{Na}^+} = 0.502 \times 10^{-2} \Omega^{-1}\text{m}^2\text{mol}^{-1}$, $\Lambda^\infty_{1/2 \text{SO}_4^{2-}} = 0.800 \times 10^{-2} \Omega^{-1}\text{m}^2\text{mol}^{-1}$)

- (b) Calculate the potential difference between hydrogen electrodes in the following cell at 298K .
The activity coefficients of 0.01 m and 0.1 m HCl solutions in the cell are 0.95 and 0.85 respectively.



End.