EASTERN UNIVERSITY, SRI LANKA
SECOND EXAMINATION IN SCIENCE
FIRST SEMESTER- 2003/2004 (Proper)
CH 202 ANALYTICAL CHEMISTRY

Time: 01 Hour

Answer all Questions.

01) a)(i) Explain the 'Nernst Distribution Law'.

(ii) V_{aq} ml of aqueous solution contains X_0 moles of solute A and is extracted with V_{org} ml of organic solvent. At equilibrium X_1 moles of A will remain in the aqueous solution then,
show that

$$[Aaq]_n = \left[\frac{V_{aq}}{(K V_{org} + V_{aq})} \right]^n [Aaq]_0$$

Where, $[Aaq]_0$ – Initial concentration of solute A in aqueous solution.
$[Aaq]_n$ – The concentration of solute A in aqueous layer after n number of extraction.
K – Partition cofficient

(iii) The distribution coefficient of iodine between CCl_4 and water is 10. A 50.0 ml of 0.125 M aqueous iodine solution was extracted with 20.0 ml of CCl_4. How many times should it be extracted to reduce the concentration of iodine in aqueous solution to 0.005 M?

b) Describe, giving examples, the difference between **normal phase** and **reversed phase** LLC techniques.

2) a) (i) Discuss the basic principles involved in the colorimetric method.

(ii) Describe a method to determine the concentration of Fe^{3+} ions in an unknown solution using colorimetry.

b) A 0.005 M solution of $[Cu(NH_3)]^{2+}$ transmits 70% of incident radiation. If the path length is 1 cm, calculate the following
i) Absorbance
ii) The molar extinction coefficient
iii) Percentage of transmittance for 0.001 M $[Cu(NH_3)]^{2+}$ solution.

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