



EASTERN UNIVERSITY, SRILANKA
SECOND EXAMINATION IN SCIENCE (FIRST SEMESTER) 2001/2002
CH202 ANALYTICAL CHEMISTRY

Time : 01 Hour

Answer all questions.

1.(a) (i) What is meant by 'solvent extraction'.

Vml of an aqueous solution which contain a_0 mol of a solute A, is brought into contact with Vml of immisible organic solvent. At equilibrium a_1 mol of solute A remains in the aqueous layer.

show that

$$a_1 = \frac{a_0 V_{aq}}{V_{aq} + V_{org} K}$$

where K - Partition coefficient of the solute A between organic layer and aqueous layer.

V_{aq} - volume of the aqueous layer

V_{org} - volume of the organic layer

Hence give the equation for the number of moles of solute A remaining after n extractions.

(ii) Explain, with suitable examples, how the ionic species can be extracted.

(b) (i) What is an ion exchanger?

Briefly explain the process of ion exchange chromatography.

(ii) Give the chemical reaction that takes place when hard water is treated with a cation exchange resin.

2.(a) (i) Describe briefly how would you develop a Paper chromatogram.

(ii) Draw a fully labelled diagram of photoelectric colorimeter.

(b) (i) Briefly describe the principles involved in the following techniques.

(A) Paper chromatography.

(B) Thin layer chromatography.

(ii) Discuss the principles behind Column chromatography.

Describe how you would use column chromatography for qualitative and quantitative determinations.

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