

Eastern University, Sri Lanka

Second Year First Semester Examination in Science

2008/2009 (April/May 2010)

External Degree (2004/2005)

EXTCH 202 Analytical Chemistry

(Proper & Repeat)

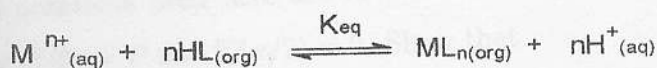
Answer all questions

Time Allowed: ONE HOUR

[1] (a) Draw a labeled diagram of an ion exchange resin column and explain how does it function in the separation of ions in a sample. 30 marks

(b) What is meant by "solvent extraction".

Following is an equilibrium process of complex formation in the solvent-solvent extraction is given below



Derive the following expression to relate the pH of the medium with the distribution ratio D and

The equilibrium constant K_{eq} .

$$\log D = \log K_{eq} [HL_{(org)}]^n + n \text{ pH}$$

40 marks

(c) Explain the following terms

- (i) Nernst Distribution Law
- (ii) Elution curve
- (iii) Ion Exchange Capacity

30 marks

Cont..

[2]

- (a) Draw a fully labeled diagram to show the essential components of a colorimeter and explain briefly the functions of each component. 30 marks
- (b) List the similarities and the differences of colorimetry and atomic absorption spectrometry. 30 marks
- (c) State Beer-Lambert's law and explain all the terms involved in it

A solution containing 1.00 mg of iron (as the thiocyanate complex) in 100 ml was observed to transmit 70.0% of the incident light compared to an appropriate blank.

- (i) What is the absorbance of the solution at this wavelength?
- (ii) What fraction of light would be transmitted by a solution of Iron if it concentrated four times as concentrated?

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