

M. SC. (Analytical Chemistry) Sem-IV (Choice Based Credit & Grade System) : WINTER - 2018

SUBJECT : RECENT SEPARATION TECHNIQUES

Day : Tuesday
Date : 23/10/2018

W-2018-1000

Time : 03.00 PM TO 06.00 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Draw neat and labeled diagrams **WHEREVER** necessary.
 - 4) Use of non-programmable **CALCULATOR** is allowed.
 - 5) Answers to both the sections should be written in **SEPARATE** answer books.
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SECTION – I

Q.1 Attempt **ANY THREE** of the following: **[15]**

- a) Define solvent extraction. Discuss in detail the principle of solvent extraction with suitable example.
- b) What is chromatography? Explain in brief the experimental technique of column chromatography.
- c) Explain in brief fraction extracted E and percent extracted % E . Write the factors affecting % E .
- d) What is Hard water and soft water? Explain in brief softening of hard water by using Ion Exchange chromatography.
- e) Write the merits and demerits of solvent extraction technique.

Q.2 **A)** Attempt **ANY TWO** of the following: **[10]**

- a) What is TLC? Describe in brief the experimental technique of TLC.
- b) Write different solvent extraction techniques. Explain in brief Batch extraction technique.
- c) Discuss the principle of chromatography. Explain various types of chromatography.

B) Solve **ANY ONE** of the following: **[05]**

- a) In the solvent extraction experimental of Fe^+ ion, the % E observed was 59% when the volume of organic phase was 20ml and volume of aqueous phase was 30ml. Calculate D Value of the metal chelate.
- b) Calculate Elution constant (E), when length of the column was 20 cm, free column volume (V_{free}) was 10 ml and the peak elution volume (V_{max}) was 25 ml. (Given : Activity coefficient (A) of resin = 1.52)

P.T.O.

