BACHELOR OF SCIENCE (CBCS - 2016 COURSE)
T. Y. B Sc. Sem-VI :SUMMER- 2022
SUBJECT : CHEMISTRY : ANALYTICAL CHEMISTRY-II

Day : Saturday
Date : 9/7/2022

S-15053-2022

Time : 11:00 AM-02:00 PM
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Attempt **ANY TWO** of the following: **[12]**

a) What are different methods of separation in solvent extraction? Describe any one method of solvent extraction.

b) Write the principle of column chromatography. Describe it in detail with a neat diagram.

c) What is HPLC? Explain its principle and the technique of separation.

Q.2 Attempt **ANY TWO** of the following: **[12]**

a) Draw an optical diagram of a flame photometer. Discuss the various steps involved in it. Mention its advantages and disadvantages.

b) Sketch the schematic diagram of a gas chromatography and describe its different components.

c) Describe the match box model of chromatographic separation.

Q.3 Attempt **ANY TWO** of the following: **[12]**

a) In the separation of compound of gallium, indium and thallium by TLC, the spots were obtained at 10, 15 and 20 cm respectively from the base line with solvent front at 25 cm. An unknown compound has R_f value of 0.6. Does it fit in any of the above metals?

b) Two grams of solute are dissolved in 100 ml aqueous solution. Calculate the amount of solute remaining in aqueous phase after:

i) A single extraction with 80 ml of organic solvent with suitable reagent.

ii) A single extraction with 20 ml organic solvent.

iii) Four successive extractions with 20 ml of organic solvent. (Distribution ratio for the extraction is 5)

c) Calculate the distribution ratio (D) and percent extracted E when 40 ml of an aqueous solution of 0.2M, organic compound is shaken with 20 ml of ether. It is reported that 1.5 milimoles of the organic compound remained in the aqueous layer.

Q.4 Attempt **ANY THREE** of the following: **[12]**

a) Explain the terms: **i)** Distribution ratio **ii)** Distribution co-efficient.

b) What is TLC? Describe it with a neat diagram.

c) Explain with suitable diagram total consumption burner used in FES.

d) Write a note on classification of ion exchangers.

Q.5 Attempt **ANY FOUR** of the following: **[12]**

a) Explain the techniques of ion-exchange chromatography.

b) Write a note on flame ionization detector.

c) Discuss various application of HPLC.

d) Discuss the interferences in flame photometry. How they are eliminated?

e) Give applications of solvent extraction.

f) Define the following terms: **i)** Chromatography **ii)** R_F value **iii)** Multiple extraction **iv)** Percent extracted

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