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[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7599

J

Unique Paper Code : 42173923 / 32173923

Name of the Paper : Basic Analytical Chemistry

Name of the Course : B.Sc. (H) / Program : SEC

Semester : V

Duration : 2 Hours

Maximum Marks : 38

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **four** questions in all.

1. (a) Define sampling. Explain different methods of sampling.

(b) Differentiate between a cation exchange resin and an anion exchange resin with the help of examples.

(c) Comment on interdisciplinary nature of Analytical chemistry.

(4,4,1½)

P.T.O.

2. (a) Explain thin layer chromatography (TLC). How is it different from Column chromatography?
- (b) Calculate the molar absorptivity of 2×10^{-4} M solution having 0.5 Absorbance, when placed in a cell of 1 cm path length.
- (c) Discuss the criterion used for selecting an indicator for
- (i) Acid base titration
 - (ii) Complexometric titration
- Give an example of indicator used in each of these type of titrations. (4,1½,4)
3. (a) Write short notes on :
- (i) Composition of soil
 - (ii) Thin layer chromatography
- (b) Which electrode is used in measuring the pH of a water sample with pH meter? Explain its functioning.
- (c) During titration of Ca^{2+} solution with EDTA using EBT indicator and $\text{NH}_3\text{-NH}_4\text{Cl}$ buffer, a sharp end

- point was not being observed and hence there was no concordance in the data set. What could have gone wrong in the titration? (4,3,2½)
4. (a) Explain the terms 'classical analysis' and 'instrumental analysis'.
- (b) Comment on the correctness of the following statements and justify :
- (i) Metal – Indicator complex should have same stability as metal – EDTA complex for a sharp end point in a complexometric titration.
 - (ii) Paper chromatography is an adsorption chromatography.
- (c) Why are chelating ligands preferred over monodentate ligands in complexometric estimations of metal ions? (3,4,2½)
5. (a) Define the following terms :
- Stationary phase, Sensitivity, Protocol, Accuracy, Matrix

(b) Distinguish between determinate and indeterminate errors giving examples.

(c) Can NaCl-NaOH mixture be used as buffer in EDTA titrations? Why? (5,3,1½)

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