

1284

4

5. (a) What is precision? How is it expressed?
- (b) What is pure water? Discuss the various purification techniques?
- (c) Draw the layer structure of soil and discuss its various layers. (3,3,4)

(1000)

[This question paper contains 4 printed pages.]

~~30 NOV 2022~~
20 DEC 2022

Your Roll No.

Sr. No. of Question Paper : 1284

Unique Paper Code : 32173902/42173923

Name of the Paper : SEC- Basic Analytical Chemistry

Name of the Course : B.Sc. (Hons.) / B. Sc. (Prog)

Semester : III/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 any **four** questions in all.
3. Question 1 is compulsory.

1. Attempt **any four** :

- (a) Does precision always ensure accuracy? Explain.
- (b) What are the primary and secondary nutrients present in soil?

P.T.O.

1284

2

- (c) Differentiate between adsorption and partition chromatography.
- (d) What do you mean by hardness of water? How is it expressed?
- (e) Enlist different reasons for pollution of water bodies. (2×4)
2. (a) What are complexometric titrations? Discuss different types of EDTA titrations with suitable examples.
- (b) Explain the principle and procedure involved in ascending paper chromatography.
- (c) Do as directed :
- (i) Express in scientific notation: 555700
- (ii) Give the correct number of significant figures: 0.0050830
- (iii) Round off to three significant figures: 75.8437
- (iv) Express the result in correct number of significant figures: $344.88 \times 42.62 / 1110.524$. (3,3,4)

1284

3

3. (a) What do you understand by the pH of soil? Explain how it is measured?
- (b) Why water is first passed through cation-exchanger and then through anion-exchanger in the deionisation process.
- (c) In two separate determinations, the concentration of iron in a given sample was found to be (a) 20.19 ppm and (b) 19.20 ppm. Taking the accepted value as 20.00 ppm, calculate the absolute error and relative error as per cent and as parts per thousand in the two determinations. (3,3,4)
4. (a) Define R_f value. In a paper chromatographic separation, one of the amino acid components travelled a distance of 1.9 cm while the solvent travelled a distance of 5.1 cm. Calculate the R_f value. Give its units.
- (b) Give the full form of the following (Any Three) :
- (i) EBT (ii) TLC (iii) SHE (iv) BOD
- (c) What do you understand by the term 'dissolved oxygen (DO)'? Describe a method to determine DO in a water sample. (3,3,4)

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