Total No. of Printed pages- 4

### 1 SEM TDC CHM (NEP) SEC 123

#### 2023

(December)

CHEMISTRY

Paper: SEC123

### (Basic Analytical Chemistry)

# Full Marks: 60

## Pass Marks: 24

Time: 3 hours

The figures in the margin indicate full marks for the questions

- Q1. Choose the correct answer
  - a. Which horizon of a soil profile contains the highest amount of humus?

i. A-horizon ii. B-horizon iii. C- horizon iv. Bedrock

b. The property of a measuring instrument to give the output very close to the actual value is termed as

i. Sensitivity ii. Repeatability iii. Precision

- iv. Accuracy
- c. High levels of sucrose and total glucose reflect adulteration with

i. caramelized sugar	ii. 2-methylbutanal	iii. 3-methylbutanal
iv. Furan		

- d. Thin layer chromatography is
  i. Partition Chromatography ii. Electrical mobility of ionic species iii. Adsorption Chromatography iv. None of these
- e. Which of the following is used as a spraying reagent in paper chromatography?
  i. Conc. HCL ii. NaCl Solution iii. Ninhydrin solution iv. CuSO<sub>4</sub> solution
- f. Which of the following is a waterborne disease?i. Typhoid ii. Cholera iii. Diarrhoea iv. All of above
- Q 2: Answer any four of the following.

 $[2 \times 4 = 8]$ 

- a. Define the methods used in analytical chemistry with examples.
- b. Define the branches of analytical chemistry with examples.
- c. What is concept of sampling? What are important terms involved with this?
- d. Write down the differences between random and non- random sampling.
- e. Define accuracy and precision with examples.
- Q 3 Answer **any two** of the following [4x2 = 8]
  - a. What is soil pH? Why it is important? How can we change soil pH?
  - b. What is complexometric titration? What are the common indicators used for complexometric titration? Write basic principle of complexometric titration with EDTA.
  - c. How Calcium and magnesium ions present in soil sample can be determined by complexometric titration? Explain the principle and procedure.

[1x6 = 6]

Q 4. What are the techniques of food preservation?	[2]
Or	
How would you determine the detection of foreign resin in asafo	etida

- Q 5. Answer **any two** of the following questions briefly: [2x3=6]
  - a. Define food processing? What are the objectives of food processing.
  - b. What is adulteration? What are the detection techniques to determine of adulteration in coffee?
  - c. What are the adulterants present in i. Coriander powder ii. Hing iii. Chilli powder
  - d. Why should you not buy shining pulses from the market?
- Q 6. What do you mean by the term chromatography? [1]
- Q 7. What type of mixture is used to separate using Chromatographic technique? What force is involved in the Chromatography? [1+1=2]
- Q8. What is Ion exchange chromatography? Mention its difference with TLC? [1+1=2]
  - OR

How retardation factor is related to retention factor and retention time?

Q9. What are stationary phase and mobile phase in Chromatography? [2]

Q10. State stationary phase and mobile phase used in paper and thin layer chromatography? [2]

Q11. Why Chromatographic techniques are useful? State points wise. [1x3=3]

Q12. Write briefly from the following (any four)  $[2\frac{1}{2}x4 = 10]$ 

- i. Polarity in Chromatography
- ii. Thin layer Chromatography
- iii. Ion exchange capacity of cations and anions
- iv. Column Chromatography
- v. Paper chromatographic separation of mixture of ions
- vi. Principles of Chromatography
- vii. Analysis of deodorants and antiperspirants
- Q13. Answer **any four** of the following

[2x4=8]

- a) Write about the sources responsible for contaminating water.
- b) Write about the methods for purification of water.
- c) Prepare 250 ml 0.25 N oxalic acid solution.
- d) Prepare 100 ml 2N Hydrochloric acid solution.
- e) How pH, acidity and alkalinity effect human health
- f) Describe how will you assess the location for sample collection.
- g) Briefly describe the Winkler's method.