

U.G. 3rd Semester Examination - 2025**CHEMISTRY****[Skill Enhancement Course (SEC)]****Course Code : CHEM-SEC-3****(Basic Analytical Chemistry)****[NEP-2020]**

Full Marks : 35

Time : 1 $\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** questions: 1×5=5
- a) Write down the name of a metal indicator.
 - b) How to remove acidity from water sample?
 - c) Write an example of polydentate ligand.
 - d) What are the edible colours?
 - e) State basic difference between TLC and paper chromatography.
 - f) How can you calculate ion exchange capacity?
 - g) Write the name of a preservative.
 - h) What is biological oxygen demand (BOD)?

[Turn over]

2. Answer any **two** questions: $5 \times 2 = 10$

- a) State the role of ligand for the stability of a complex citing example with structure. What is a monodentate and bidentate Ligand? $3 + 2 = 5$
- b) Why colours are used in food? What are the edible colours? How they are differ from chemical colours? $2 + 1 + 2 = 5$
- c) What are the important factors to be considered for the choice of an adsorbent in chromatographic separation. State the principle of HPLC chromatography. $3 + 2 = 5$
- d) Why do we add buffer solution in complexometric titration? What is the role of EDTA in complexometric titration? What is the full name of Na_2EDTA ? $2 + 2 + 1 = 5$

3. Answer any **two** questions: $10 \times 2 = 20$

- a) What is the application of analytical chemistry and its interdisciplinary nature? Write down the procedure for soil sampling. What is chelation? Write down the procedure of estimate the calcium and magnesium by complexometric titration. $3 + 3 + 2 + 2 = 10$

- b) Write down one analysis method for food preservative. In what way you can identify adulterant in chilli powder? What is ion exchange chromatography? How you can determine ion exchange capacity of an anion? $3 + 3 + 2 + 2 = 10$
- c) Write down the major constituents of cosmetics. Write one analysis method of deodorants. In what way can determine of constituents like magnesium oxide, zinc oxide in talcum powder by complexometric titration? $3 + 3 + (2 + 2) = 10$
- d) Write spectrophotometric determination method of iron in vitamin tablet. Suggest one application of phenolphthalein in analytical chemistry. In what way you determine pH and alkalinity of water sample. $3 + 3 + (2 + 2) = 10$