

U.G. 3rd Semester Examination - 2024**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 two phenomenon of chromatography.
 - b) What is complexometric titration?
 - c) What is R_f value in chromatography?
 - d) What is Eutrophication?
 - e) Write down the activity of constituent of Talcum powder.
 - f) Mention the basic problems of soil analysis.
 - g) Write name of preservatives to protect food from fungus.
 - h) What is the full name of the Na_2EDTA ?

[Turn over]

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

- a) i) State the principle of Paper chromatography.
ii) What are the factors to be considered for the choice of an adsorbent in chromatographic separation?
iii) Why Thin layer chromatography is superior over paper chromatography?

$2+2+1=5$

- b) i) Why colours are used in food?
ii) What are the edible colours?
iii) How they are differ from chemical colours?

$2+1+2=5$

- c) What is BOD? What are the methods of purification of water in rural areas?

$3+2=5$

- d) What is the advantage of Calcon over EBT as metal indicator? In what form EDTA is available commercially?

$3+2=5$

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

- a) i) What are the roles of ligand for stability of a complex compound? What are the role of magnesium carbonate and ZnO in talcum powder? Write down the structure of Mg- EDTA. How can you determine Iron in Vitamin tablets by spectrophotometrically?

$2+3+2+3=10$

- b) i) State the principle of HPLC.
ii) Explain elute and chromatogram in chromatography.
iii) Give the example of one monodentate ligand and one bidentate Ligand.
iv) How will you determine metallic element in food industry?

- v) What types of adulterants are used in chilli and turmeric powder? $2+2+2+2+2=10$

- c) i) How can you separate Fe^{3+} and Al^{3+} by using paper chromatography?

- ii) What will happen if we add at first small amount of KCN solution and then add excess amount of KCN solution with AgNO_3 ? $5+5=10$

- d) i) How can you Calculate ion exchange capacity?

- ii) Why buffer solution is used for EDTA titration?

- iii) How the chromatographic separation is influenced?

- iv) Why R_f value is less than 1 in paper chromatography?

- v) What the role of solvent polarity in chromatographic separation?

$2+2+2+2+2=10$