

Seat No. : _____

JH-125

June-2022

M.Sc., Sem.-II

410 : Chemistry

(Analytical Chemistry)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :**
- (1) Section I : Answer any **three (3)** questions out of **eight (8)**.
 - (2) Section II : **All** questions are compulsory.
 - (3) Illustrate your answers with neat diagrams/figures wherever necessary.

Section – I

Answer any **three (3)** questions :

1. (A) Discuss sampling and sample preparation with general steps involved in chemical analysis. 7
(B) Explain the equilibrium processes involved in the solvent extraction of metal chelates. 7
2. (A) Discuss Craig's Counter Current distribution. 7
(B) Describe the process for accelerated and microwave-assisted extraction. 7
3. (A) Discuss working mechanism in ion exchange chromatography for the separation of cations and anions. 7
(B) State the principles of TLC & HPTLC and give their comparative assessment. 7
4. (A) Explain principle of chromatography and its classification based on mechanism of retention/interaction. 7
(B) Discuss the Van-Deemter equation in detail. 7
5. (A) Derive Lambert-Beer's law and explain the logarithmic relation between Transmittance and Concentration. 7
(B) Give a detailed note on Ringbom plot. 7

6. (A) Discuss the role of job's method of continuous variation in finding stoichiometry of a complex. 7
(B) Explain the concept of circular dichroism and optical rotator dispersion. 7
7. (A) Explain Jablonski diagram. 7
(B) Give the application of fluorescence and phosphorescence for quantitative measurements. 7
8. (A) Explain factors affecting on fluorescence and phosphorescence. 7
(B) Explain instrumentation and interference of fluorescence spectroscopy. 7

Section – II

9. Answer the following questions : (1 mark each) 8
- (1) Give the relation between % extraction and distribution ratio.
 - (2) What is the use of solvent extraction ?
 - (3) What is R_f value ?
 - (4) Give full name of HDES in counter current chromatography.
 - (5) Give any two applications of spectrophotometry.
 - (6) Which indicator is used in photometric titration ?
 - (7) In fluorescence the full name of ISC is _____.
 - (8) Which source has been used in fluorescence spectrophotometer ?
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