Sr. No. 754103

JANUARY 2023

M.Sc. (Environmental Sciences) 1stSemester

INSTRUMENTAL TECHNIQUES FOR ENVIRONMENTAL ANALYSIS (EVS-103B)

Time: 3 hrs. **Max. Marks:75**

Instructions:
1. *It is compulsory to answer all the questions (1.5mark each) of Part -A in short.*
2. *Answer any fourquestions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART -A

Q1 Write short notes on the following:

(a) Reagent blank and Matrix blank (1½)

(b) Limit of Quantification (LOQ) (1½)

(c) Jablonski Diagram (1½)

(d) Nephalometry (1½)

(e) Flame Ionization Detector (FID) (1½)

(f) Radial Development in Paper Chromatography (1½)

(g) Isocratic Elution (1½)

(h) Retention Factor (R_f) (1½)

(i) Annular Ring in Phase Contrast Microscopy (1½)

(j) Dichoric mirror (1½)

PART -B

Q2 (a) Define accuracy. How can the accuracy of an analytical procedure be defined? (5)

(b) Explain the sampling and storage procedure for liquid samples. (5)

(c) Give a detailed account of principle type errors in the analytical approach. (5)

Q3 (a) Describe different type of titrimetric techniques available for analytical applications. (8)

(b) Describe the working and applications of Atomic Absorption Spectrophotometer (AAS) in various identified sectors. (7)

Q4 (a) Describe the principle and interferences of flame photometry in various identified sectors. (7½)

(b) Give a detailed account of construction and working of X-Ray Diffraction (XRD). (7½)

Q5 (a) Elucidate the working principle and components Gas Chromatography (GC). (8)

(b) Describe the different types of HPLC columns. Briefly explain their significance also. (7)

Q6 (a) Define Ion-exchange chromatography. Explain the different types of ion-exchange resins. (10)

(b) Explain how the confocal microscopy is more significant than fluorescent microscopy. (5)

Q7 (a) Describe the principle and working of Scanning Electron Microscopy (SEM) with labelled diagram. (10)

(b) Differentiate between optical and electron microscopy. (5)

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