SF-687

Total No. of Pages : 03

Seat No.	

M.Sc. (Part-II) (Semester-III) (NEP 2.0)

Examination, December 2024

ANALYTICAL CHEMISTRY

E-ACH 304: Environmental Chemical Analysis and Control

Sub. Code : 97899

Day and Date: Thursday, 12-12-2024 **Total Marks: 80**

Time: 10.30 a.m. to 01.30 p.m.

Instructions:

1) **Question No. 1 is compulsory.**
2) **Attempt ANY TWO questions from EACH section.**
3) **Total FIVE questions are to be answered from the entire paper.**
4) **All questions carry equal marks.**
5) **Figures to the right indicate full marks.**
6) **Draw neat labelled diagrams wherever necessary.**

Q.1 Answer the following. **(16)**

1) Itai-itai disease is caused due to ..... poisoning.
2) What is the principle of amperometric titration?
3) Polarographic cells are not sensitive to ..... gas.
4) Malathion is the ..... pesticide.
5) In luminescence analysis of NO, it reacts with O_3 to give excited molecule .....
6) Odour of water sample can be tested by using .....
7) What are the sources of asbestos?
8) What is the principle of thermal precipitator?

9) What is PON and DON?

10) What is detection threshold of odour?

11) What is DDT? Give its IUPAC name.

12) Give any four techniques available for the removal of phenol.

13) Spectrophotometric estimation of CD (II) is carried out with ..... reagent.

14) What is meant by ultramicroanalysis?

15) Gas chromatography is used for *CO* analysis within range .....

16) In filtration sampling of particulates, the ..... filter materials are used for inorganic species.

SECTION - I

Q.2 **a)** Discuss the sampling methods for gaseous pollutants. **(6)**

b) Explain in brief, sampling and analysis of aerosol. **(6)**

c) Discuss the analysis of particulate matter. **(4)**

Q.3 **a)** Define the terms, total hardness, permanent hardness and temporary hardness. Discuss the method to determine temporary hardness. **(6)**

b) Write a short note on High Pressure Ashing Technique (HPAT). **(6)**

c) Discuss the criteria for good sampling. **(4)**

Q.4 **a)** Explain the basic principle and application for AAS pollutant analysis. **(6)**

b) Explain the NDIR technique for continuous monitoring for *CO*. **(6)**

c) How ICP technique is used for pollutant analysis? **(4)**

SECTION - II

Q.5 **a)** Discuss the West Gaeke method for analysis of sulphur dioxide. **(6)**

b) Explain the analysis of phosphate using turbidimetry. **(6)**

c) Write a short note on analysis of Cr (VI) using spectrophotometer. **(4)**

Q.6 **a)** Discuss spectrophotometric method for analysis of organochlorine pesticides. **(6)**

b) How spectrophotometric method is used for analysis of phenolic residue. **(6)**

c) Explain the chromatographic method for analysis of organomercurial pesticides. **(4)**

Q.7 **Write short notes on the following. (Any four)** **(16)**

a) Analysis of volatile organic pollutants

b) Recovery of phenols from effluents

c) Use of cyclic voltammetry in pollutant analysis

d) Analysis of *NO*

e) Physiological manifestations of lead

f) Biological oxygen demand