ASSIGNMENT BOOKLET

Post Graduate Diploma in Analytical Chemistry (PGDAC)

Basic Analytical Chemistry **(MCH – 001)**

Separation Methods **(MCH – 002)**

Spectroscopic Methods **(MCH – 003)**

Electroanalytical &Other Methods **(MCH – 004)**

(Valid from January 1, 2026 to December 31, 2026)

It is compulsory to submit the assignment before filling in the examination form.

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068
(2026)

Dear Learner,

This assignment booklet consists of the tutor marked assignments of MCH- 001, MCH- 002, MCH – 003 and MCH – 004 courses of the Post Graduate Diploma in Analytical Chemistry (PGDAC) programme.
We hope, you are familiar with the system of evaluation to be followed for this Programme. You may probably like to re-read the section on assignments in the Programme Guide that was sent to you earlier. As you are aware, a weightage of 30 percent has been earmarked for continuous evaluation component. For this you have to submit the responses of the enclosed tutor marked assignments to the Study Centre Coordinator. The assignments are based on the content of all the blocks of all the courses.

Before attempting the assignment, please read the following instructions carefully.

1 On top of the first page of your assignment response, please write the details exactly in the following format; write your answers from second page onwards.

ENROLMENT NO. : ……...

NAME **:** ……

ADDRESS **:** ……...

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COURSE CODE **:** …….

COURSE TITLE **: ……..**

ASSIGNMENT NO. : ……...

STUDY CENTRE : ……..… **DATE : ……...**

(NAME AND CODE)

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2 Use only foolscap size paper (but not of very thin variety) for writing your answers.

3 Leave about 4 cm margin on the left, top and bottom of your assignment response sheet.

4 Your answers should be precise.

5 While writing answers, clearly indicate the Question No. and part of the question being solved.

6 Though the validity of assignment is for one year, we advise you to submit the assignment response within 12 weeks after receiving it.

7 **We strongly suggest that you should retain a copy of your assignment responses.**

Wishing you good luck

TUTOR MARKED ASSIGNMENT
SEPARATION METHODS

Course Code: MCH -002
Assignment Code: MCH -002/TMA/2026
Maximum Marks: 100

Note: Answer all the questions given below.

1. How can electromigration be used as a property for separation? Give various techniques based on it. (5)
2. Discuss the important features of extraction by compound formation using carboxylic and sulphonic acids. (5)
3. List the essential characteristics of diluents. (5)
4. How does pH affect the extraction? Illustrate giving suitable examples. (5)
5. Briefly explain stripping in the context of metal ion separations. (5)
6. Briefly discuss the basis of classification of various chromatographic techniques. (5)
7. Describe the important parameters of stationary phases used in liquid-solid chromatography. (5)
8. Discuss the applications of paper chromatography. (5)
9. What are different factors which make R_f values in TLC difficult to reproduce? (5)
10. Discuss the conclusions of the rate theory of van Deemter which can be used to improve column efficiency. (5)
11. List the characteristics of solid stationary support used in gas chromatography. (5)
12. List the general criteria for the selection of a mobile phase in HPLC. (5)
13. Give the requirements of a detector used in HPLC. (5)
14. Briefly explain various types of cation exchangers used in ion exchange chromatography. (5)
15. What is meant by the capacity of an ion exchanger? Explain various types of capacities. (5)
16. Briefly discuss important properties of gels used in chromatography. (5)
17. Describe the preparative applications of size exclusion chromatography. (5)
18. Discuss the principle and use of electrodialysis. (5)
19. What is an ion selective membrane electrode? Give the basic principle of its function. (5)
20. Give a brief account of SDS-PAGE gel electrophroresis. (5)