

QP CODE: 211329

Reg. No:.....

**Second Semester M. Pharm Degree Regular/Supplementary Examinations
November 2025**

**M.Pharm (Pharmaceutical Analysis)
Paper I: Advanced Instrumental Analysis (MPA 201T)
(Common for 2019 and 2024 Scheme)**

Time: 3 Hours

Total Marks: 75

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary*

Essays

(3x10=30)

1. Explain the chiral stationary phases used in liquid chromatography.
2. Differentiate between ion exchange and ion pair chromatography. List the advantages and applications of both.
3. Explain the following.
 - a) Capillary zone electrophoresis
 - b) Capillary gel electrophoresis
 - c) Micellar electro kinetic capillary chromatography
 - d) Capillary iso electric focusing.

Short Notes

(9x5=45)

4. An analyst needs to develop HPLC method for application in dissolution studies. Explain the factors to be considered and how are they to be applied in developing the method.
5. Explain Derivatisation in gas chromatography.
6. Explain the applications of super critical fluid chromatography in pharmaceutical sciences.
7. Explain a metastable peak in mass spectroscopy and how is it identified.
8. Explain double bond equivalence rule in MS. Explain with suitable example.
9. Calculate the average atomic mass of zirconium from the given data:

Isotope	Zr - 90	Zr - 91	Zr - 92	Zr - 93	Zr - 94
Atomic mass	89.905	90.906	91.905	93.906	95.908
Relative abundance %	51.45	11.22	17.15	17.38	2.80

10. Explain any five important differences between ¹H NMR and ¹³C NMR.
11. Explain Larmor precession.
12. Methyl acetate shows 2 hydrogen signals whereas 2 – chlorobutane shows 4 in ¹H NMR spectra. Why.

CORRECTION / NO-CORRECTION FILE
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QPCODE: 211329

Dated: 06-11-2025

Question No.1

Corrected as "Explain the chiral stationary phases used in liquid chromatography."

Corrections/Modifications/Replacement of Questions if any shall be made available to all students. Take the print out of the Correction File in such cases and distribute to all students.

(Sd/-)

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