

QP Code: 831006

Reg. No.....

**Eighth Semester B. Pharm Degree Regular/Supplementary  
Examinations July 2023  
Advanced Instrumentation Techniques  
(2017 Scheme)**

Time: 3 Hours

Max. 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 diagrams wherever necessary

**Essays**

(2x10=20)

1. What are the factors affecting chemical shift in HNMR. Explain.
2. Write a note on calibration of UV – Visible spectrophotometer.

**Short Notes**

(7x5=35)

3. <sup>13</sup>C NMR.
4. What are soft and hard ionization in mass spectrometry. Give two examples each. List the advantages and disadvantages of each.
5. How does a quadrupole analyser work.
6. Explain the pharmaceutical applications of mass spectroscopy.
7. What are two types of differential scanning calorimeters. Differentiate between them.
8. Explain the calibration of electronic balance.
9. Explain the different methods of radio immune assay.

**Answer Briefly**

(10x2=20)

10. In NMR, what does the number of signals and position of signals signify.
11. Write about rotating crystal technique in x-ray diffraction method.
12. What is Larmor frequency and what is its importance in NMR spectroscopy.
13. What is a shim coil and what is its role in NMR spectrometer.
14. Why mass spectrometer is maintained under high vacuum.
15. Explain and classify thermal methods of analysis.
16. Why purging system is required in thermal analysis.
17. List the applications of X ray powder diffraction.
18. Differentiate H-NMR and C<sup>13</sup> – NMR.
19. Name the radiation source used in flame photometer.

\*\*\*\*\*