

**QP Code: 831006**

**Reg. No.....**

**Eighth Semester B. Pharm Degree Supplementary Examinations  
November 2024**

**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. Explain the principle of X-ray crystallography along with the rotating crystal technique.
2. Discuss calibration and validation as per ICH and USFDA guidelines.

**Short Notes**

**(7x5=35)**

3. Explain the principle of radio immuno assay.
4. Explain the importance of calibration of instrument.
5. Explain the calibration of electronic balance.
6. Explain shielding and deshielding effect in NMR.
7. Explain quadrupole in mass spectroscopy.
8. Explain differential scanning calorimetry.
9. LC-MS/MS.

**Answer Briefly**

**(10x2=20)**

10. FAB.
11. Chemical ionization in mass spectrometry.
12. Counter current extraction.
13. Spin-spin splitting.
14. Applications of Thermo gravimetric analysis.
15. Define solid phase extraction.
16. List the advantage of HPTLC-MS.
17. Molecular ion peak.
18. List the different types of solvent in NMR spectroscopy.
19. Enlist the condition for a crystal to show X-ray diffraction.

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