

**PARUL UNIVERSITY**  
**FACULTY OF PHARMACY**  
**M.Pharm. Winter 2022 - 23 Examination**

**Semester : 1**  
**Subject Code: MIP101T**  
**Subject Name: Modern Pharmaceutical Analysis Techniques**

**Date: 13/03/2023**  
**Time: 10:00am to 1:00pm**  
**Total Marks: 75**

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**Instructions:**

1. Figures to the right indicate maximum marks.
2. Make suitable assumptions wherever necessary.

**Q.1 Essay Type Questions. (any 2 out of 3) (15 Marks Each) (30)**

1. A. Explain in detail instrumentation of UV-Visible spectrophotometer.  
B. What do you understand by coupling constant? Write factors affecting the chemical shift.
2. A. What is mass spectroscopy? Discuss Mc-Lafferty rearrangement.  
B. Enumerate different types of chromatography techniques. Write a short note on ion-exchange chromatography.
3. A. Explain principle and instrumentation of capillary electrophoresis.  
B. Write a short note on X ray diffraction methods.  
C. Write a short note on ELISA.

**Q.2 Short Essay Type Questions. (any 5 out of 6) (5 Marks Each) (25)**

1. Write detail about different types of vibration in IR spectroscopy.
2. Explain in brief theory and principle of NMR spectroscopy.
3. Discuss general rules of fragmentation in MS.
4. Write short note on stationary phase and mobile phase of Gas chromatography.
5. Write a brief note on Radioimmunity assay (RIA).
6. Explain Instrumentation of Atomic absorption spectroscopy.

**Q.3 Short Answers. (2 Marks Each) (20)**

1. What is flame emission spectroscopy?
2. What is the difference between Bathochromic shift & Hypsochromic shift?
3. What is the difference between shielding & deshielding?
4. What do you mean by Stark effect?
5. What is the difference between MALDI & FAB?
6. What is the base peak & molecular ion peak in mass spectra?
7. What is the  $R_f$  value?
8. What is the principle of separation in Paper Chromatography?
9. What is Bragg's law? Write its equation.
10. What do you mean by isoelectric focusing?