



[Time: 3 Hours]

[Max. Marks: 75]

**Modern Pharmaceutical Analytical Techniques**

**Q.P. CODE: 5101**

Your answers should be specific to the questions asked.

Draw neat, labeled diagrams wherever necessary.

**LONG ESSAY (Answer any Three)**

**3 X 10 = 30 Marks**

1. Define and derive Beer Lambert's law. Add a note on its limitations.
2. Explain the principle and instrumentation of NMR Spectroscopy.
3. Enlist the different Ionisers used in MS and Explain any two in detail.
4. Explain in detail Rate and Plate theory for Column efficiency. Add a note on applications of GC.

**SHORT ESSAY (Answer any Nine)**

**9 X 5 = 45 Marks**

5. Discuss the Sample handling techniques used in IR Spectroscopy.
6. What are Quenchers? Discuss the different types of quenching with examples.
7. What is shielding and deshielding. Explain
8. Discuss the principles of FT-NMR and  $^{13}\text{C}$ -NMR.
9. Enlist the different peaks observed in MS and explain Isotopic peaks with examples.
10. Write a note on HPTLC, and its applications.
11. Explain the pumps and UV detectors used in HPLC.
12. How are X-rays produced? What are modifications of X-ray tube?
13. Explain the principle and working conditions of paper electrophoresis.
14. Enlist the different electrodes used in potentiometry and explain the construction and working of any one electrode.

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