

**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. Explain the instrumentation of double beam UV-Visible spectrophotometer with the help of a neat diagram. Add a note on its advantages over single beam instrument.
2. Discuss the Principle of NMR Spectroscopy. Explain chemical shift and the factors influencing chemical shift.
3. Explain the different parts of a Mass Spectrometer with the help of a neat diagram.
4. Enlist the detectors used in Gas Chromatography and explain the construction & working of any two detectors.

**SHORT ESSAY (Answer any Nine)****9 X 5 = 45 Marks**

5. Explain the theory of fluorescence and factors affecting fluorescence.
6. Discuss the modes of molecular vibrations that occur in IR region.
7. Explain Spin-Spin Coupling constant.
8. Write a note on  $^{13}\text{C}$ -NMR Spectroscopy.
9. Explain briefly the Fragmentation rules used in MS.
10. Write a note on Ion Exchange chromatography.
11. Differentiate HPTLC from TLC.
12. Explain the principles and working conditions of gel electrophoresis.
13. Enlist the different X-ray diffraction techniques and explain any one in detail.
14. Explain the principle and applications of ELISA

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