

**SEMESTER EXAMINATION-2021**  
**CLASS – M.PHARM. (PHARMACOLOGY) I SEM**  
**SUBJECT: MODREN PHARMACEUTICAL ANALYTICAL TECHNIQUES**  
**PAPER CODE: MPL101T**

**Time: 3 hour**

**Max. Marks: 75**

**Min. Pass: 50%**

**Note:** Question Paper is divided into two sections: **A and B**. Attempt both the sections as per given instructions.

**SECTION-A (SHORT ANSWER TYPE QUESTIONS)**

**Instructions:** Answer any five questions in about 150 words each. Each question carries seven marks. (5 X 7 = 35 Marks)

Question-1:

- a) Name of the convenient light source for Visible radiation in UV-Visible spectrophotometer is .....
- b) Name of the convenient light source for UV radiation in UV-Visible spectrophotometer is .....
- c) Quartz or silica cell is used for .....region
- d) Photo multiplier tube is used as.....in UV-Visible spectrophotometer
- e) The absorbance of the solution having concentration gm.mol.weight/1000 ml of the solution is defines as.....

Question-2: Explain the Principle of Fluorimetry.

Question-3: describe the beer's lambert law with Limitations.

Question-4: Describe the  $\sigma \rightarrow \sigma^*$ ,  $n \rightarrow \sigma^*$ ,  $\pi \rightarrow \pi^*$  and  $n \rightarrow \pi^*$  electronic transition with the name of organic compounds involve these transition.

Question-5: explain the Molecular Vibrations in IR spectroscopy.

Question-6: Write a note on ion exchange chromatography.

Question-7: Discuss the Meta stable ions and isotopic peaks.

Question-8: Describe the Electrophoresis. Explain the factor affecting separations.

Question-9: describe the principle and application of Potentiometry.

Question-10: discuss the principle and application of Differential thermal Analysis.

**SECTION-B (LONG ANSWER TYPE QUESTIONS)**

**Instructions:** Answer any FOUR questions in detail. Each question carries 10 marks. (4 X 10 = 40 Marks)

Question-11: Discuss the Principle and Instrumentation of Mass Spectroscopy

Question-12: Discuss the Principle and application of High Performance Liquid chromatography.

Question-13: Write a note on Chemical shifts, NMR signals, Spin Spin coupling and relaxation Process.

Question-14: Describe the application of following in respect of Pharmaceutical sciences.

- a) Mass spectroscopy
- b) NMR spectroscopy
- c) Spectrofluorimetry
- d) UV-visible Spectroscopy

Question-15: write a note on any two

- a) Fast atom bombardment [ FAB]
- b) Matrix Assisted Laser Desorption/Ionization [MALDI]
- c) Electrospray ionization (ESI)

Question-16: Discuss the Principle and application of Column Chromatography.

Question-17: Explain the Principle, instrumentation and application of Thermogravimetric Analysis (TGA)

Question-18: Write a note on a) <sup>13</sup>C NMR spectroscopy b) Flame emission Spectroscopy

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