J-MPL-101-T Seat No. _____

M. Pharm. (Pharmacology) (Sem. I) Examination

January – 2020

MPL-101T : Modern Pharmaceutical Analytical Techniques

Time : **3** Hours] [Total Marks : **75**

Instructions : (1) Figures to the right indicates full marks.
(2) Draw neat and clean diagram, wherever required.

1 Answer the following questions : **10×2=20**

a) What are the difference between UHPLC and HPLC ?

b) What is the main difference between Modulated DSC and Hyper DSC ?

c) Explain about K band and B band with suitable example.

d) What are the difference between Atomic absorption and Flame emission spectroscopy ?

e) What is the meaning of base peak, molecular ion peak and adduct peak in mass spectra ?

f) Enlist different types of sources used in X-ray instrument. Discuss any one.

g) How we can differentiate primary amine and amino acid with the help of IR ?

h) Explain briefly about coupling constant.

i) What are the application of fluorescence spectrophotometer?

j) Define Resolution and Column efficiency.

2 Answer any two out of the following : **2×10=20**

a) What is Chromatography ? Enumerate different types of chromatography techniques. Discuss about affinity and thin layer chromatography in detail.

b) What is the principle of Mass spectrometer ? Draw the diagram of Mass Spectrometer. Enlist and discuss in detail about various ionization technique used in mass spectrometer.

c) Explain Bragg's law, instrumentation and applications of X-ray diffractometer. Enlist the different X-ray diffraction methods. Discuss in detail any two.

3 Answer any seven out of the following : **7×5=35**

a) Differentiate :

I. stretching and bending vibrations

II. fluorescence and phosphorescence

b) Write a brief note on : Ion selective electrodes in potentiometry.

c) Write a brief note on isoelectric focusing.

d) Define chromophore and Auxochrome with suitable examples. Enlist and discuss about various electronic transition observed in UV spectrometery.

e) What is the principle of TGA ? Discuss about factor affecting TGA. Mention briefly advantage and disadvantage of TGA.

f) What are the principles of FT-NMR and 13C NMR ? Mention the applications of NMR spectroscopy.

g) Write an informative note on paper and zone electrophoresis.

h) Enlist various types of detectors used in gas chromatography. Explain in detail any two.

i) Explain in detail about FT-IR instrument.