

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
M. Ph. SEMESTER- 1 EXAMINATION – SUMMER 2018

Subject Code: MAT101T**Date: 03/05/2018****Subject Name: Modern Pharmaceutical Analytical Techniques****Time: 02:30PM TO 05:30PM****Total Marks: 80****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain Bragg's law, instrumentation and applications of X-ray diffractometer. **06**
(b) Explain in detail instrumentation of UV-Visible spectrophotometer. **05**
(c) Explain in detail applications of fluorimetry. **05**
- Q.2** (a) Explain the factors affecting vibrational frequency in IR. **06**
(b) Differentiate: **05**
 I. stretching and bending vibrations
 II. fluorescence and phosphorescence
(c) Write in brief on FTIR and enlist advantages of FTIR. **05**
- Q.3** (a) Explain MALDI and Quadrupolar analyzer in brief. **06**
(b) Explain in brief theory and principle of NMR spectroscopy. **05**
(c) Explain principle and applications of differential scanning calorimetry. **05**
- Q.4** (a) What is chemical shift? Explain various factors responsible for affecting the magnitude of chemical shift. **06**
(b) Describe inductively coupled plasma emission spectroscopy in detail. **05**
(c) Write a brief note on spin spin coupling. **05**
- Q.5** (a) Draw a block diagram of Gas chromatograph. Describe stationary phases used in GC with its desirable properties. **10**
(b) Write a brief note on isoelectric focusing. **06**
- Q.6** (a) What is ion-exchange chromatography? Explain the factors affecting the separation in ion-exchange chromatography. Describe the stationary phases used in size exclusion chromatography. **06**
(b) I. Define: resolution, capacity factor, column efficiency. **05**
 II. Differentiate: HPTLC and HPLC.
(c) Explain: thermal conductivity detector and flame ionization detector in GC. **05**
- Q.7** (a) Explain principle and instrumentation of capillary electrophoresis. **06**
(b) Describe principle, technique and applications of affinity chromatography. **05**
(c) Write a brief note on: Ion selective electrodes in potentiometry. **05**
