Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. Pharm. - SEMESTER– I • EXAMINATION – SUMMER 2017

Subject Code: 910001 **Date: 27/04/2017**

Subject Name: Modern Analytical Techniques

Time: 10:30 AM TO 01:30 PM **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 theory and applications of derivative spectroscopy.	**06**
	(b)	Give applications of atomic absorption spectroscopy in Pharmacy.	**05**
	(c)	Explain principle and working of mass spectroscopy.	**05**
Q.2	**(a)**	What is reflection spectroscopy? Describe attenuated total reflection (ATR) spectroscopy with its applications.	**06**
	(b)	Describe with diagram, principle and working of Michelson interferometer.	**05**
	(c)	What do you mean by X-ray diffraction? Explain Bragg's law and application of X-ray diffraction.	**05**
Q.3	**(a)**	Give principle of NMR spectroscopy. How NMR spectroscopy helps in the structure elucidation of compounds?	**06**
	(b)	Explain the similarities and differences between proton and C^{13} NMR.	**05**
	(c)	Describe Factors affecting the Chemical Shift.	**05**
Q.4	**(a)**	Enlist the ionization techniques used in mass spectroscopy. Discuss MALDI technique.	**06**
	(b)	Describe Mc-Lafferty rearrangement with suitable examples.	**05**
	(c)	Write in brief about optical rotatory dispersion and circular dichroism.	**05**
Q.5	**(a)**	Explain the term capacity factor, tailing factor and resolution.	**06**
	(b)	Explain in detail hyphenation technique : LC-MS.	**05**
	(c)	What is plasma? Describe inductive coupled plasma emission spectroscopy.	**05**
Q. 6	**(a)**	Explain the terms of Van Demeter equation. Describe eddy and longitudinal diffusion in detail.	**06**
	(b)	Explain the principle and instrumentation of Supercritical Fluid chromatography.	**05**
	(c)	What is HPLC? Explain the principle of HPLC.	**05**
Q.7	**(a)**	Enumerate different methods of Thermal analysis. Explain DSC in detail.	**06**
	(b)	What are reference standards? Discuss sources, storage and records for reference standards.	**05**
	(c)	What is Radio Immuno Assay? Discuss principle and method used in ELISA technique.	**05**

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