Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. Pharm. – SEMESTER – I • EXAMINATION – WINTER 2013

Subject Code: 910001 **Date: 21-12-2013**

Subject Name: Modern Analytical Techniques

Time: 10.30 am - 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 the terms of Van Demeter equation. Describe eddy and longitudinal diffusion in detail.	**06**
	(b)	Describe the principle and technique of Ion exchange chromatography.	**05**
	(c)	Explain the term: Resolution, Column selectivity and Capacity factor.	**05**
Q.2	(a)	Discuss the rate of Michelson interferometer in FT-IR	**06**
	(b)	How can you differentiate following pair of compounds using IR spectroscopy? (i) Acetaldehyde and Acetylene (ii) Acetic acid and Acetone	**05**
	(c)	Discuss the term: Fingerprint Region, Fermi resonance	**05**
Q.3	(a)	Write Principle, instrumentation and application of AAS.	**06**
	(b)	Explain in brief Derivative spectroscopy with its application.	**05**
	(c)	Describe storage, handling and documentation of reference standard.	**05**
Q.4	(a)	What is radio immuno assay technique? Discuss ELSIA method in detail.	**06**
	(b)	Discuss about Inductively coupled Plasma emission spectroscopy.	**05**
	(c)	Write principle of X-ray spectroscopy. Explain Bragg's Law.	**05**
Q.5	(a)	Enlist the ionization techniques used in mass spectroscopy. Discuss MALDI technique.	**06**
	(b)	Explain principle and working of Quadrupole mass analyzer.	**05**
	(c)	Give the fragmentation pattern of the following compounds (i) Benzyl alcohol (ii) Acetophenone	**05**
Q. 6	(a)	Describe Factors affecting the Chemical Shift.	**06**
	(b)	Discuss hydrogen decoupling and off resonance decoupling technique in CMR	**05**
	(c)	Why C^{13} NMR spectra are more difficult to record than PMR?	**05**
Q.7	(a)	Enumerate different methods of Thermal analysis. Discuss DSC in detail.	**06**
	(b)	Write note on Super critical Fluid Chromatography.	**05**
	(c)	Write principle, instrumentation and application of ORD	**05**

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