

GUJARAT TECHNOLOGICAL UNIVERSITY**M. Pharm. – SEMESTER– I • EXAMINATION – SUMMER-2016****Subject Code: 910001****Date: 25/05/2016****Subject Name: Modern Analytical Techniques****Time: 10:30 AM to 1:30 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)	What is derivative spectroscopy? Discuss its application with examples.	06
	(b)	What is atomic spectroscopy? Describe background interferences present in Atomic absorption spectroscopy.	05
	(c)	A sample in 1cm cell is determined by spectrophotometer to transmit 80% of light of certain λ if absorptivity of substance at this λ is 2 then what is concentration	05
Q.2	(a)	Explain the principle of FTIR spectroscopy. Give the difference between Dispersive IR and FTIR.	06
	(b)	Explain and give examples of the types of transition occurs in organic compounds.	05
	(c)	Write down theory and application of NIR spectroscopy.	05
Q.3	(a)	Explain the techniques used for simplification of complex NMR spectra. Discuss shift reagent with examples.	06
	(b)	Explain the principle of NMR Spectroscopy. Why ^{13}C NMR spectra are more difficult to record compared to ^1H NMR spectra	05
	(c)	Define Chemical shift. Describe the factors affecting the chemical shift.	05
Q.4	(a)	Explain the principle of Mass spectrometry. Classify the ionization technique used in MS. Discuss chemical ionization technique in detail.	06
	(b)	Describe Mc-Lafferty rearrangement with suitable examples.	05
	(c)	Write a note on instrumentation of X-ray diffraction spectroscopy.	05
Q.5	(a)	Discuss principle, instrumentation and application of TGA.	06
	(b)	Describe storage, handling and documentation of reference standard.	05
	(c)	What is enzyme immune-assay? Describe double sandwich ELISA technique for antigen measurement.	05
Q. 6	(a)	Enlist the factor affecting the efficiency of chromatographic separation. Discuss longitudinal diffusion.	06
	(b)	Explain quantitaion in HPTLC. Give the difference between HPTLC and HPLC.	05
	(c)	Discuss Size exclusion chromatography	05
Q.7	(a)	Discuss the principle, elution technique and application of SFC.	06
	(b)	Write Short notes on <ol style="list-style-type: none"> i. Bragg's law ii. octant rule 	05
	(c)	Write down instrumentation and application of GC-MS	05