Seat	No.: _	Enrolment No	
		GUJARAT TECHNOLOGICAL UNIVERSITY	
•	•	M. Pharm. – SEMESTER – I • EXAMINATION – WINTER • 2015 Code: 910207 Date: 02-01-2016 Name: Advanced Spectroscopic Techniques	
•	e: 10 ructio 1. 2.	Name: Advanced Spectroscopic Techniques 0:30 am - 01:30 pm Total Marks: 80 ons: Attempt any five questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a) (b) (c)	Discuss theory and Principle of Photoacoustic spectroscopy. Write note on Instrumentation of Photoacoustic spectroscopy. What is fluorescence and Phosphorescence? Write brief note on Gas Phase Chemiluminescence analysis.	06 05 05
Q.2	(a) (b) (c)	What is luminescence? Discuss theory of Chemiluminescence. What is Electron spin resonance spectroscopy (ESR)? Discuss spin spin splitting with respect to ESR. Discuss the application of Electron spin resonance spectroscopy.	06 05 05
Q.3	(a) (b) (c)	Write note on Instrumentation of Electron spin resonance spectroscopy. Discuss the application of Photoacoustic spectroscopy. Discuss chemical shift reagent used in NMR.	06 05 05
Q.4	(a) (b) (c)	What are different 2D NMR Techniques? Write note on COSY NMR. Discuss Nuclear overhauser effect and Off resonance decoupling with respect to ¹³ C NMR. Discuss DEPT experiment in NMR.	06 05 05
Q.5	(a) (b) (c)	How ¹³ C NMR differs from ¹ H NMR? Discuss Pulsed filed gradient and Attached proton test in NMR. Write note on Instrumentation of Raman Spectroscopy.	06 05 05
Q. 6	(a) (b) (c)	Explain the theory of Raman Spectroscopy. Compare stokes and antistokes scattering with respect to Raman spectroscopy? Write application of Raman spectroscopy. Discuss Isotope dilution method in Radiochemical analysis.	06 05 05
Q.7	(a) (b) (c)	Write note on Neutron activation analysis. Classify different types of LASER? Write brief note on it. Discuss Principle of LASER? Write applications of LASER.	06 05 05
