Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. Pharm. – SEMESTER – I • EXAMINATION – SUMMER • 2015

Subject Code: 910207 **Date: 25-05-2015**

Subject Name: Advanced Spectroscopic Techniques

Time: 02:30 pm - 05:30 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)**	Define chemiluminescence and discuss its basic principle.	**06**
	(b)	Write a note on instrumentation LASER.	**05**
	(c)	Explain in detail liquid phase chemiluminescence.	**05**
Q.2	**(a)**	Draw the schematic diagram and discuss apparatus used in chemiluminescence.	**06**
	(b)	Define Electron spin resonance and discuss theory of Electron spin resonance.	**05**
	(c)	Explain factor affecting of the g-value.	**05**
Q.3	**(a)**	Discuss source of electromagnetic radiation and source of magnetic flux density for electron spin resonance.	**06**
	(b)	Give the differences between NMR and ESR.	**05**
	(c)	Describe applications of electron spin resonance.	**05**
Q.4	**(a)**	What is Raman spectroscopy? Discuss the different types of raman spectra and its principle.	**06**
	(b)	Write in depth on isotopic dilution.	**05**
	(c)	Discuss applications and limitations of photoacoustic spectroscopy.	**05**
Q.5	**(a)**	Explain in detail neutron activation methods with suitable examples.	**06**
	(b)	Write a note on positron emission tomography.	**05**
	(c)	Give note on shift reagent used in NMR.	**05**
Q. 6	**(a)**	Write brief note on 2D NMR.	**06**
	(b)	Discuss APT technique in NMR.	**05**
	(c)	Give the comparison between ^{13}C NMR and Proton NMR.	**05**
Q.7	**(a)**	Discuss proton coupled and proton decoupled spectra in ^{13}C NMR.	**06**
	(b)	Give the applications of Raman spectroscopy.	**05**
	(c)	Explain in detail instrumentation of photoacoustic spectroscopy.	**05**

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