Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.PHARM - SEMESTER–8 EXAMINATION – WINTER -2023

Subject Code: BP811TT **Date: 08/12/2023**

Subject Name: Advanced Instrumentation Techniques

Time:02.30 p.m. to 5.30 p.m. **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)**	Discuss in detail about HPTLC-MS.	**06**
	(b)	Write a note on instrumentation of NMR spectrometer.	**05**
	(c)	Explain Calibration of UV-Visible Spectrophotometer.	**05**
Q.2	**(a)**	Write note on LC-MS/MS.	**06**
	(b)	Define Calibration. What is Significance of Calibration? Write calibration procedure for IR Spectrophotometer.	**05**
	(c)	Discuss General principle and procedure involved in the liquid-liquid extraction.	**05**
Q.3	**(a)**	Define Validation. Explain Accuracy and Precision as Per ICH guideline.	**06**
	(b)	Describe Instrumentation of Mass Spectroscopy.	**05**
	(c)	Discuss at length “Calibration of HPLC”.	**05**
Q.4	**(a)**	Briefly explain Fragmentation rules of Mass Spectrometry.	**06**
	(b)	Discuss in detail about Differential thermal analysis (DTA).	**05**
	(c)	Explain Chemical ionization techniques in Mass Spectrometry.	**05**
Q.5	**(a)**	Explain Validation as Per USFDA guideline.	**06**
	(b)	Define Coupling Constant. Compare C13 NMR and H1 NMR?	**05**
	(c)	What is Radio Immuno Assay Technique? Discuss ELISA method in detail.	**05**
Q. 6	**(a)**	What is spin-spin coupling explain with example?	**06**
	(b)	Explain Bragg’s law and applications of X-ray diffraction.	**05**
	(c)	Enumerate Mass Analyzer in Mass Spectrophotometer and explain any one detail.	**05**
Q.7	**(a)**	Discuss principle, instrumentation and application of Differential Scanning Calorimetry (DSC).	**06**
	(b)	Describe single crystal diffraction in detail.	**05**
	(c)	Discuss factors affecting chemical shift in NMR.	**05**

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