Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. PHARM. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 270004 **Date: 03/01/2013**

Subject Name: Pharmaceutical Analysis - III

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)	State and explain Beer's law. Discuss the factors leading to deviation from this law.	**06**
	(b)	Give an account of the detectors used in UV VIS spectrophotometer. Add a note on monochromators.	**05**
	(c)	10.00 mg of a drug sample was dissolved in water and volume was adjusted to 1 Ltr. with the same solvent. The absorbance was found to be 0.556 at its λ_{max}. Calculate purity of the sample (M. Wt. 200.0 and molar absorptivity is 1.32×10^4).	**05**
Q.2	(a)	Explain various transitions occurring in a molecule when electromagnetic radiations interact with it. Discuss in detail the principle of IR Spectroscopy.	**06**
	(b)	Discuss constructions and working of Michelson interferometer.	**05**
	(c)	Give a detailed account of various regions of electromagnetic spectrum.	**05**
Q.3	(a)	Explain the theory of fluorescence and phosphorescence. Discuss the factors affecting fluorescence intensity.	**06**
	(b)	Draw a well labeled diagram of Spectrofluorimeter. Explain advantages and limitations of fluorescence spectroscopy.	**05**
	(c)	Discuss sample handling in UV – VIS and IR Spectroscopy.	**05**
Q.4	(a)	Explain the principle of NMR. Give an account of instrumentation in NMR.	**06**
	(b)	Define chemical shift. Explain in brief factors affecting chemical shift.	**05**
	(c)	Write a short notes : (**Any TWO**) 1. Spin-Spin coupling 2. Coupling constant 3. TMS as an internal standard	**05**
Q.5	(a)	Discuss the theory of Mass Spectroscopy. Give an account of Ionization techniques used in Mass spectroscope.	**06**
	(b)	Draw a well labeled diagram of a Mass Spectroscope. Add a note on fragmentation rules.	**05**
	(c)	Enlist different Mass analyzers and discuss any one in detail.	**05**
Q. 6	(a)	Explain the principle of Atomic absorption Spectroscopy. Give its applications.	**06**
	(b)	Give a detailed account of interferences in Atomic Spectroscopy.	**05**
	(c)	Write a short notes : (1) Hollow Cathod lamp (2) Flame photo meter	**05**
Q.7	(a)	Discuss simultaneous equation method for analysis of Binary Mixture.	**06**
	(b)	Describe the factors influencing vibrational frequencies.	**05**
	(c)	Write Short note (**ANY TWO**) 1. C13 NMR 2. Doppler effect 3. Calibration of UV – VIS spectrophotometer **OR** IR spectrophotometer	**05**

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