GUJARAT TECHNOLOGICAL UNIVERSITY
B. Pharm-Semester-VII May-2012 Examination
Subject code: 270004
Subject Name: Pharmaceutical Analysis III
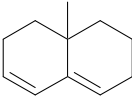**Time: 02:30pm to 5:30pm**   **Date:28 -05-2012**

Instructions: **Total Marks: 80**
1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	Define Lambert-Beer Law. Discuss the construction and principle of double Beam spectrophotometer.	**06**
	(b)	Discuss the wave Properties of Electromagnetic radiation.	**05**
	(c)	Calculate concentration in µg/ml of drug (Mol.Wt-204.2) in 1m HCl, giving absorbance of 0.613 in 4 cm cell of λ_{max} value of 277nm, the Molar absorptivity Value is 5432 at 277nm.	**05**
Q.2	(a)	Define Phosphorescence. Discuss the factor influencing Fluorescence intensity.	**06**
	(b)	The observed value of $\lambda_{max\ of}$ the following compound is 234nm. Explain.	**05**

	(c)	Write down the Instrumentation and application of Fluorescence spectroscopy	**05**
Q.3	(a)	What do you mean by Molecular vibration in IR. Discuss the factors influencing Vibrational frequencies.	**06**
	(b)	Calculate stretching frequency of C-H in alkane by Hook's law. ($k=5 \times 10^5$ dynes/cm)	**05**
	(c)	Give the difference between Dispersive IR and FTIR.	**05**
Q.4	(a)	Explain the basic principle of atomic spectroscopy. Give the difference between the atomic absorption and atomic emission spectroscopy.	**06**
	(b)	Discuss about the interferences in AAS	**05**
	(c)	Write down the Application of Atomic absorption Spectroscopy.	**05**
Q.5	(a)	What is mass spectroscopy? Enlist the ionization techniques used in MS. Explain Chemical ionization technique in detail.	**06**
	(b)	Why isotope peaks are present in mass spectrum of a compound?	**05**
	(c)	write short notes on any two	**05**
		(i) Mc-Lafferty rearrangement	
		(ii) Base Peak	
		(iii) Metastable ion	
Q. 6	(a)	What do you mean by chemical Shift? Describe the factors affecting the chemical Shift.	**06**
	(b)	Discuss the Principle and instrumentation of NMR spectroscopy	**05**
	(c)	Why carbon-13 NMR spectra more difficult to record than H-NMR. Write short Note on spin-spin coupling.	**05**

Q.7   Identify the following compounds on the basis of the spectral data presented   **16**
here.show your reasoning for the conclusion arrived at.

(i)   Molecular weight: 108 amu

UV : λ_{max} 253 nm
IR: $3401_{(s)}$, $3077_{(s)}$, $2899_{(m)}$, $1499_{(b)}$, $1456_{(m)}$, $690\text{-}710_{(s)}$ cm^{-1}
NMR: singlet δ =7.2(5H)
        Singlet δ=4.5(2H)
        Singlet δ=2.8(1H)

(ii)   Molecular weight: 72 amu

UV : λ_{max} 272 nm
IR: $2941\text{-}2857_{(m)}$, $1716_{(s)}$, $1460_{(m)}$ cm^{-1}
NMR: quartet δ =2.48(2H)
        Singlet δ=2.22(3H)
        triplet δ=1.07(3H)

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