Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharm. – SEMESTER – VII • EXAMINATION – WINTER 2013

Subject Code: 270004 **Date: 03-12-2013**

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)	Explain: wave number, frequency, line spectra, band spectra, absorption spectra, emission spectra	**06**
	(b)	Explain different types of electronic transition in spectroscopy. Predict the type of electronic transition in dimethyl amine, methanol.	**05**
	(c)	(1) A standard 3.5×10^{-3}M solution of a compound was prepared and placed in a cell with 3 cm thickness. The percentage transmittance of the solution at 368 nm is 65.6. Determine specific absorbance of the compound (Mol wt.: 200). (2) Convert 5.4 µm into wave number in cm^{-1}.	**05**
Q.2	(a)	State Beer's law. What is deviation from Beer's law, enlist various types of deviation and explain any one in detail.	**06**
	(b)	Define: auxochrome, bathochromic shift. Draw a neat labeled diagram of double beam UV -Visible spectrophotometer and also explain the function of each part of the instrument.	**05**
	(c)	Explain analysis of binary mixtures of absorbing substances by simultaneous equation method.	**05**
Q.3	(a)	Explain the effect of vibrational coupling, H-bonding and electronic effects on vibrational frequency in IR spectroscopy.	**06**
	(b)	Explain the principle, working and advantages of FTIR.	**05**
	(c)	Wrtie a brief note on sample handling in IR spectroscopy.	**05**
Q.4	(a)	What is chemical shift? Explain various factors that are responsible for affecting the magnitude of chemical shift.	**06**
	(b)	Explain spin spin coupling in detail. Predict the numbers of peaks in H-NMR for following: CH_3CHO, CH_3CH_2OH, $CH_3CH_2CH_2Cl$	**05**
	(c)	Explain in brief theory and principle of NMR spectroscopy.	**05**
Q.5	(a)	Define: quenching and heavy atom effect. Explain various structural factors that influence fluorescence intensity.	**06**
	(b)	Explain the fundamental difference between absorption and fluorescence method? Derive an expression relating fluorescence intensity and concentration.	**05**
	(c)	Differentiate: (1) fluorescence and phosphorescence (2) hard source and soft source	**05**

Q. 6	(a)	Describe the basic principle of Mass Spectrometry and draw a labeled diagram of magnetic deflection mass spectrometer. What is the function of each part of instrument, and explain in brief double focusing analyzer.	**06**
	(b)	Explain in brief various fragmentation rules in MS.	**05**
	(c)	Explain: mass spectrum, base peak, metastable ion and write a brief note on Chemical ionization ionic source.	**05**
Q. 7	(a)	Explain in brief various types of interferences in flame photometry and various correction methods applied for it.	**06**
	(b)	Explain in detail flame and nebulizer burner system in flame photometry.	**05**
	(c)	Explain the principle, instrumentation and applications of ICP-AES.	**05**

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