Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharm. – SEMESTER – VII • EXAMINATION – SUMMER • 2014

Subject Code: 270004 Date: 10-06-2014

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.**

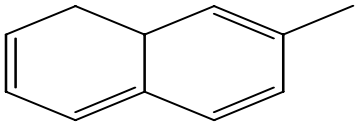
Q.1	(a)	Explain Deviation of Beer's law and explain instrumental factors affecting on deviation of Beer's law.	**06**
	(b)	Enlist detectors used in UV-Visible spectroscopy. Explain construction, working, advantages and disadvantages of photo emissive cell.	**05**
	(c)	Explain absorption of UV radiation by molecule.	**05**
Q.2	(a)	Justify the following comments. 1) Trans isomer absorb UV radiation at longer wavelength than cis isomer. 2) Fluorescence occurs at longer wavelength than absorbance radiation. 3) Compounds having n-π^* transition show decrease in λ_{max} on increasing polarity of solvent.	**06**
	(b)	Define quenching. Explain types of quenching.	**05**
	(c)	What is the affect of concentration on fluorescence intensity? Derive $F=2.303kI_0abc$.	**05**
Q.3	(a)	Give the principle of IR spectroscopy. Discuss the requirements of IR absorption by molecule.	**06**
	(b)	Write a note on solid sampling technique with its merits and demerits.	**05**
	(c)	Enlist detectors used in IR spectroscopy and write a note on any two thermal detectors.	**05**
Q.4	(a)	Give the differnce between gas phase and desorption phase ionisation technique and write a note on quadrupole ion filter and TOF.	**06**
	(b)	Define mass spectroscopy and give the principle with labeled diagram of mass spectrometer.	**05**
	(c)	Write the rule of fragmentation for EI-MS.	**05**
Q.5	(a)	Give the difference between AAS and AES. Write merits and demerits of AAS over AES.	**06**
	(b)	Write a note on HCL.	**05**
	(c)	Discuss about the interference in FES.	**05**
Q. 6	(a)	Explain principle and theory of NMR spectroscopy.	**06**
	(b)	Write a note on spin - spin coupling and coupling constant.	**05**
	(c)	Write a note on ^{13}C NMR spectroscopy.	**05**

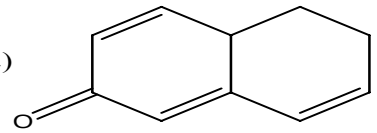
Q. 7 (a) Deduce the structure of following compound on the basis of given spectral data. **06**
And show reasons for your conclusion.
Molecular Formula: $C_{10}H_{12}O$
UV λmax : 272 nm
IR: 3000, 2970, 2880,1715, 1515, 1465, 750 cm^{-1}
NMR: 1.06 triplet 3(H), 2.49 quartet (2H), 3.71 singlet (2H), 7.08 multiplet(5H)

(b) Write the detail of spectral characteristic (IR, Mass, NMR) for the following compounds. **05**

1) CH_3CH_2OH
2) $C_6H_5CH_2CHO$

(c) Calculate the λ_{max} of the following compounds. **05**

(1) 

(2) 

****