Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. Pharm. – SEMESTER – I • EXAMINATION – WINTER • 2014

Subject Code: 910001 **Date: 05-01-2015**

Subject Name: Modern Analytical Techniques

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.**

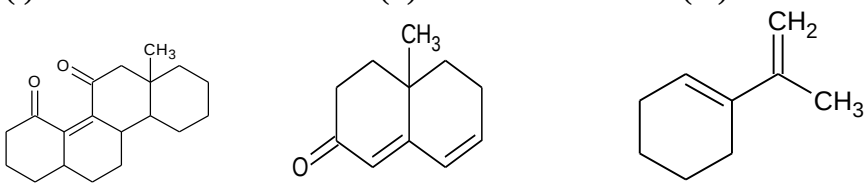
Q.1 (a) What do you mean by X-ray powder diffraction? Explain Bragg's law. **06**

(b) Explain in brief Derivative UV spectroscopy with its application. **05**

(c) Discuss optical rotator dispersion (ORD) and circular dichroism (CD). **05**

Q.2 (a) Calculate the λmax of following compounds **06**

(i) (ii) (iii)



(b) How can you differentiate following pair of compounds using IR spectroscopy? **05**

i. Acetone and acetylene

ii. Acetaldehyde and methanol

(c) What do you mean by Radio Immuno Assay? Discuss principle and method used in ELISA technique. **05**

Q.3 (a) Explain the terms of Van-de meter equation. Describe eddy and longitudinal diffusion in detail. **06**

(b) Describe principle of affinity chromatography. Discuss ligands used in affinity chromatography with its characteristics. **05**

(c) What is reflection spectroscopy? Describe attenuated total reflection (ATR) spectroscopy with its applications. **05**

Q.4 (a) What is chemical shift? Discuss the factors affecting chemical shift. **06**

(b) What detectors are used in Gas chromatography. Explain working of any one detector **05**

(c) Write short notes on (Any One) **05**

i. Super fluid chromatography

ii. LC-MS

Q.5 (a) Explain principle and working of mass spectroscopy. **06**

(b) Discuss principle and instrumentation of NMR **05**

(c) Define the following terms : (Any Two) **05**

i. Anisotropy

ii. Spin-spin decoupling

iii. Shielding effect

Q. 6	(a)	Discuss principle, instrumentation and application of Differential Scanning Calorimetry (DSC).	**06**
	(b)	What is plasma? Describe inductive coupled plasma emission spectroscopy	**05**
	(c)	Describe the principle and technique of Ion exchange chromatography.	**05**
Q.7	(a)	Discuss in detail HPTLC	**06**
	(b)	Explain in detail Mc-lafferty rearrangement	**05**
	(c)	Write short note on any one i. Isoelectric focusing ii. Reference standard	**05**

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