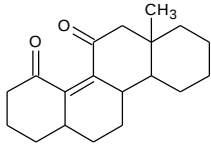
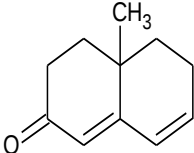
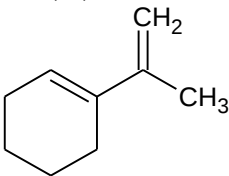


GUJARAT TECHNOLOGICAL UNIVERSITY**M. Pharm. – SEMESTER – I • EXAMINATION – WINTER • 2014****Subject Code: 910001****Date: 05-01-2015****Subject Name: Modern Analytical Techniques****Time: 10:30 am - 01:30 pm****Total Marks: 80****Instructions:**

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 $\lambda_{\max}$ 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	05
	i.	Isoelectric focusing	
	ii.	Reference standard	
