

Chemistry 334

First Hour Examination

September 26, 1994

Professor Charonnat

Name: _____

Be certain that your examination has six (6) pages including this one.

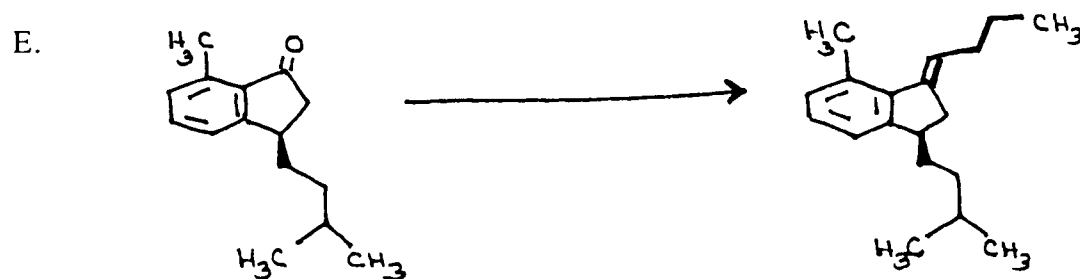
Put your name on **each** page of this examination booklet.

By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

1. (25 points)

For each of the following five (5) questions specify the reagent(s) necessary to effect the transformation.



Name: _____

2. (25 points)

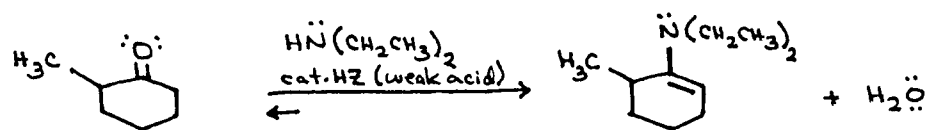
Answer the following two (2) questions precisely, succinctly and with correct grammar.

A. Why must the external magnetic field, B_0 , be held constant during a multi-scan ^1H NMR acquisition?

B. Why does the mass spectrum of 3-chloropentane show signals at $m/z = 106$ and 108 with relative intensities of approximately $76 : 24$?

3. (25 points)

Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** intermediates and denote all lone pairs, formal charges and countercharges where appropriate.



Name: _____

4. (25 points)

The infrared, ^1H NMR and ^{13}C NMR (broadband ^1H decoupled) spectra of compound A ($\text{C}_{10}\text{H}_{14}$) are shown below. Clearly assign all the resonances that you can identify with certainty and draw the structure of compound A. (Correlation tables are included separately.)

The infrared spectrum is unavailable due to copyright considerations.

Name: _____

4. (cont.)

The ^1H NMR and ^{13}C NMR spectra are unavailable due to copyright considerations.

Name: _____

4. (cont.)

Infrared absorption assignments:

wave number (cm⁻¹)	functional group	type of vibration
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¹H NMR assignments:

chemical shift (ppm)	assignment	explanation of multiplicity
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¹³C NMR assignments:

chemical shift (ppm)	assignment	explanation of multiplicity
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structure of compound A:

Congratulations!

1	/25
2	/25
3	/25
4	/25
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Total:	/100