

Chemistry 334

Second Hour Examination

October 24, 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.

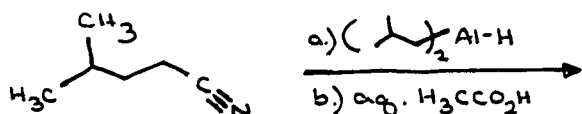
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

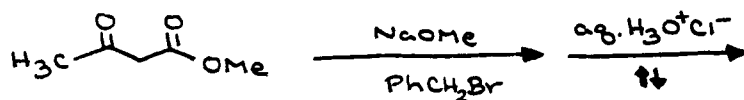
1. (25 points)

For each of the following five (5) questions specify the expected major organic product. If relevant, **clearly** specify the relative and/or absolute stereochemistry of the product.

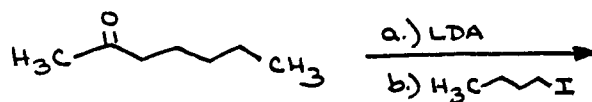
A.



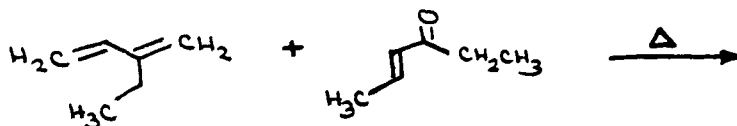
B.



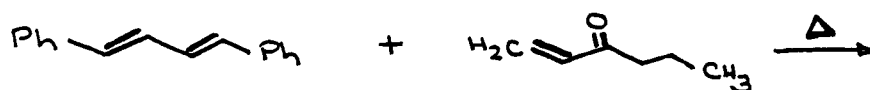
C.



D.



E.



Name: _____

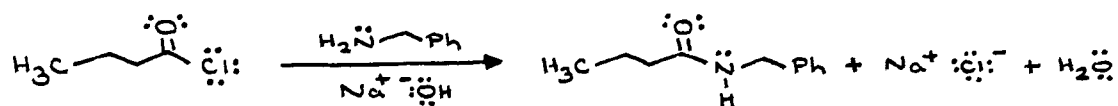
2. (25 points)

Design a synthesis of the acid chloride **1** from the aldehyde **2**. Use any inorganic and organic reagents that you deem necessary. Draw clearly **all** reagents and isolable synthetic intermediate compounds. (N.B. Do **not** draw mechanisms for each synthetic transformation!)



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. Draw **all** important resonance structures where appropriate.



Name: _____

4. (25 points)

The infrared, ^1H NMR and ^{13}C NMR (broadband ^1H decoupled) spectra of compound A ($\text{C}_9\text{H}_{10}\text{O}_2$) 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 (stretch or bend)
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^1H NMR assignments:

chemical shift (ppm)	assignment	explanation of multiplicity
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^{13}C 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