

Chemistry 334

Hour Examination #2

October 29, 2002

Professor Charonnat

Name: _____

Be certain that your examination has five (5) 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.

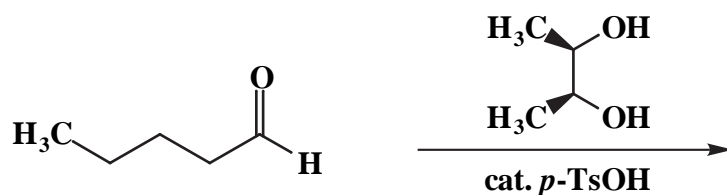
Molecular models are allowed for this examination. Calculators are unnecessary and are not allowed.

Name: _____

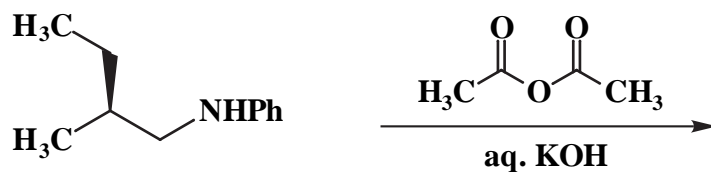
1. (25 points)

Draw the structure of the expected major organic product for each of the following five (5) questions. Clearly specify stereochemistry, if relevant.

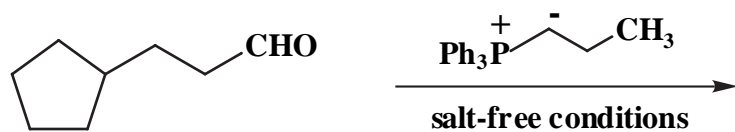
A.



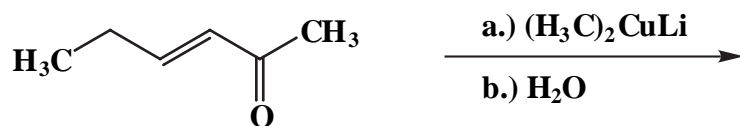
B.



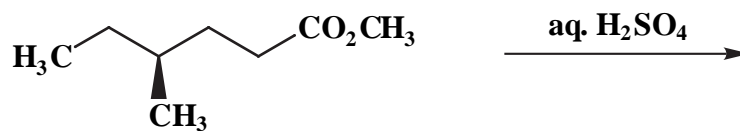
C.



D.



E.



Name: _____

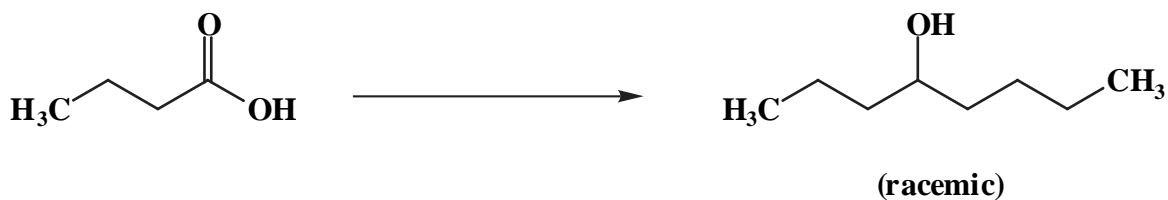
2. (25 points)

Draw the specific reagent(s) necessary to effect the transformation shown, for each of the following three (3) questions. If more than one reaction is involved in an answer, be certain to distinguish the individual steps clearly.

A.



B.

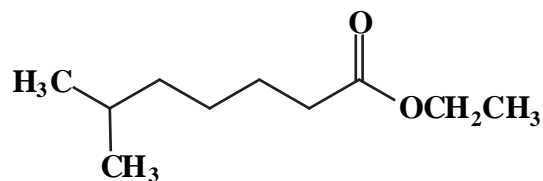


C.



3. (10 points)

Use IUPAC nomenclature to write the systematic name of the following carbonyl compound.



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4. (25 points)

Circle the number that corresponds to the correct answer for each of the following five (5) questions.

A. Which of the following reagents can reduce a carboxylic acid to the corresponding primary alcohol?

1. sodium hydride
2. sodium borohydride
3. lithium aluminum hydride

B. The reaction of butanenitrile with ethylmagnesium bromide, followed by an aqueous acidic workup yields:

1. an aldehyde
2. a ketone
3. an ester

C. One can distinguish an aldehyde ^1H NMR resonance from a carboxylic acid resonance by:

1. chemical shift comparison
2. D_2O exchange
3. integration comparison

D. The reaction of 1-heptanol with pyridinium chlorochromate affords:

1. an aldehyde
2. a ketone
3. an ester

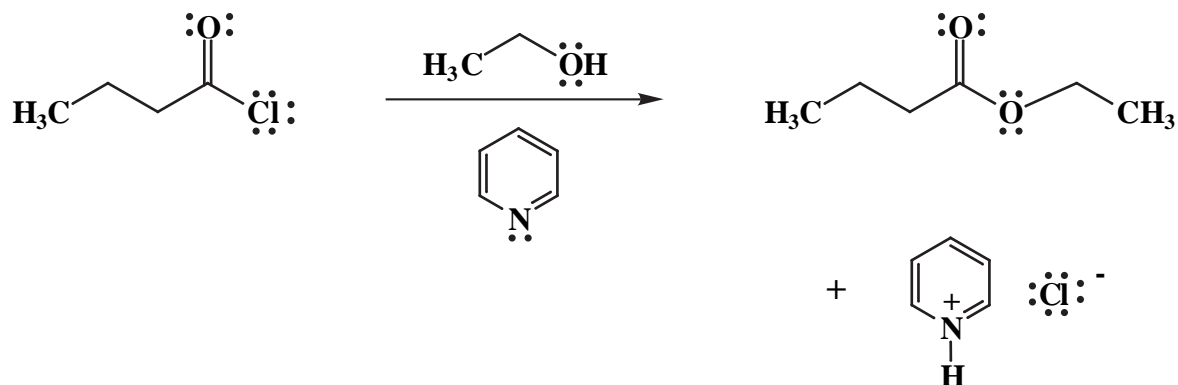
E. Nucleophiles can bond to which positions of an α,β -unsaturated ester?

1. the carbonyl carbon and the α position
2. the carbonyl carbon and the β position
3. the α and β positions

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5. (15 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 unshared electrons, formal charges and countercharges where appropriate. Clearly designate reversibility or irreversibility for each primary mechanistic step.



Congratulations!

1	/25
2	/25
3	/10
4	/25
5	/15
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Total:	/100