

Chemistry 334

Examination #2

August 6, 1998

Professor Charonnat

Name: _____

Be certain that your examination has seven (7) pages including this one.

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

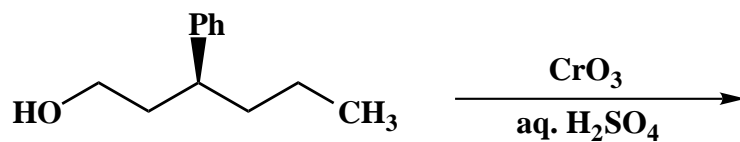
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

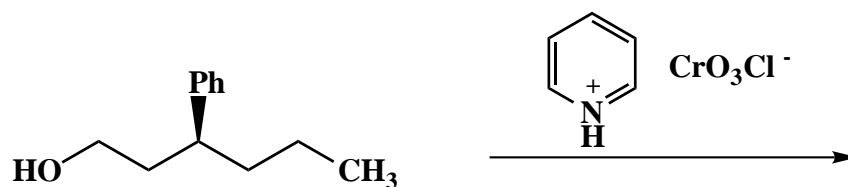
1. (25 points)

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

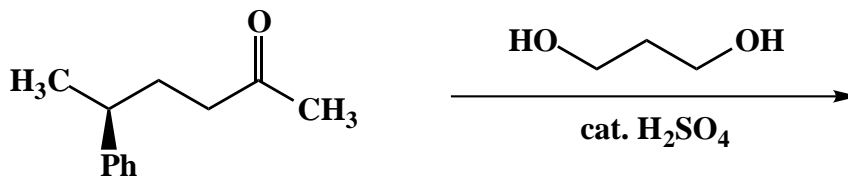
A.



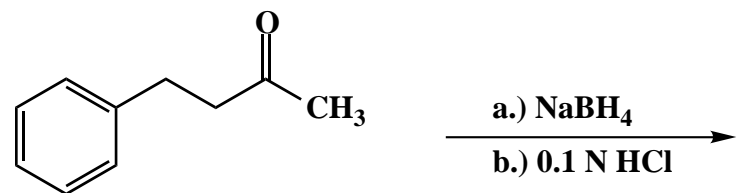
B.



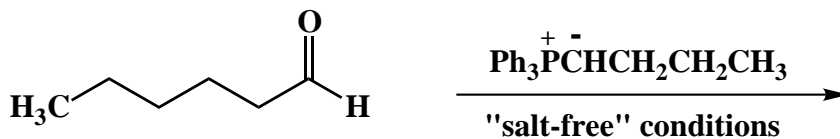
C.



D.



E.

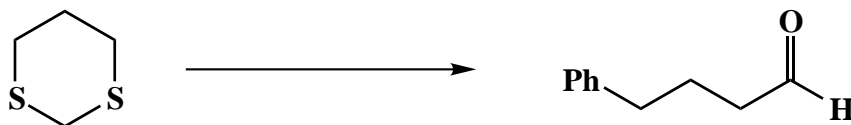


Name: _____

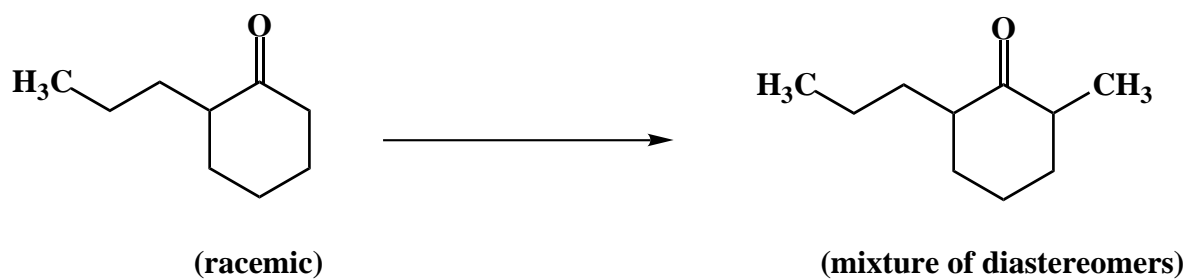
2. (25 points)

For each of the following five (5) questions, draw the specific reagent(s) necessary to effect the transformation shown. If more than one reaction is involved in an answer, be certain to distinguish the individual steps clearly.

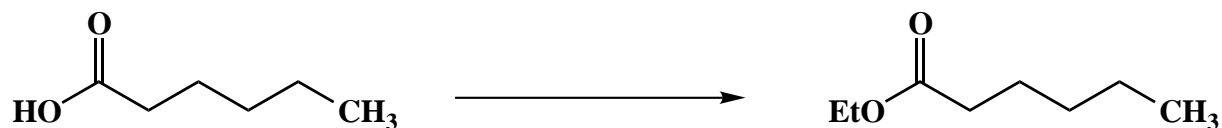
A.



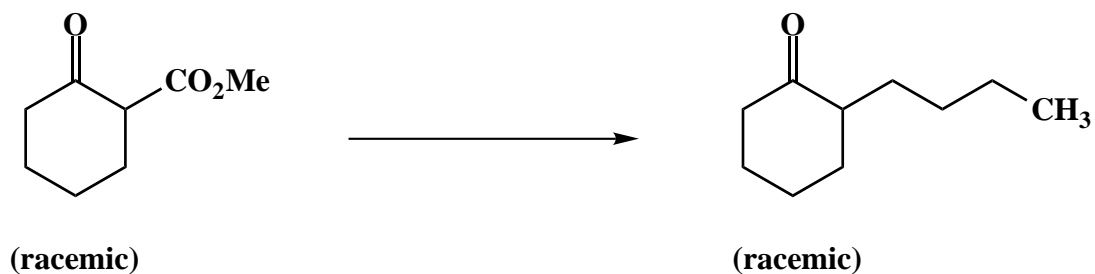
B.



C.



D.



E.



Name: _____

3. (20 points)

For each of the following four (4) questions, circle the number that corresponds to the correct answer.

A. An aldehyde and the corresponding enol are:

1. enantiomers
2. diastereomers
3. tautomers
4. contributors to a resonance hybrid

B. Rank the following carboxylic acid derivatives by relative reactivity, from least to most reactive.

1. ester, amide, acid chloride
2. amide, acid chloride, ester
3. ester, acid chloride, amide
4. amide, ester, acid chloride

C. What is the strongest acid?

1. chloroacetic acid
2. trichloroacetic acid
3. dichloroacetic acid
4. acetic acid

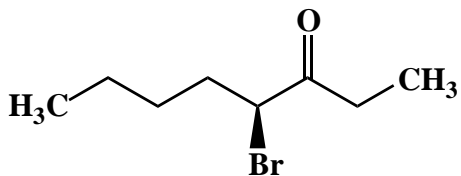
D. When a nucleophile does a Michael reaction with an α,β -unsaturated ketone, the nucleophile bonds to:

1. the carbonyl carbon
2. the β -position
3. the α -position
4. the γ -position

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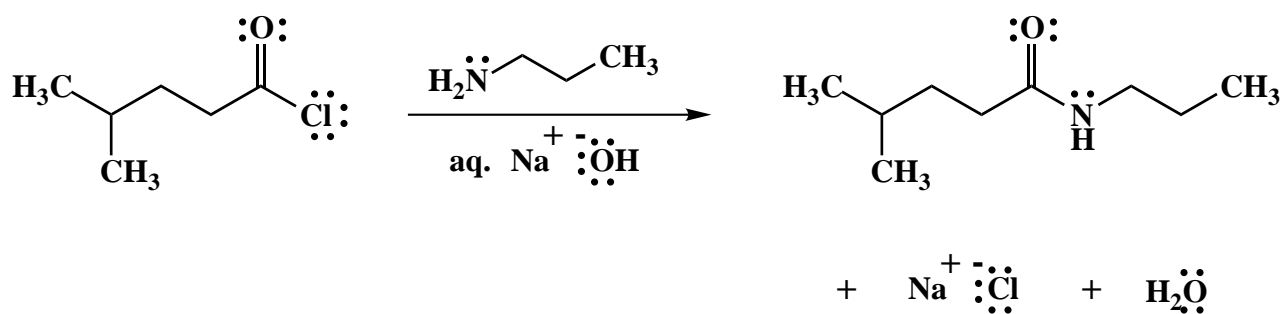
4. (10 points)

Use IUPAC nomenclature to write the systematic name of the following ketone.



5. (20 points)

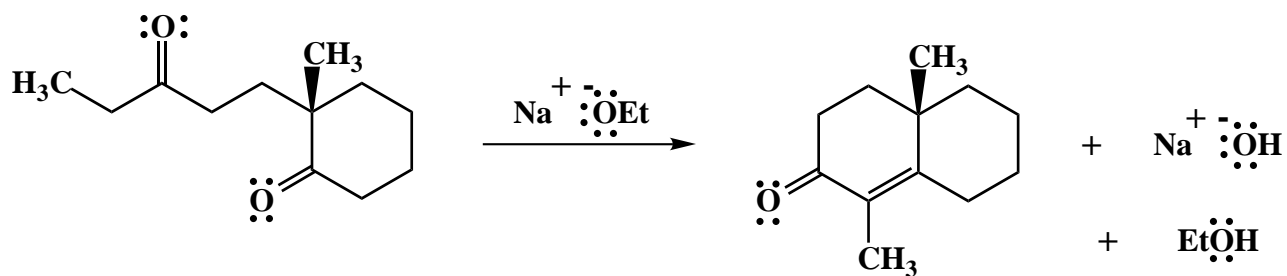
Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** intermediates and denote **all** lone pair electrons, formal charges and countercharges where appropriate.



Name: _____

6. (25 points)

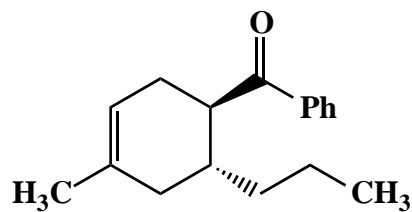
Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** intermediates and denote **all** lone pair electrons, formal charges and countercharges where appropriate.



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7. (25 points)

Design a synthesis of the racemic aryl ketone **1** from benzene. Use any inorganic and organic reagents that are necessary. Show all reagents and stable synthetic intermediate compounds. (**N.B.** Do not draw mechanisms for each synthetic transformation!)



1

Congratulations!

1	/25
2	/25
3	/20
4	/10
5	/20
6	/25
7	/25
Total:	<hr/> /150