

Chemistry 334

Examination #2

April 1, 2009

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.

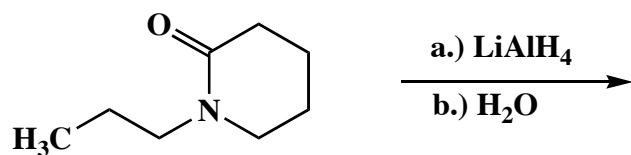
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

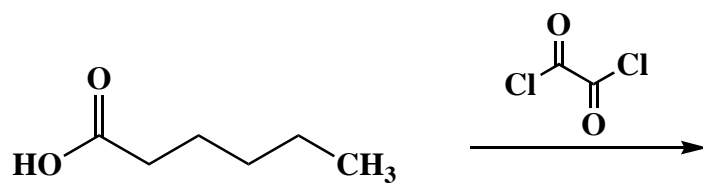
1. (25 points)

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

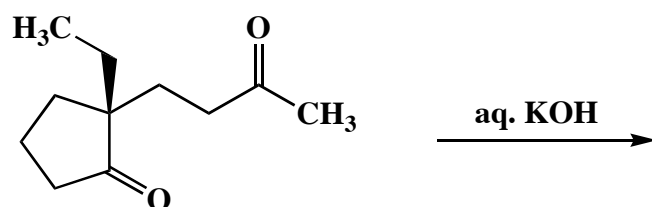
A.



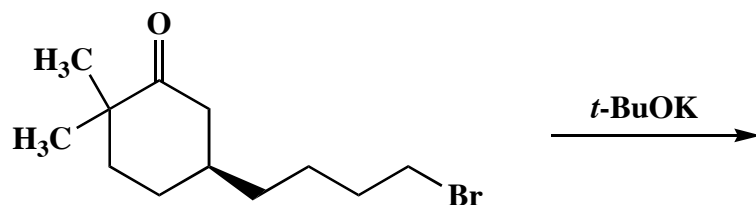
B.



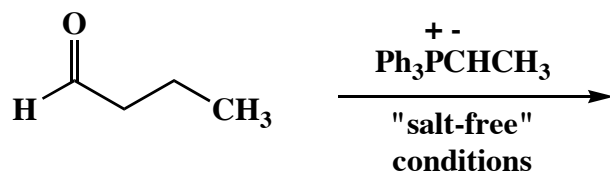
C.



D.



E.



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2. (25 points)

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

A. Which carboxylic acid is the most acidic?

1. 2-methoxybutanoic acid
2. 2-methylbutanoic acid
3. 2-fluorobutanoic acid

B. The reaction of cyclohex-2-enone with Me_2CuLi affords a carbonyl compound as the major product. The ^{13}C NMR spectrum of this product contains

1. six resonances
2. seven resonances
3. eight resonances

C. Which statement is true?

1. Enols are more reactive toward electrophiles than enolates are.
2. Enols and enolates have identical reactivity toward electrophiles.
3. Enols are less reactive toward electrophiles than enolates are.

D. Acetal hydrolysis requires

1. anhydrous acidic conditions
2. aqueous acidic conditions
3. aqueous basic conditions

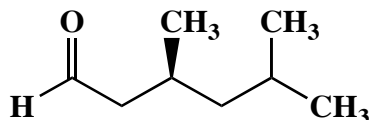
E. Which carbonyl compound is least likely to undergo nucleophilic substitution?

1. *N,N*-dimethylpentanamide
2. methyl pentanoate
3. pentanoyl chloride

Name: _____

3. (10 points)

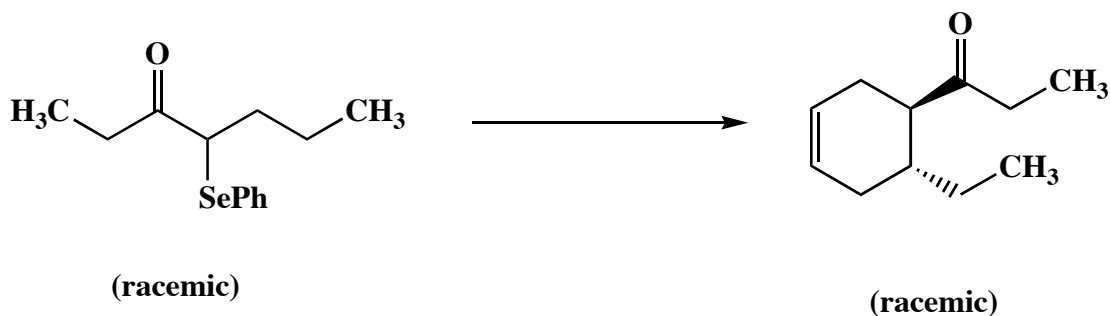
Use IUPAC nomenclature to write the systematic name of the following carbonyl compound.



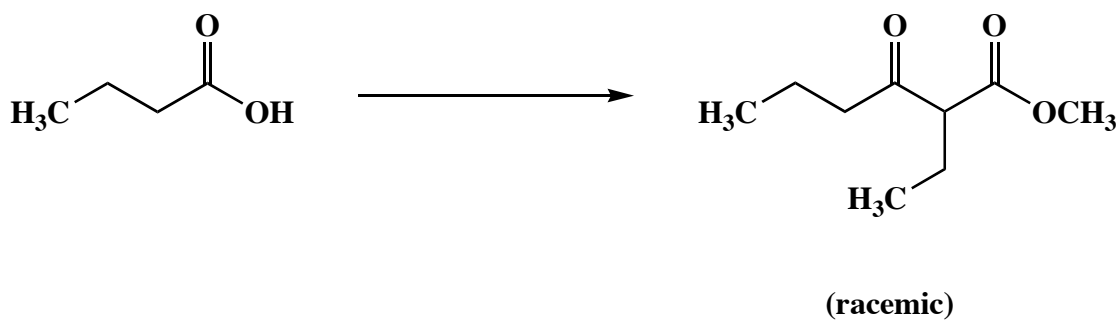
4. (20 points)

Draw the specific reagent(s) necessary to effect the following two (2) transformations. If more than one reaction is involved in an answer, be certain to distinguish the individual steps clearly. Specify the relative stoichiometry of all reagents, also.

A.



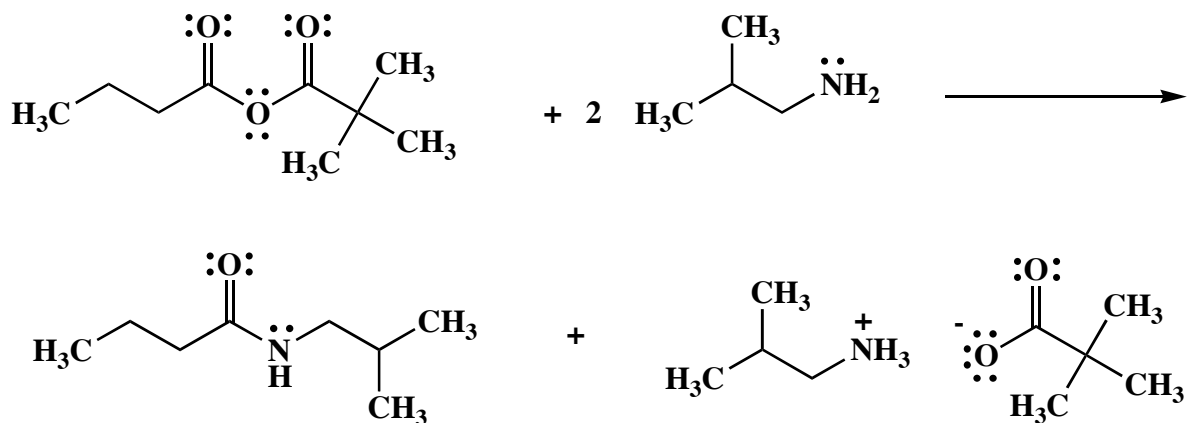
B.



Name: _____

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 unshared electrons, formal charges and countercharges where appropriate. Explain why only the amide that is shown is formed, not a different amide.



Congratulations!

1	/25
2	/25
3	/10
4	/20
5	/20
Total:	/100