

Chemistry 334

Examination #2

November 1, 1999

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.

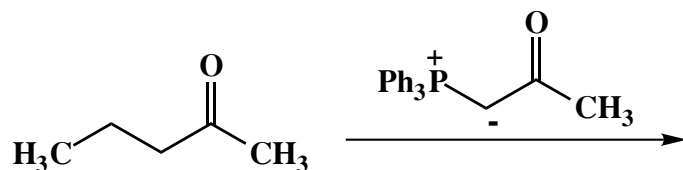
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

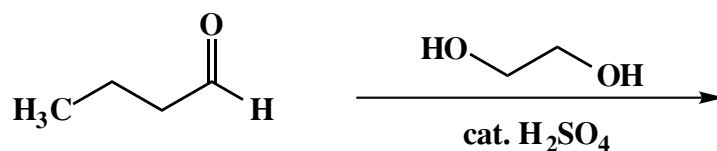
1. (25 points)

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

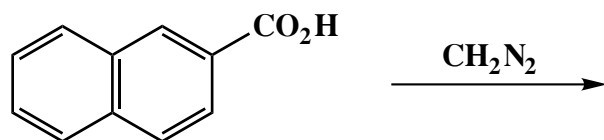
A.



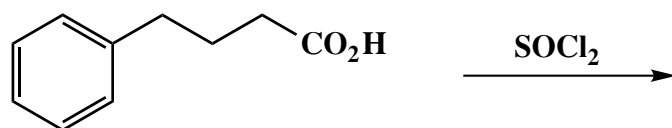
B.



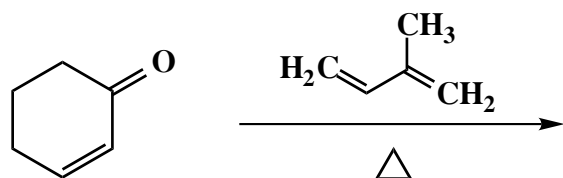
C.



D.



E.



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2. (20 points)

For each of the following five (5) questions, circle the number that corresponds to the correct answer.

A. Jones oxidation of a primary alcohol affords:

1. an aldehyde
2. a carboxylic acid
3. an ester

B. DIBAL-H reduction of a nitrile, followed by an aqueous acidic workup, yields:

1. an aldehyde
2. an amine
3. an imine

C. Nucleophiles add to:

1. the carbonyl carbon of ketones
2. the carbonyl oxygen of ketones
3. the alpha carbon of ketones

D. Fischer esterification can be driven largely to completion by using:

1. the alcohol as the solvent
2. dilute aqueous acid
3. dilute aqueous base

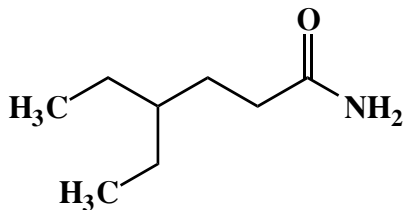
E. Imine formation requires:

1. strongly acidic conditions
2. weakly acidic conditions
3. weakly basic conditions

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3. (10 points)

Use IUPAC nomenclature to write the systematic name of the following carboxylic acid derivative.



4. (10 points)

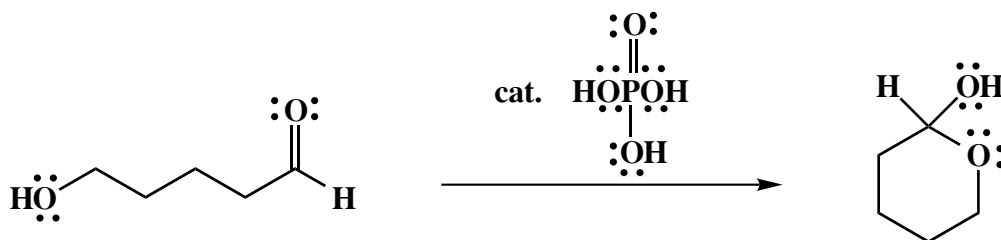
Answer the following question precisely, succinctly and with correct grammar.

Primary and secondary amide protons usually appear between 5.0 and 8.0 ppm in a ¹H NMR spectrum. This region overlaps the aromatic region (6.0 - 9.5 ppm). How can one tell if a resonance in this region is due to an amide or aromatic proton?

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5. (20 points)

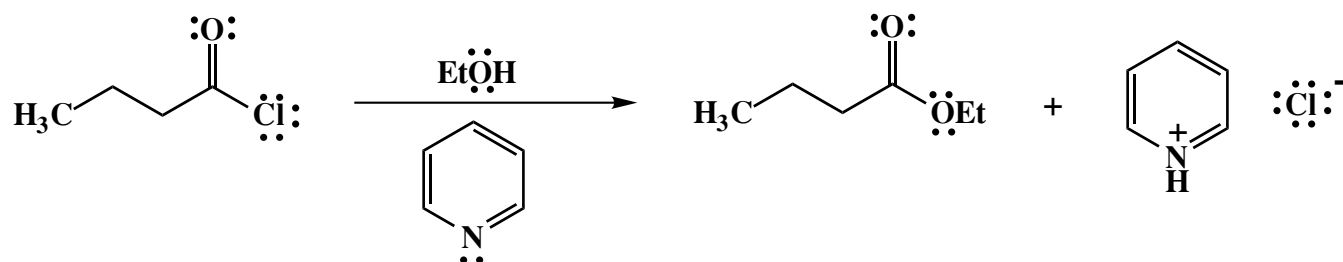
Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates and denote all lone pair electrons, formal charges and countercharges where appropriate. State why a cyclic hemiacetal is formed, instead of an acyclic one formed by the reaction of two molecules of the starting material.



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6. (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 lone pair electrons, formal charges and countercharges where appropriate.



Congratulations!

1	/25
2	/20
3	/10
4	/10
5	/20
6	/15
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Total:	/100