

Chemistry 334

Examination #2

October 27, 2003

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.

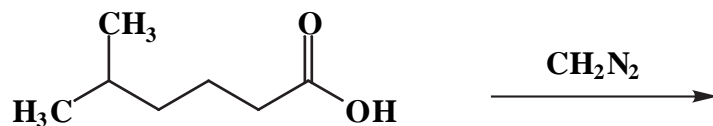
Molecular models are allowed for this examination. Calculators are unnecessary and are not allowed.

Name: _____

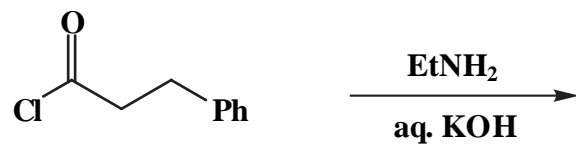
1. (25 points)

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

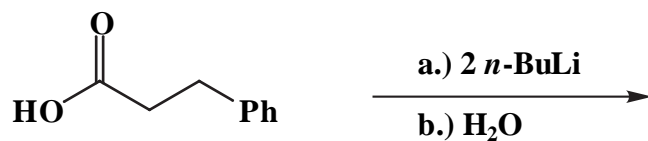
A.



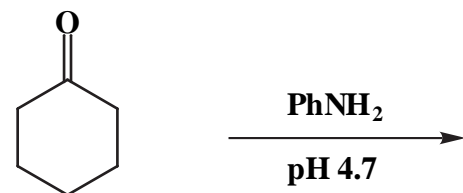
B.



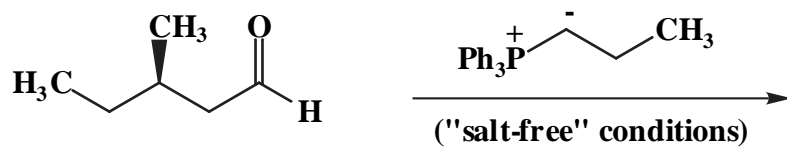
C.



D.



E.



Name: _____

2. (25 points)

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

A. The carbonyl group of an aldehyde has:

1. a dipole moment pointing toward carbon
2. a dipole moment pointing toward oxygen
3. no dipole moment

B. The alkylation of dithiane anion with an alkyl iodide proceeds via an:

1. E2 mechanism
2. S_N1 mechanism
3. S_N2 mechanism

C. What is the strongest acid?

1. propionic acid
2. 2-chloropropionic acid
3. 3-chloropropionic acid

D. α,β -Unsaturated ketones can undergo:

1. Michael additions, only
2. Diels-Alder cycloadditions, only
3. Michael additions and Diels-Alder cycloadditions

E. Nitriles can be converted to primary amides, which in turn, can be hydrolyzed to carboxylic acids.

1. The first conversion is relatively difficult. The second conversion is easy.
2. The second conversion is relatively difficult. The first conversion is easy.
3. Both conversions are relatively easy.

Name: _____

3. (20 points)

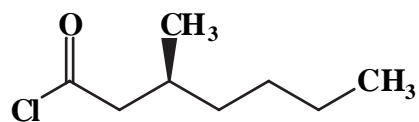
Answer the following two (2) questions precisely, succinctly and with correct grammar.

A. Why are aldehydes more reactive than ketones toward nucleophilic additions?

B. Amide protons appear between 5 and 8 ppm in ^1H NMR spectra. Aromatic protons appear in the same region. How can one identify an amide ^1H NMR resonance unambiguously?

4. (10 points)

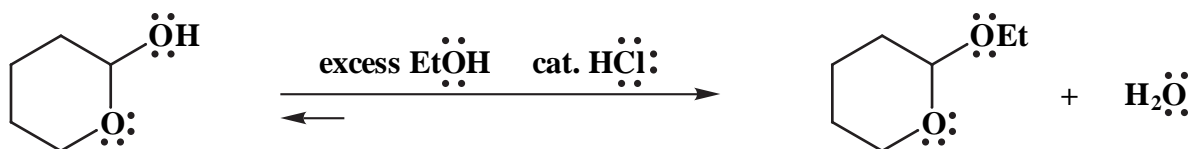
Use IUPAC nomenclature to write the systematic name of the following carbonyl compound.



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 lone pair electrons, formal charges and countercharges where appropriate.



Congratulations!

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