Chemistry 334

Examination #3

November 23, 1998 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.

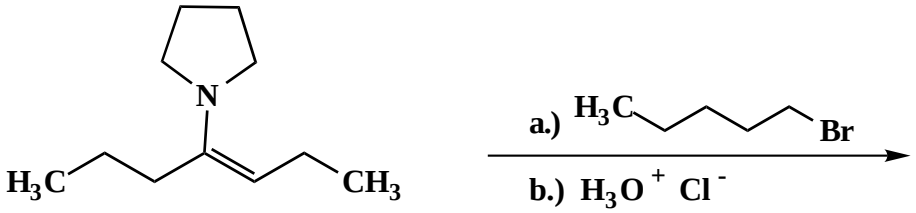
By putting your name on this examination booklet you agree to abide by
California State University, Northridge policies of academic honesty and integrity.

Name:_____

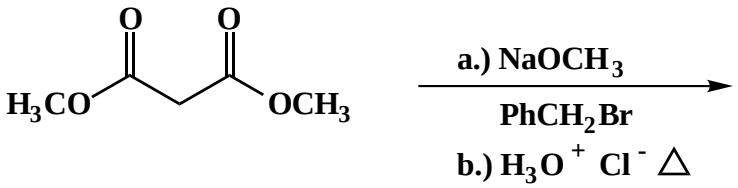
1. (25 points)

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

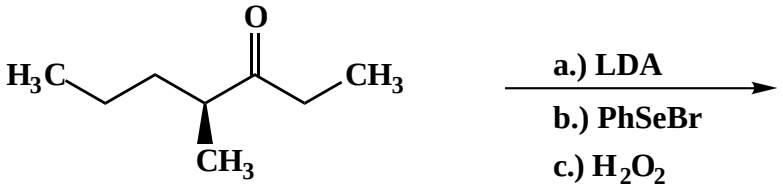
A.



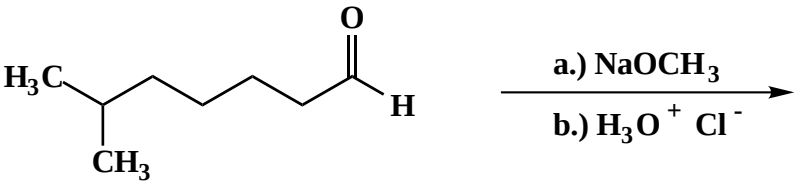
B.



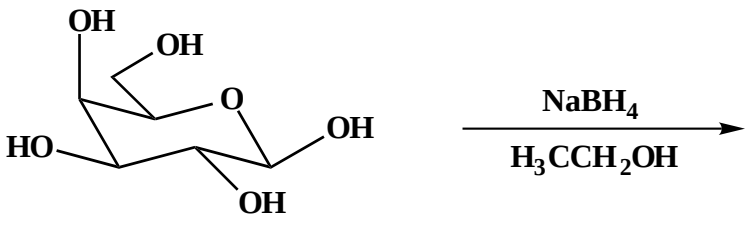
C.



D.



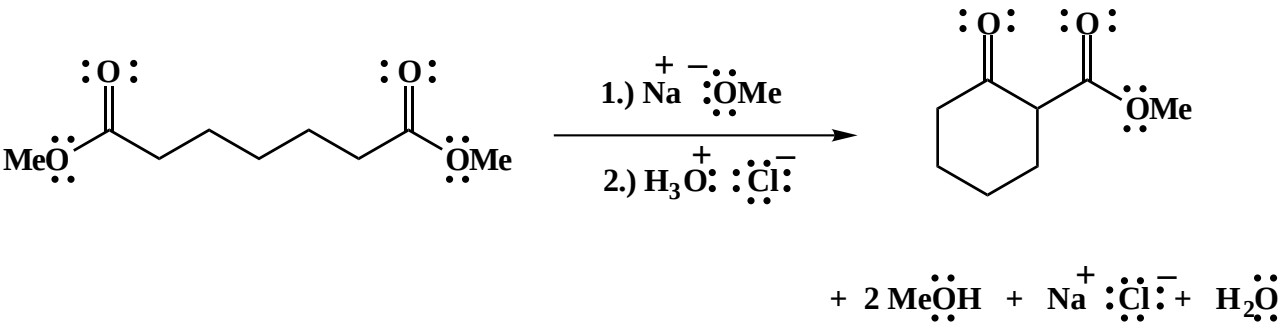
E.



Name:_____

2. (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. Briefly explain why a full equivalent, not a catalytic amount of base is required to obtain a satisfactory yield of the β-ketoester product.



Name:_____

3. (20 points)

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

A. D-glucose differs from D-fructose in:

1. the number of carbons
2. the overall oxidation level
3. the position and identity of the carbonyl group

B. Amylose is a:

1. step-growth homopolymer of D-glucose
2. step-growth copolymer of D-glucose and D-fructose
3. chain-growth homopolymer of D-glucose

C. The α- and β-anomers of D-galactose are:

1. enantiomers
2. diastereomers
3. structural isomers

D. The second sequence of steps in a Robinson annulation is an intramolecular aldol condensation followed by a dehydration. The intramolecular reaction occurs instead of an intermolecular one due to:

1. sterics
2. resonance
3. entropy

E. Cellulose contains D-glucose molecules linked together by

1. α-1,4'-glycosidic bonds
2. β-1,4'-glycosidic bonds
3. β-1,6'-glycosidic bonds

Name:_____

4. (30 points)

Answer the following three (3) questions precisely, succinctly and with correct grammar.

A. What structural features are common to all D-aldoses?

B. Why does free-radical polymerization of styrene afford a complex mixture of products?

C. Define the term, "crystallite". Draw a rough diagram to illustrate your answer.

Have a very happy Thanksgiving!

1	/25
2	/25
3	/20
4	/30
Total:	/100