

Chemistry 334

Hour Examination #3

November 17, 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.

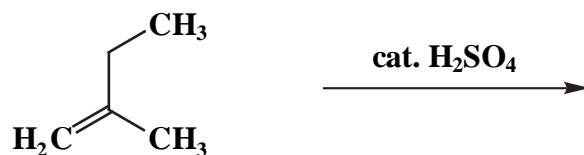
Molecular models are allowed for this examination. Calculators are unnecessary and are not allowed.

Name: _____

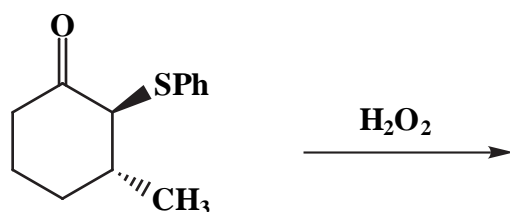
1. (25 points)

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

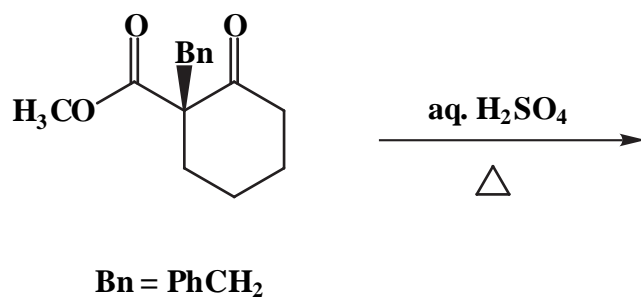
A.



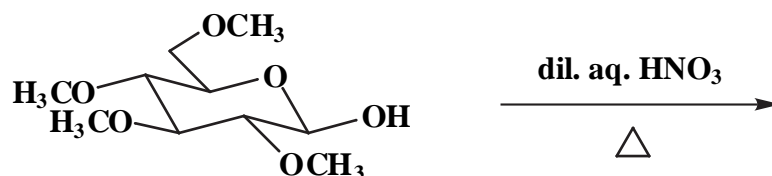
B.



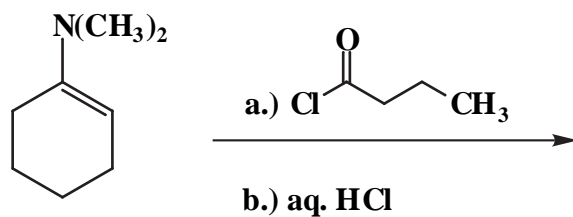
C.



D.



E.



Name: _____

2. (25 points)

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

A. Lactose and cellobiose are:

1. conformational isomers
2. enantiomers
3. diastereomers

B. Electrophilic substitution of carbonyl compounds occurs at the:

1. carbonyl carbon
2. alpha position
3. beta position

C. Which of the following compounds is not a "reducing sugar"?

1. sucrose
2. maltose
3. cellobiose

D. What conditions will polymerize ethylene to afford linear polyethylene?

1. radical
2. Ziegler-Natta
3. cationic

E. Glycogen is a:

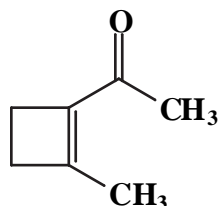
1. chain-growth homopolymer
2. step-growth homopolymer
3. step-growth copolymer

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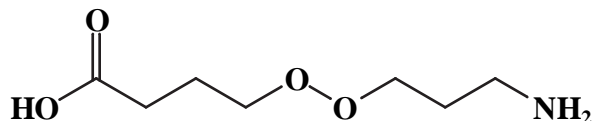
3. (20 points)

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

A. When 2,6-heptanedione is exposed to basic conditions, it does not form the α,β -unsaturated ketone shown below, but forms an isomeric α,β -unsaturated ketone instead. Explain why this is so, and draw the isomeric α,β -unsaturated ketone which is the actual product.

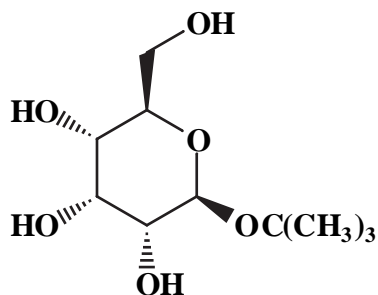


B. An acquaintance of yours excitedly tells you that he has made a new synthetic polymer to be used in next year's clothing lines. The polymeric material is a step-growth polymer of the compound shown below. He tells you that millions of dollars will be yours for a modest investment of \$10,000. Is it a good idea to invest? Why or why not?



4. (10 points)

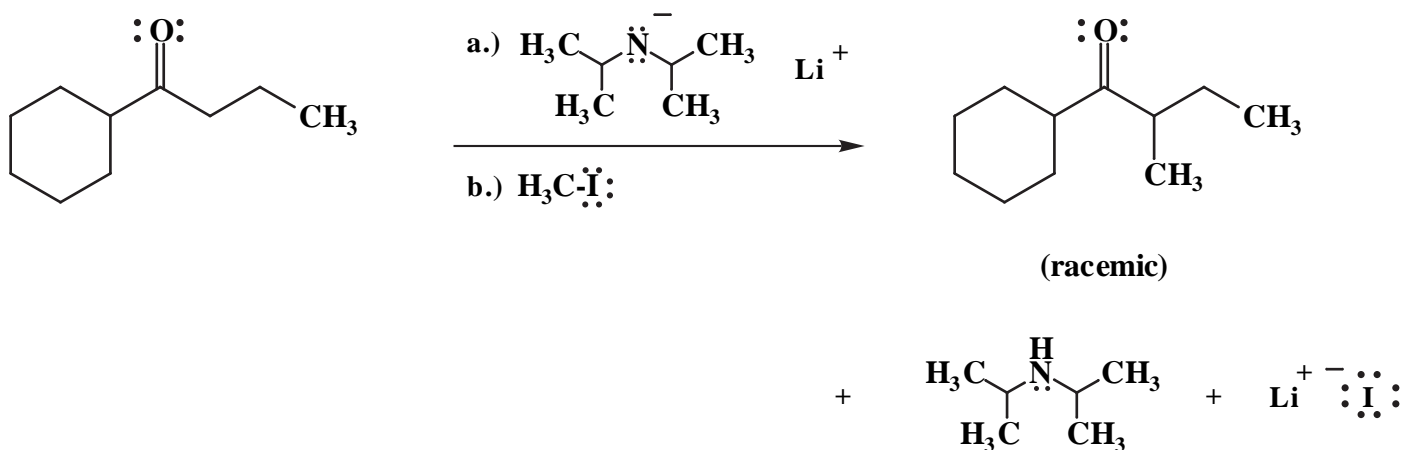
Draw the most stable conformation of the following glycoside. Denote all 1,3-diaxial interactions clearly.



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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** unshared electrons, formal charges and countercharges where appropriate. Explain concisely why the regiochemical result shown is obtained. Also, explain why a racemic mixture is produced.



Congratulations!

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