

Chemistry 334

Examination #3

November 21, 2005

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.

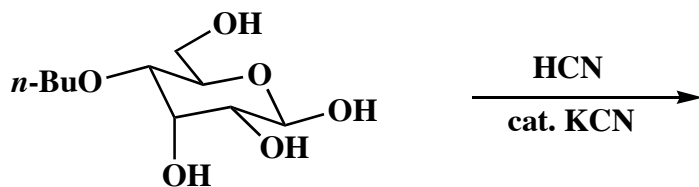
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

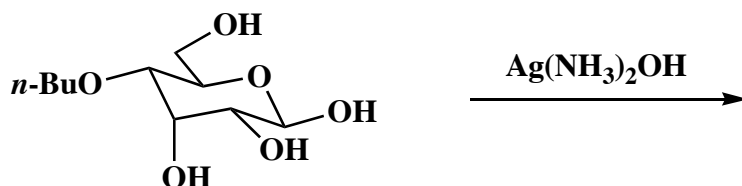
1. (25 points)

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

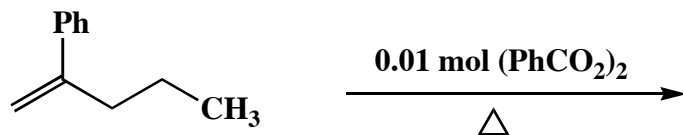
A.



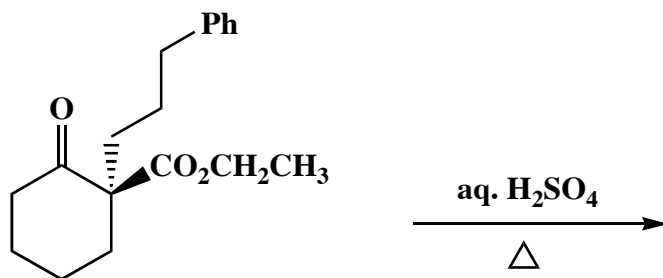
B.



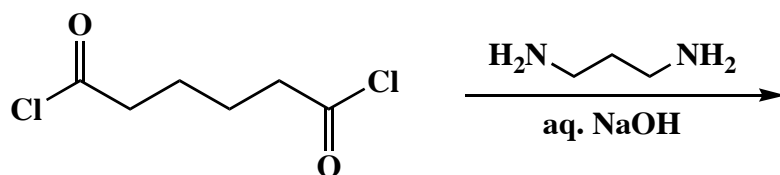
C.



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. Lactose and cellobiose are

1. enantiomers
2. diastereomers
3. structural isomers
4. not isomeric

B. Assuming an identical number of monomer units, amylose and amylopectin are

1. enantiomers
2. diastereomers
3. structural isomers
4. not isomeric

C. Poly(vinyl chloride) is

1. an addition copolymer
2. a condensation copolymer
3. a condensation homopolymer
4. an addition homopolymer

D. Polyethylene can be made via Ziegler-Natta or radical conditions. Which conditions afford polyethylene with larger and stronger crystallites?

1. Ziegler-Natta
2. radical
3. Ziegler-Natta and radical conditions afford polyethylene with similar structure.

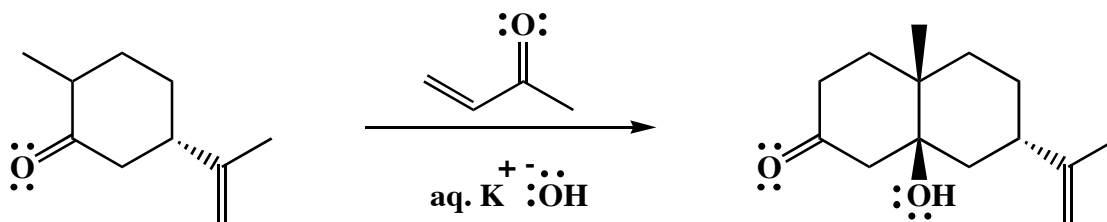
E. α -Anomers

1. always are more stable than β -anomers
2. sometimes are more stable than β -anomers
3. never are more stable than β -anomers

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3. (25 points)

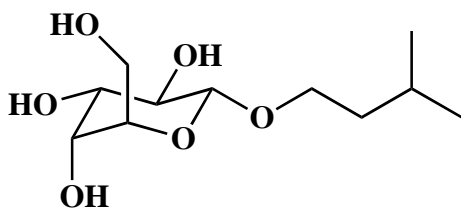
The following reaction is a key step in Marshall's synthesis of valeranone. Draw the mechanism of this reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates and denote all lone pair electrons, formal charges and countercharges where appropriate.



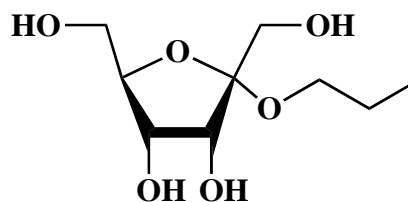
4. (10 points)

Write the general classification names for both of the following carbohydrates.

A.



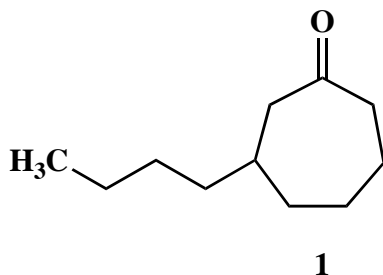
B.



Name: _____

5. (15 points)

Design a synthesis of a racemic mixture of the ketone **1** from cycloheptanol. Show all reagents and stable synthetic intermediate compounds. (**N.B.** Do not draw mechanisms for each synthetic transformation!)



Congratulations! Happy Thanksgiving!

1	/25
2	/25
3	/25
4	/10
5	/15
total:	/100