

Chemistry 334

Third Hour Examination

November 17, 1997

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.

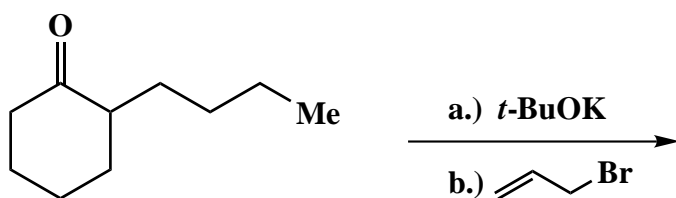
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

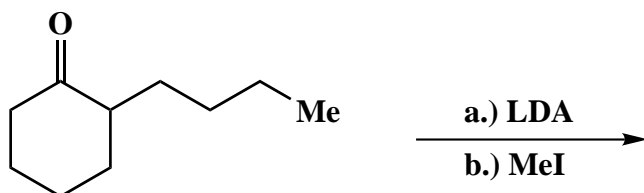
1. (20 points)

For each of the following four (4) questions draw the structure of the expected major organic product. If relevant, **explicitly** specify absolute and/or relative stereochemistry.

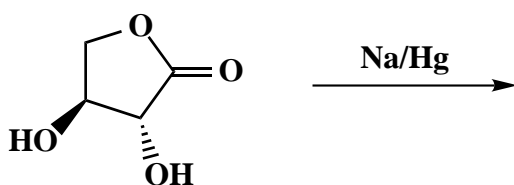
A.



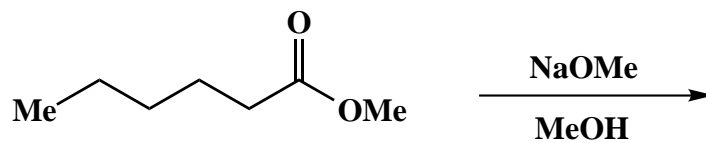
B.



C.



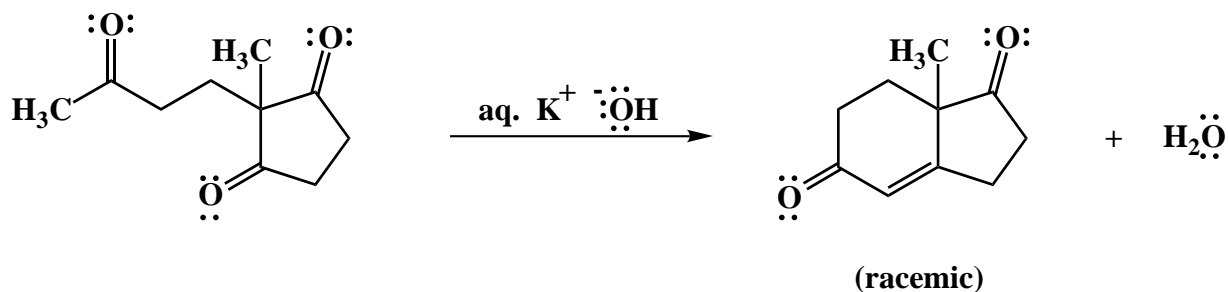
D.



Name: _____

2. (20 points)

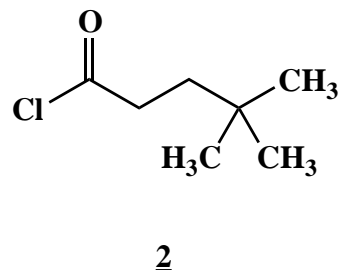
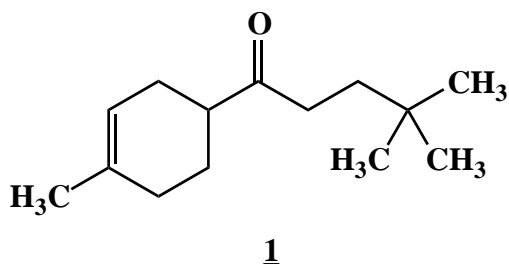
Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** intermediates and denote **all** unshared electrons, formal charges and countercharges where appropriate. Clearly denote reversibility or irreversibility for each primary mechanistic step. Explain briefly why the product is a racemic mixture.



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3. (20 points)

Use a retrosynthetic analysis to design a synthesis of the ketone **1** from the acid chloride **2** and mono- or difunctional organic compounds containing five carbons or less. Show all reagents and stable synthetic intermediate compounds. (**N.B.** Do not draw mechanisms for each synthetic transformation!)



4. (20 points)

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

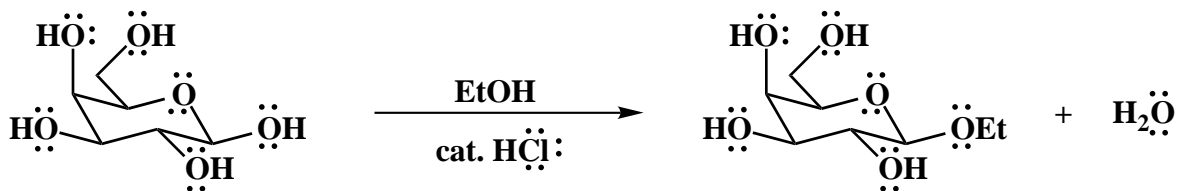
A. Why is isobutylene [$\text{H}_2\text{C}=\text{C}(\text{CH}_3)_2$] polymerized by acidic, but not basic conditions?

B. What is copolymerization? Draw a specific example of a copolymer.

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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. Clearly denote reversibility or irreversibility for each primary mechanistic step.



Congratulations!

| | |
|--------|------|
| 1 | /20 |
| 2 | /20 |
| 3 | /20 |
| 4 | /20 |
| 5 | /20 |
| Total: | /100 |