

Chemistry 334

Hour Examination #3

May 3, 1999

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 five (5) questions, circle the number that corresponds to the correct answer.

A. Amylopectin contains D-glucose molecules linked together by

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

B. The enzyme, aldolase, causes fructose-1,6-bisphosphate to undergo

1. a fragmentation reaction
2. an addition reaction
3. a substitution reaction

C. It is possible to dehydrate a β -hydroxy ketone to the corresponding α,β -unsaturated ketone with

1. acidic conditions
2. basic conditions
3. acidic or basic conditions

D. "Butyl rubber," the polymer used for inner tubes, is a

1. homopolymer of isobutylene units
2. a graft copolymer of isobutylene and isoprene units
3. a random copolymer of isobutylene and isoprene units

E. Free-radical polymerization of styrene affords

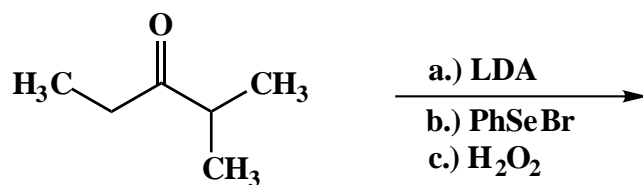
1. linear polystyrene
2. branched polystyrene with two-monomer side chains
3. branched polystyrene with multi-monomer side chains

Name: _____

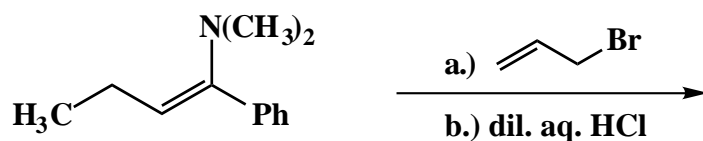
2. (25 points)

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

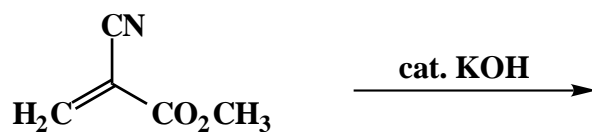
A.



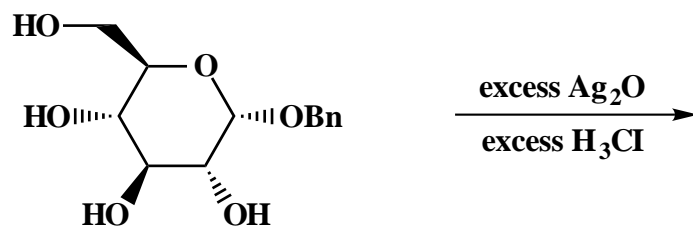
B.



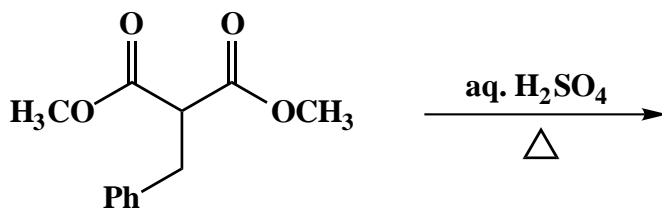
C.



D.



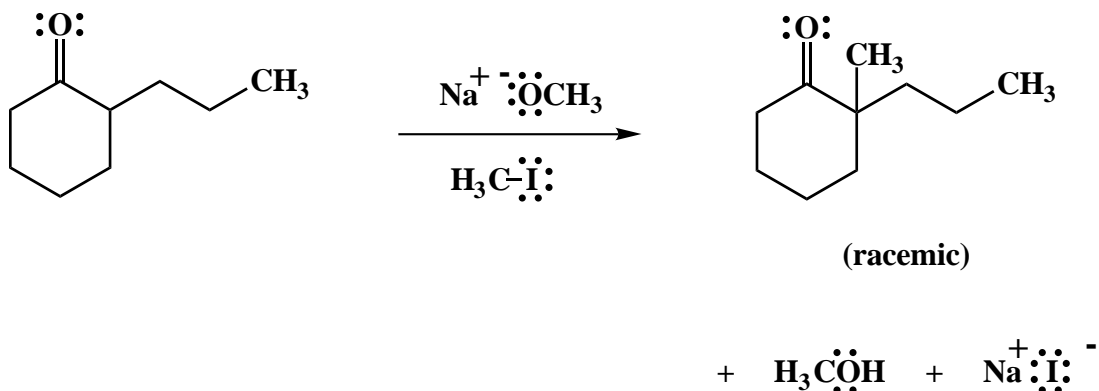
E.



Name: _____

3. (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 unshared electrons, formal charges and countercharges where appropriate. Clearly denote reversibility or irreversibility for each primary mechanistic step. Draw the other possible regioisomeric product. Comment why this alternate product is not formed. Finally, comment why a racemic mixture is obtained.



4. (10 points)

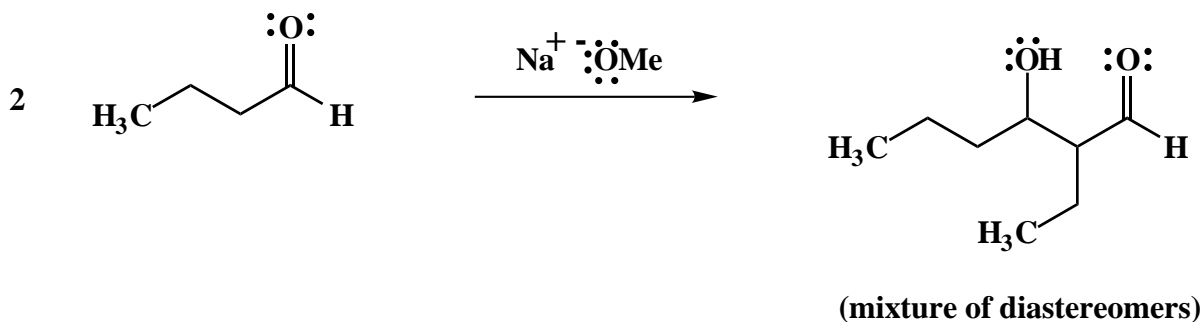
Answer the following question precisely, succinctly and with correct grammar.

What is carbonyl transposition? Describe a specific example to illustrate your answer.

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 unshared electrons, formal charges and countercharges where appropriate. Clearly denote reversibility or irreversibility for each primary mechanistic step.



Congratulations!

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