

Chemistry 334

Final Examination

December 8, 2003

Professor Charonnat

Name: _____

Be certain that your examination has nine (9) 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.

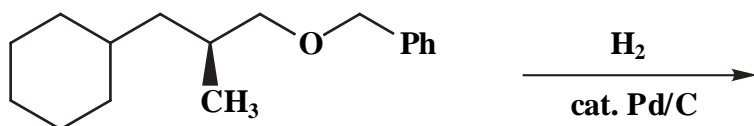
Molecular models are allowed for this examination. Calculators are unnecessary and are not allowed.

Name: _____

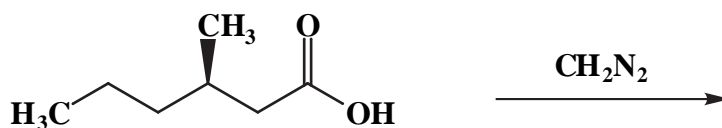
1. (50 points)

Draw the structure of the expected major organic product for each of the following ten (10) questions. Clearly specify stereochemistry, if relevant.

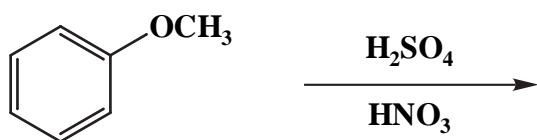
A.



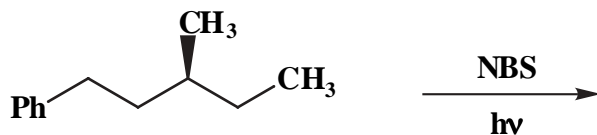
B.



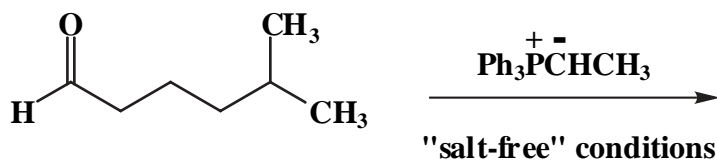
C.



D.



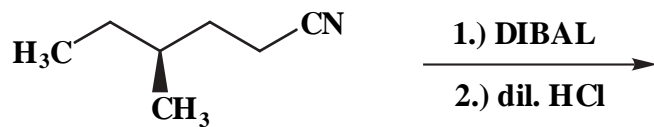
E.



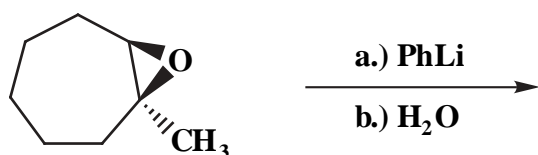
Name: _____

1. (cont.)

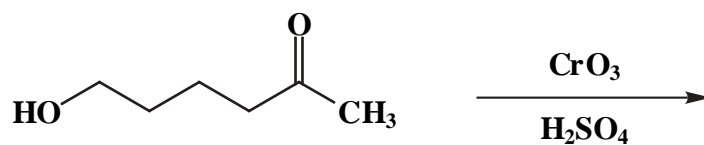
F.



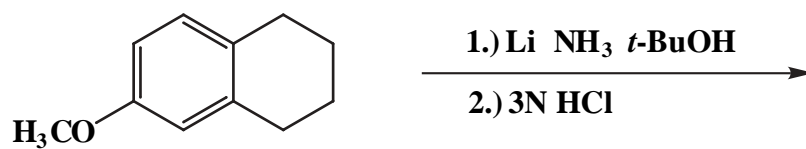
G.



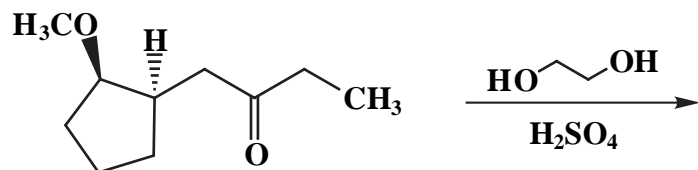
H.



I.



J.

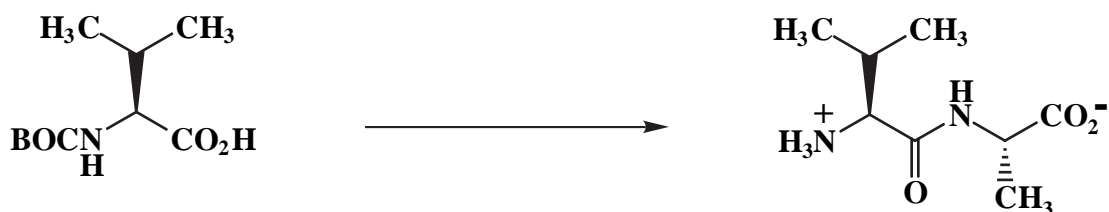


Name: _____

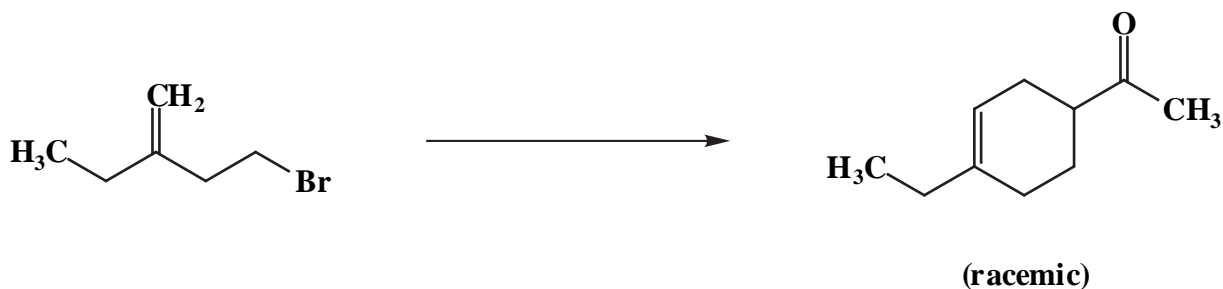
2. (25 points)

Draw the specific reagent(s) necessary to effect the transformation shown for both of the following two (2) questions. If more than one reaction is involved in an answer, be certain to distinguish the individual steps clearly.

A.

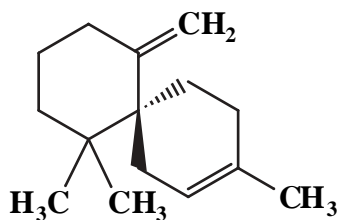


B.



3. (10 points)

Circle the "isoprene" units in the following sesquiterpene. Clearly label the head (h) and tail (t) of each "isoprene" unit.

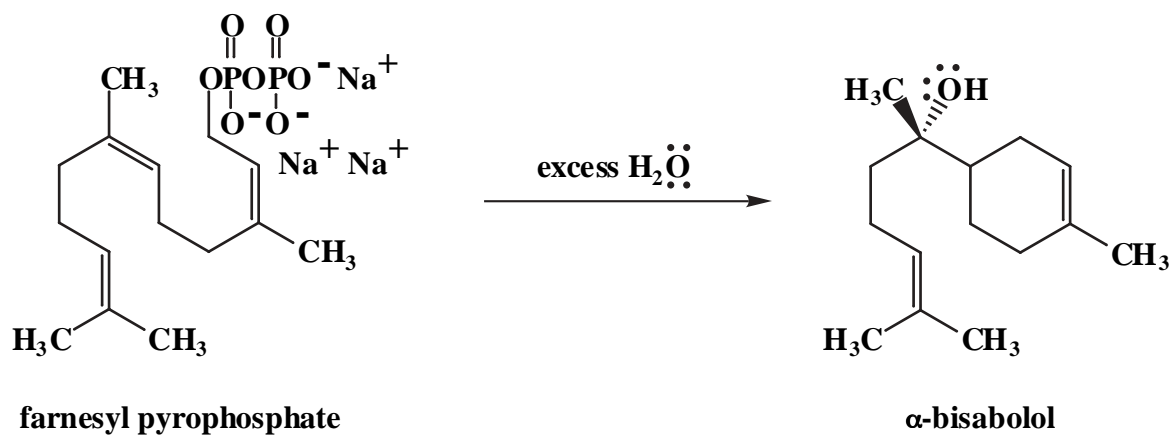


β -chamigrene

Name: _____

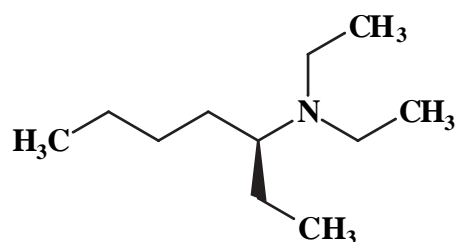
4. (15 points)

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. Denote reversibility or irreversibility for each primary mechanistic step. (N.B.: Lone pairs were left off of the pyrophosphate oxygens for graphical clarity.)



5. (10 points)

Use IUPAC nomenclature to write the systematic name of the following compound.



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6. (25 points)

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

A. Sodium cyanoborohydride will reduce:

1. a ketone but not an iminium ion
2. an iminium ion but not a ketone
3. both an iminium ion and a ketone

B. The primary structure of a protein is:

1. the overall conformation of the protein
2. the local conformation of the protein
3. the sequence of α -amino acids in the protein

C. Fatty acids contain an:

1. odd number of carbons
2. even number of carbons
3. even or odd number of carbons

D. Neutral α -amino acids contain:

1. one amino and one carboxyl group
2. one amino and more than one carboxyl group
3. one carboxyl and more than one amino group

E. The absolute stereochemistry of L-phenylalanine is:

1. R
2. S
3. a 1:1 mixture of R and S

Name: _____

7. (25 points)

Draw a specific example of each of the following:

A. any steroid:

B. any monoterpene:

C. any naturally-occurring phospholipid:

D. any naturally-occurring triacylglycerol:

E. any naturally-occurring, unsaturated fatty acid:

F. any naturally-occurring wax:

G. any aldol product:

H. any Claisen product:

I. any chain-growth polymer:

J. any step-growth polymer:

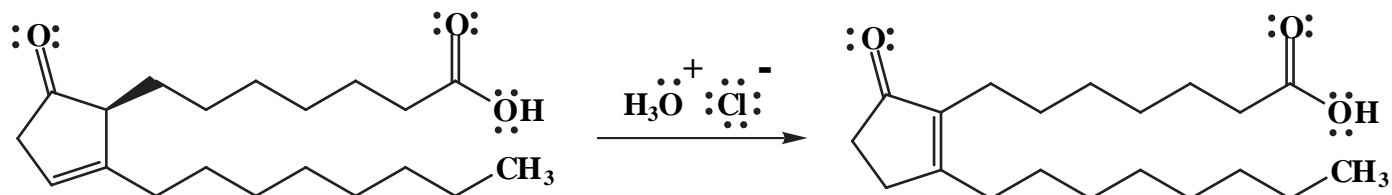
K. any reducing sugar:

L. any nonreducing sugar:

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8. (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.

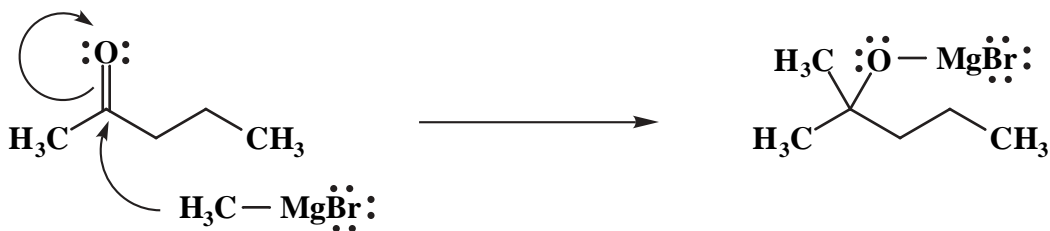


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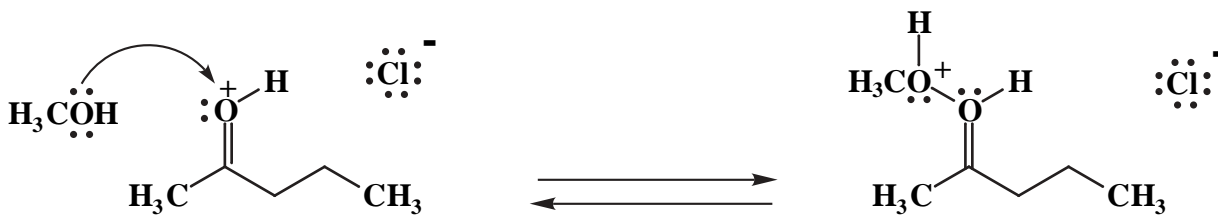
9. (20 points)

State concisely why the primary mechanistic step shown does not occur, for both of the following two (2) questions. Draw what would actually happen, instead.

A.



B.



Congratulations!

1	/50
2	/25
3	/10
4	/15
5	/10
6	/25
7	/25
8	/20
9	/20
<hr/> Total:	<hr/> /200

course grade: ____