

Chemistry 334

Final Examination

December 20, 2006

Professor Charonnat

Name: _____

Be certain that your examination has eight (8) 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.

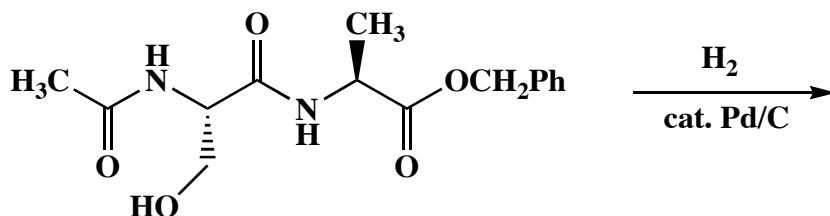
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

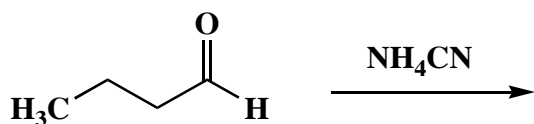
1. (50 points)

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

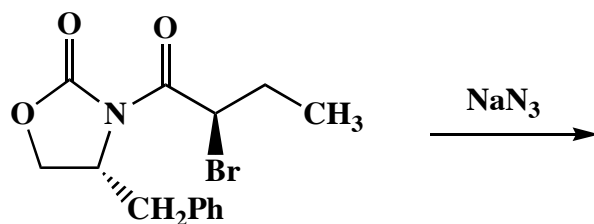
A.



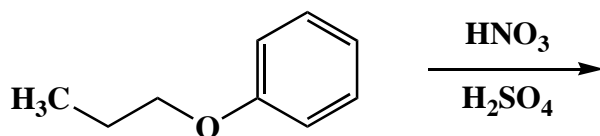
B.



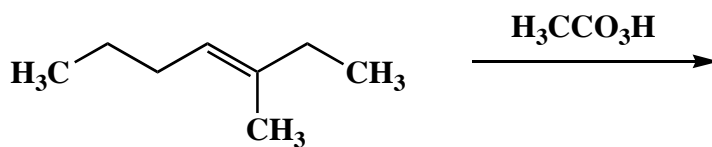
C.



D.



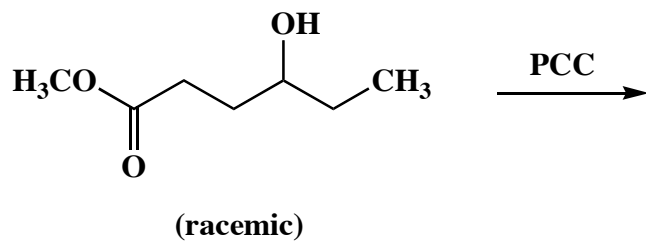
E.



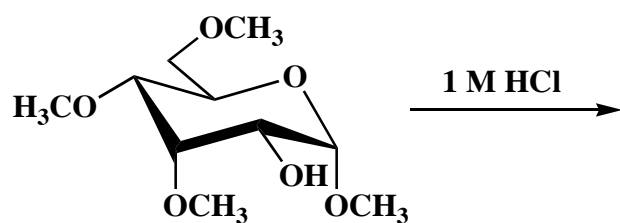
Name: _____

1. (cont.)

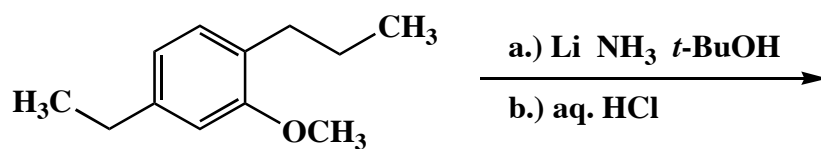
F.



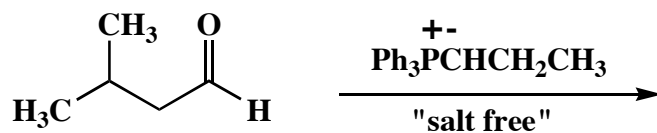
G.



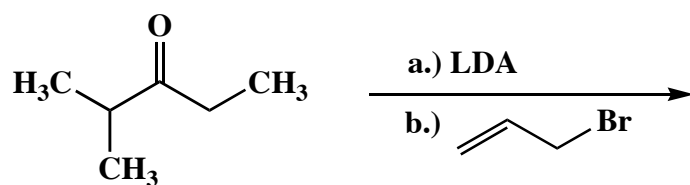
H.



I.



J.

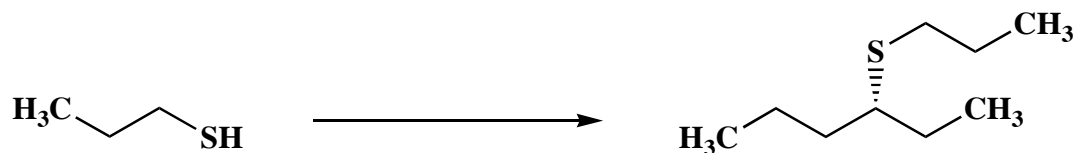


Name: _____

2. (25 points)

Draw the specific reagent(s) necessary to effect the following four (4) transformations. If more than one reaction is involved in an answer, be certain to distinguish the individual steps clearly.

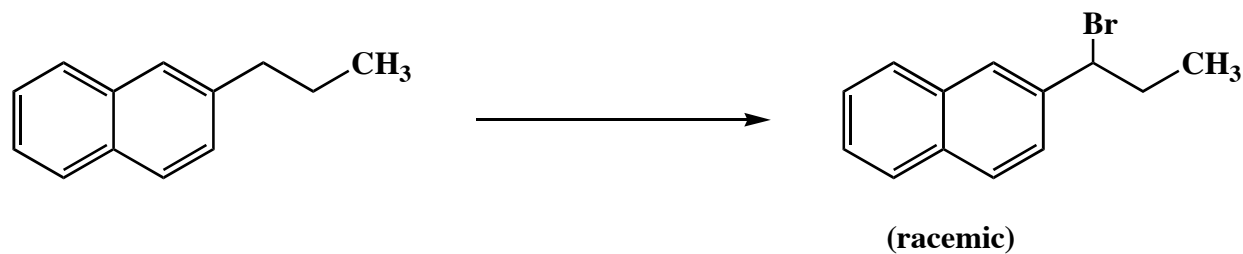
A.



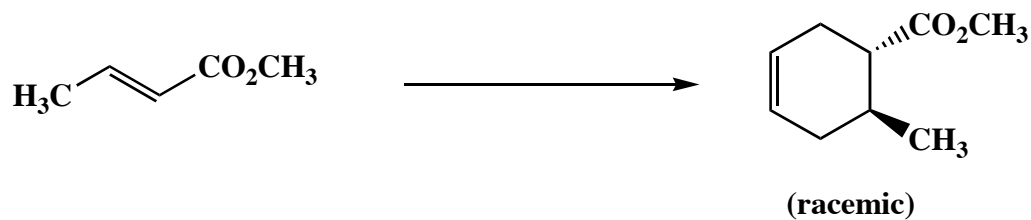
B.



C.



D.



Name: _____

3. (25 points)

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

A. Bromine is

1. a *meta*-directing deactivator in electrophilic aromatic substitutions
2. an *ortho, para*-directing deactivator in electrophilic aromatic substitutions
3. an *ortho, para*-directing activator in electrophilic aromatic substitutions

B. The Merrifield peptide synthesis utilizes

1. enzyme catalysis
2. a solid-phase support
3. a phase-transfer catalyst

C. Which of the following is the most stable carbocation?

1. allylic
2. primary alkyl
3. secondary alkyl

D. An omega loop is an example of

1. repetitive primary structure
2. repetitive secondary structure
3. nonrepetitive secondary structure

E. Aldol products are

1. α -hydroxy carbonyl compounds
2. β -hydroxy carbonyl compounds
3. γ -hydroxy carbonyl compounds

Name: _____

4. (25 points)

Draw a specific example of each of the following twelve (12) categories.

A. any naturally-occurring acidic α -amino acid:

B. any naturally-occurring basic α -amino acid:

C. any naturally-occurring phosphatidic acid:

D. any naturally-occurring triacylglycerol:

E. any prostaglandin:

F. any naturally-occurring wax:

G. any steroid:

H. any monoterpene:

I. any naturally-occurring unsaturated fatty acid:

J. any naturally-occurring saturated fatty acid:

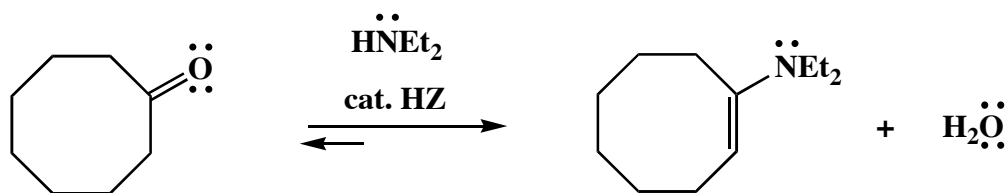
K. any reducing sugar:

L. any nonreducing sugar:

Name: _____

5. (30 points)

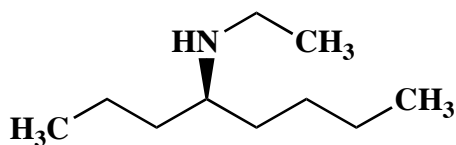
Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates and denote all unshared electrons, formal charges and countercharges where appropriate. Clearly denote reversibility or irreversibility for each primary mechanistic step. (Note: HZ is a weak acid.)



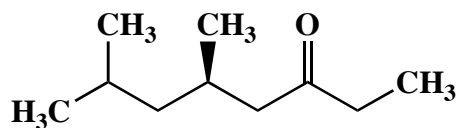
6. (20 points)

Use IUPAC nomenclature to write the systematic name for both of the following two (2) compounds.

A.



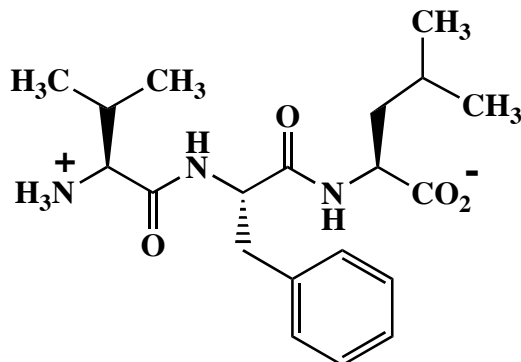
B.



Name: _____

7. (25 points)

Design a synthesis of the following tripeptide from the corresponding BOC-protected α -amino acids. Use any inorganic and organic reagents that are necessary. Show all reagents and stable synthetic intermediate compounds. (Note: Do not draw mechanisms for each synthetic transformation!)



Congratulations!

1	/50
2	/25
3	/25
4	/25
5	/30
6	/20
7	/25
Total:	/200