

Chemistry 333

Examination #3

May 8, 2019

Professor Charonnat

Name: _____

Be certain that your examination has seven (7) 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.

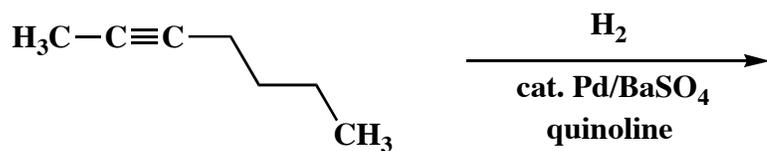
Molecular models are allowed for this examination. All electronic devices, including calculators and cell phones, are unnecessary and are not allowed.

Name: _____

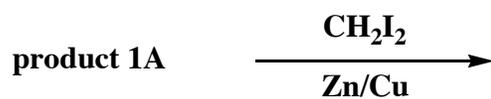
1. (25 points)

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

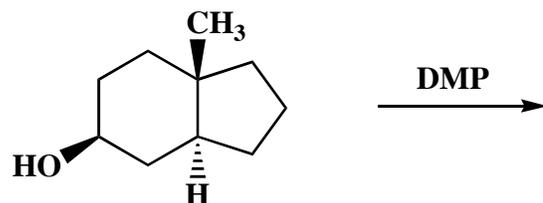
A.



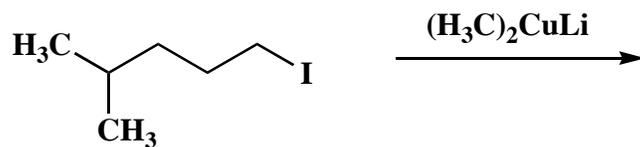
B.



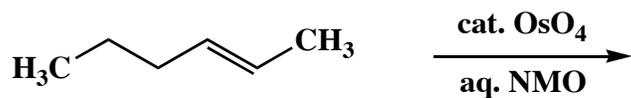
C.



D.



E.

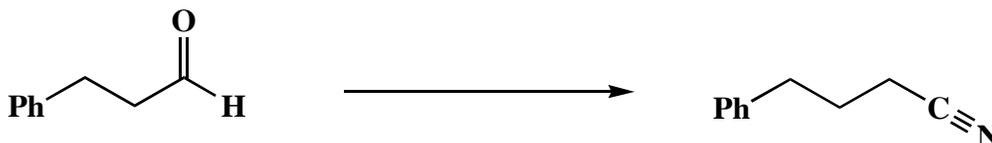


Name: _____

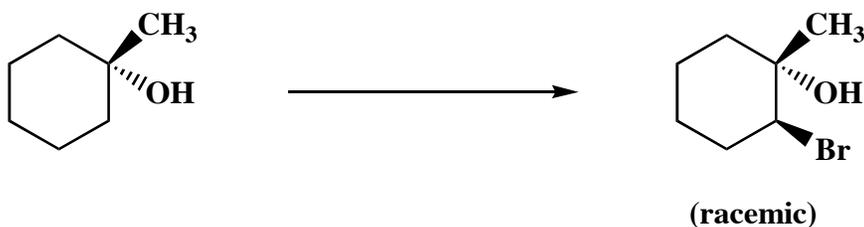
2. (25 points)

Write 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. Include stoichiometric coefficients of reagents, as well.

A.

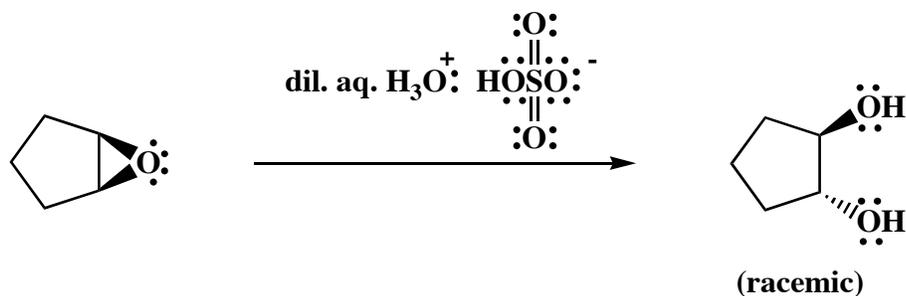


B.



3. (15 points)

Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates, unshared electrons, nonzero formal charges, countercharges, and reversibility or irreversibility. Finally, explain why the observed stereochemical results are obtained.



Name: _____

4. (30 points)

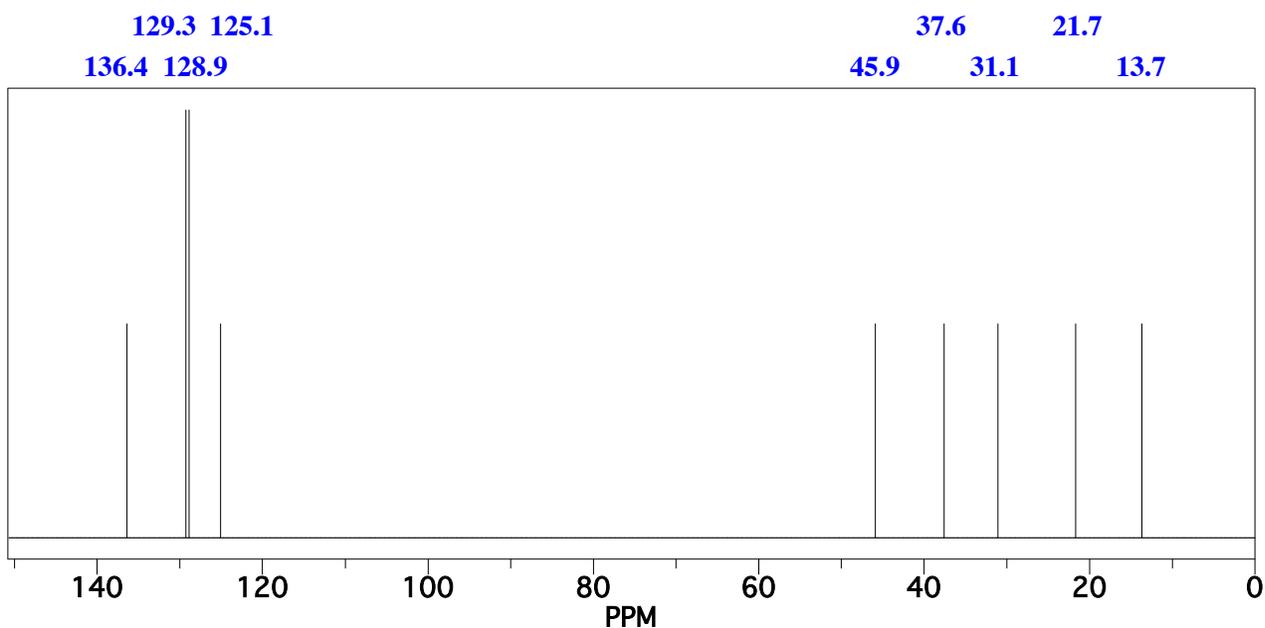
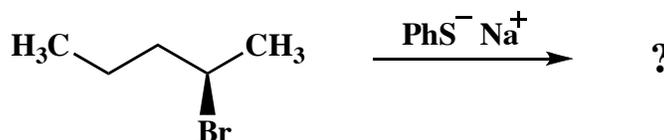
Circle the letter that corresponds to the correct answer for each of the following six (6) questions.

These questions are unavailable due to copyright considerations.

Name: _____

5. (25 points)

Draw the structure of the expected major organic product that is formed from the following reaction. Draw this structure in the box at the bottom of the next page. Then use letters to label all the sets of chemically equivalent carbons in this structure. The broadband proton-decoupled ^{13}C NMR spectrum of the product is shown below. DEPT 90 and DEPT 135 data are included in the table on the next page. Use this spectroscopic data to make clear assignments of all the resonances and determine the identity of the product. (A ^{13}C NMR correlation table is included separately.)



Name: _____

5. (continued)

^{13}C NMR assignments:

chemical shift (ppm)	assignment	DEPT 90	DEPT 135	DEPT explanation
136.4		absent	absent	
129.3		present	up	
128.9		present	up	
125.1		present	up	
45.9		present	up	
37.6		absent	down	
31.1		absent	down	
21.7		absent	up	
13.7		absent	up	

structure:



Congratulations!

1	/25
2	/25
3	/15
4	/30
5	/25
<hr/>	
Total:	/120