Name _____ Slayter Box _____

Examination I Thursday, September 27, 2012

Organic Chemistry II (CHEM 251-03)

Dr. Fantini

EXAM 1

Please do not open until instructed

You have two hours to complete this examination.

Organic Chemistry (CHEM 251-03)
Dr. Fantini

Examination I

EXAM 1

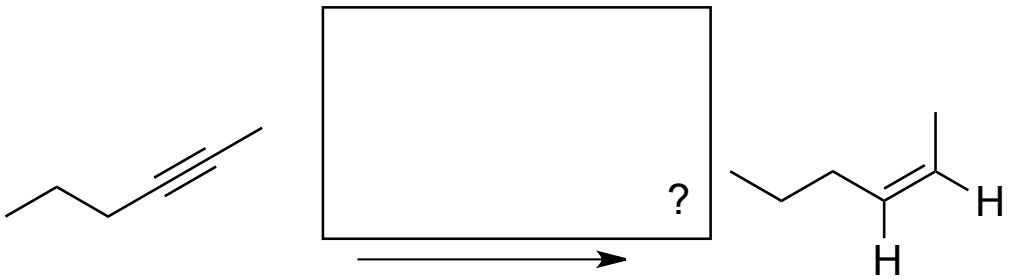
Notes:

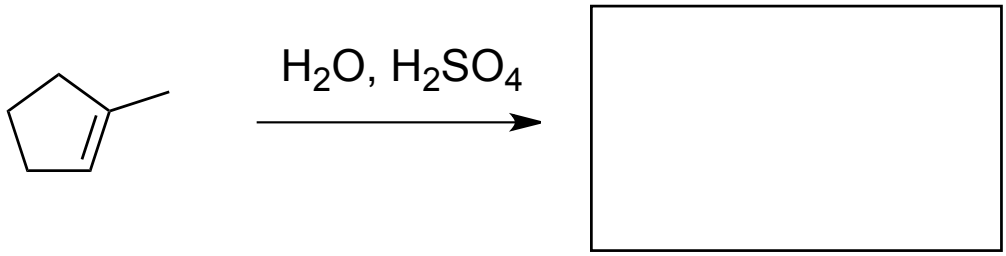
• This exam consists of **7 questions**. Please check to make sure that you have a complete copy of the exam.
• ***Please do not simply give me answers. Give me well-supported answers where needed. Answers that are not backed by explanations will receive minimal credit.***
• Please write clearly; if I can't read your answer, I can't give you credit for your answer.
• Please note that different questions are worth different numbers of points. Plan your time accordingly.
• Remember to include units and significant figures where appropriate.
• No books or notes are to be used on this exam.
• Please do NOT share calculators; if you need a calculator but do not have one, please let me know!

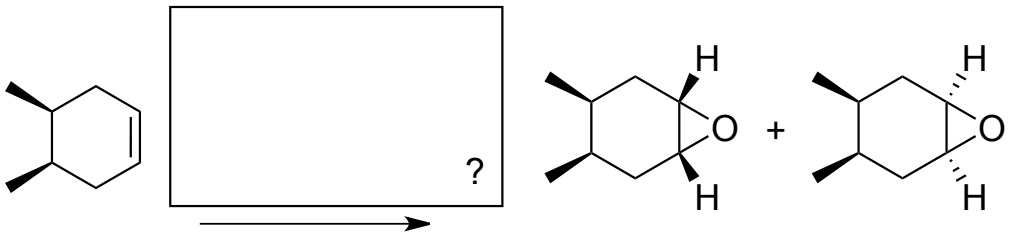
• *If you feel that you would be better able to answer **any** question if you had additional information, please do not hesitate to ask for it*. I will happily provide any information that I feel will help you answer the question without compromising the efficacy and fairness of the test.

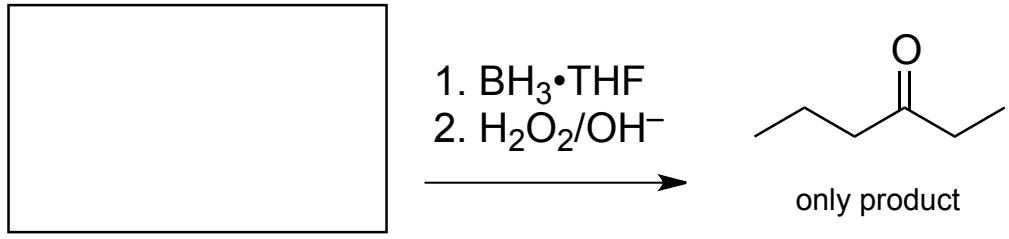
Question	Possible	Score
1	30	
2	16	
3	4	
4	10	
5	16	
6	8	
7	16	
EC (synthesis)	4	
EC (seminar)	1	1
TOTAL	100	
	Approx. Letter:	

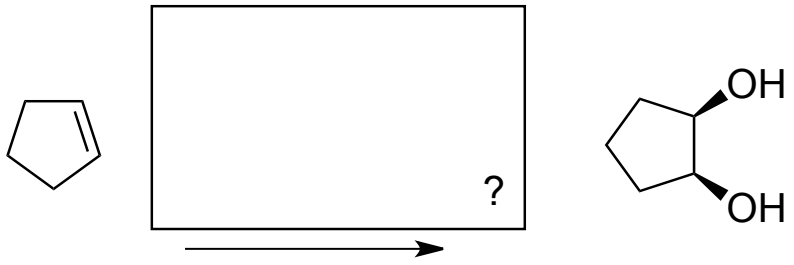
30 1. Please provide the missing reagent or product. All are single-step unless stated otherwise. *This problem extends over three pages. Room for work is at the bottom of each page.* ***Only answers in boxes are graded! IT IS IMPORTANT TO DESIGNATE STEREOCHEMISTRY***







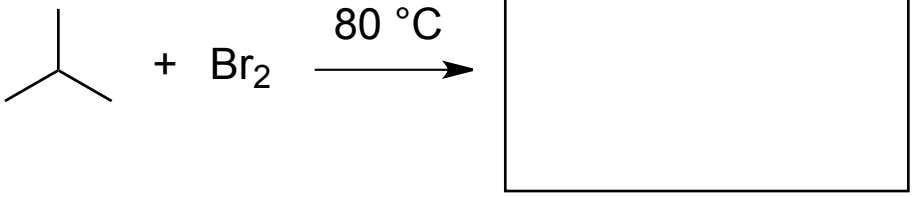




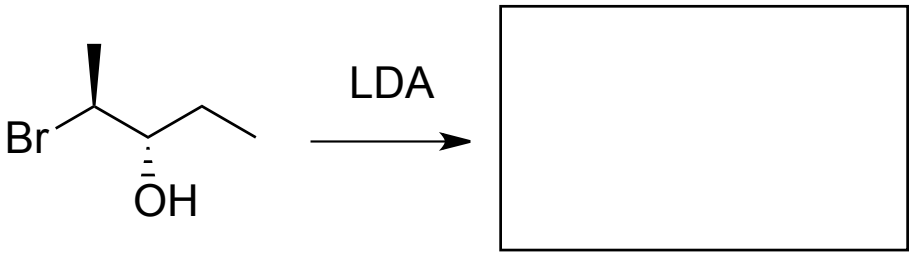
IT IS IMPORTANT TO DESIGNATE STEREOCHEMISTRY

Question 1, continued.

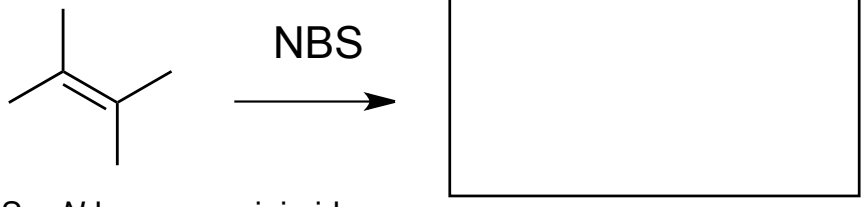
IT IS IMPORTANT TO DESIGNATE STEREOCHEMISTRY



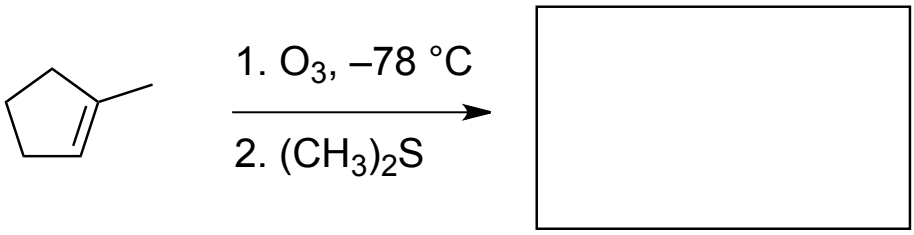
only the **one** major product

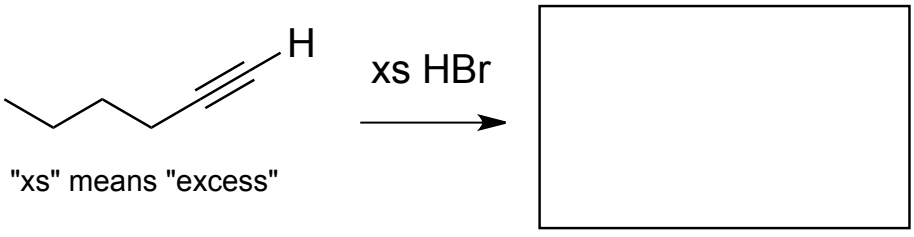


LDA = lithium diisopropylamide



NBS = *N*-bromosuccinimide

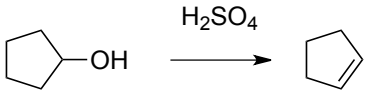


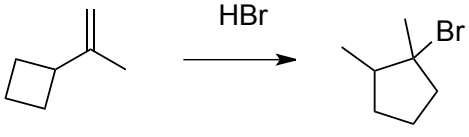


"xs" means "excess"

IT IS IMPORTANT TO DESIGNATE STEREOCHEMISTRY

162. Please provide the step-by-step electron-pushing mechanism for:

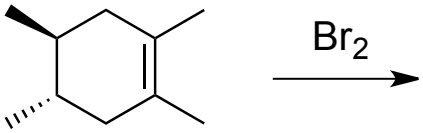
(a) 

(b) 

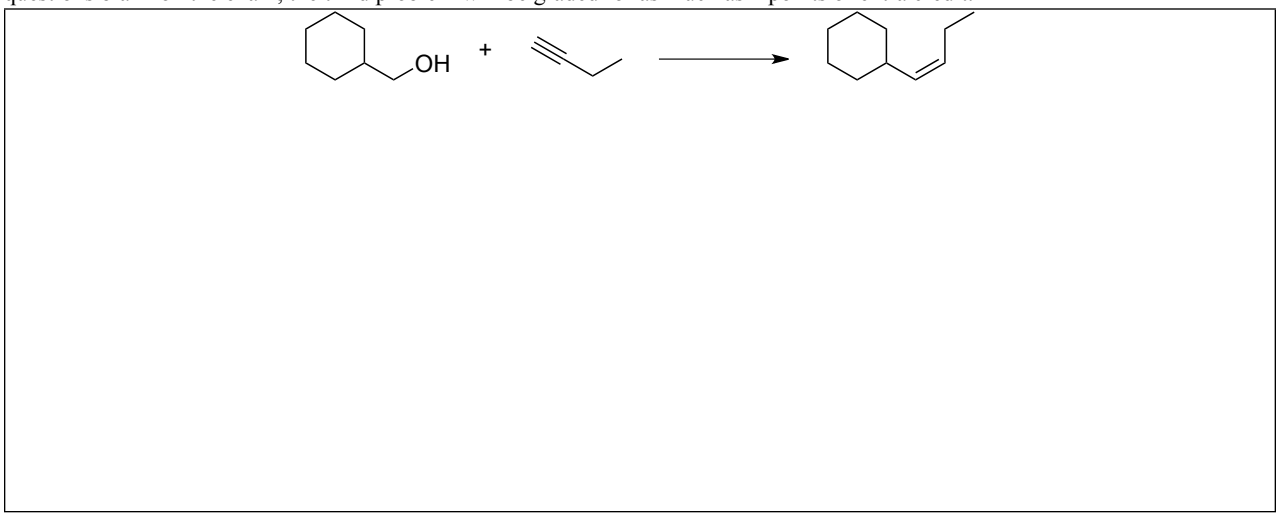
*4*3. Please give a structure for each name shown.

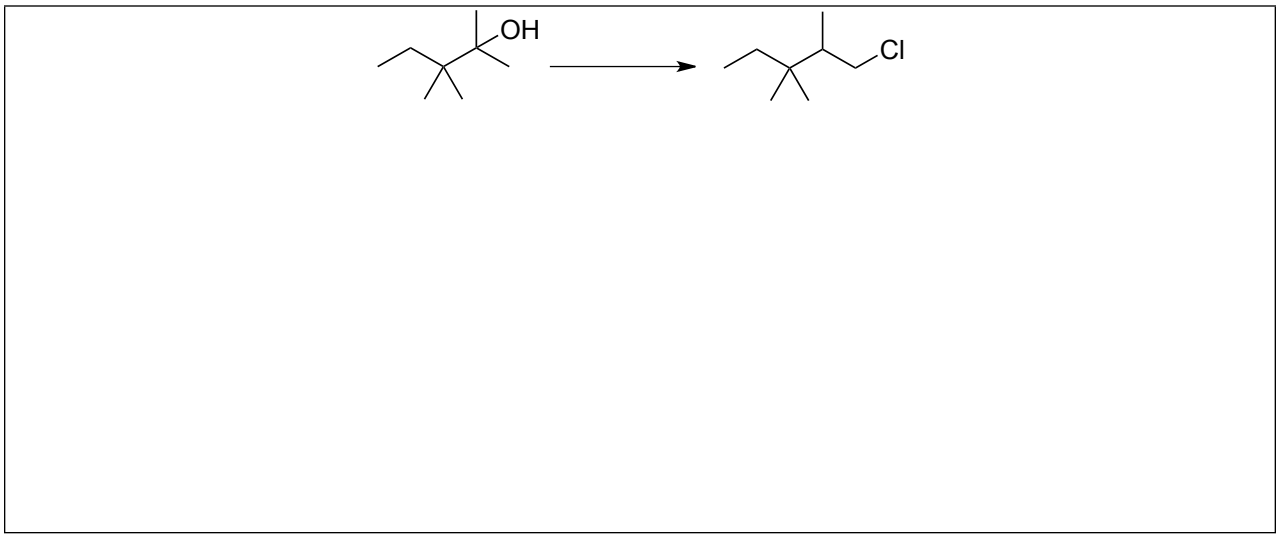
(*R*)-2-pentanol	(*Z*)-3-methyl-2-hexene

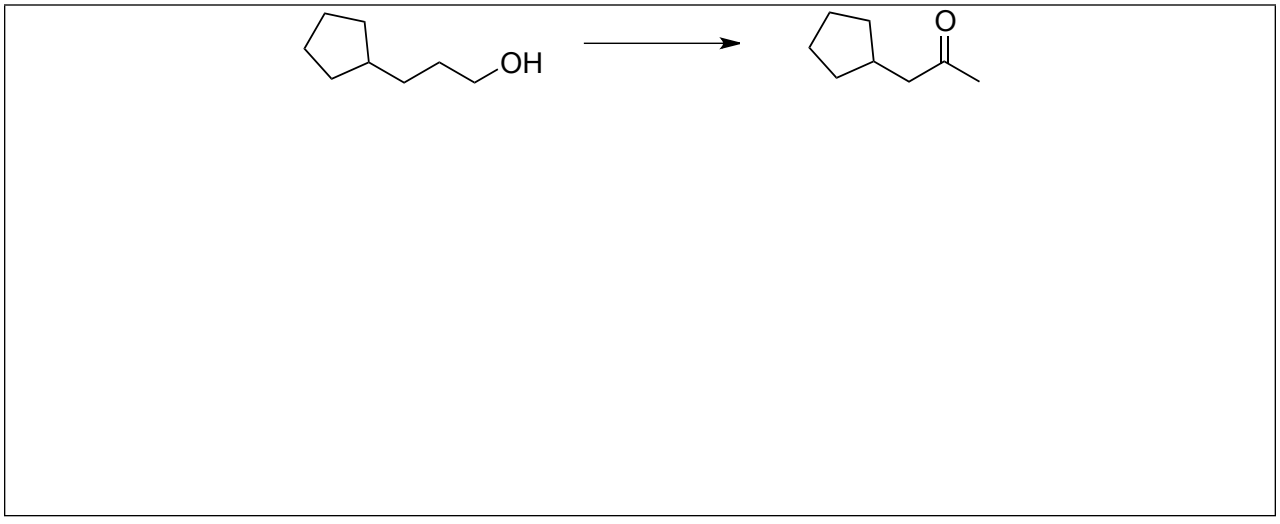
*10*4. For the reaction shown below, draw all of the products, and show relationships among all products (e.g. enantiomers, diastereomers, meso, etc.).



165. Outline a synthesis of the following compounds starting with the given reactant and any reagents as needed. Carbons must come from the given reactants. **CHOOSE ANY TWO (2) OF THE THREE (3) PROBLEMS.** If you designate which 2 you want graded for regular credit, AND you have not left any questions blank on the exam, the third problem will be graded for as much as 4 points of extra credit.



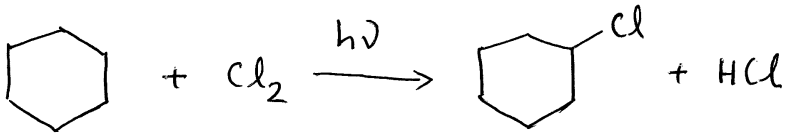




8 6. The following reaction is a radical chain that begins with the generation of the chlorine radical (Cl•).

<u>Write the propagation steps for the mechanism of the reaction.</u> Show that the steps added together give the overall reaction.

Don't include initiation or termination steps.



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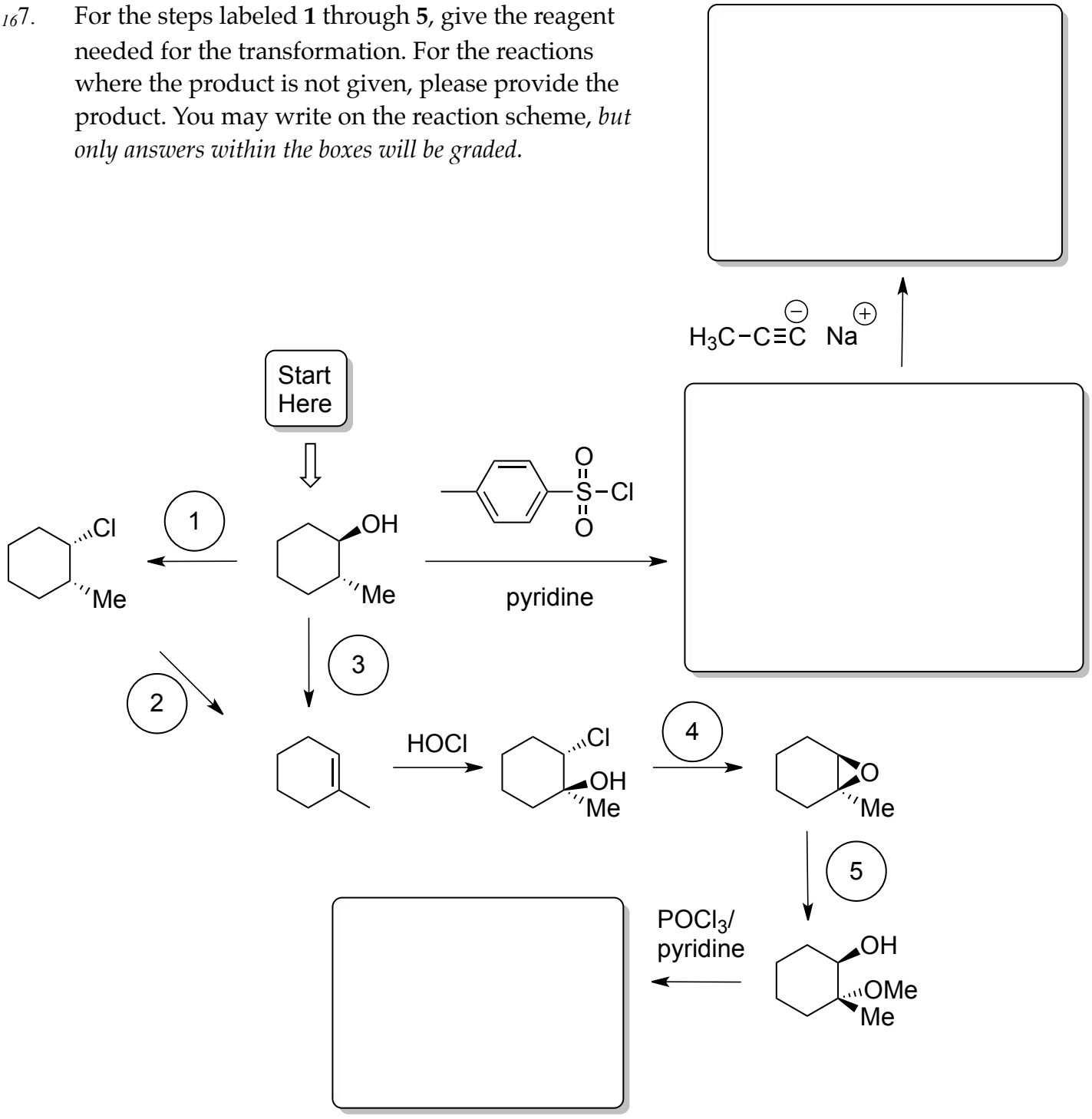
167. For the steps labeled **1** through **5**, give the reagent needed for the transformation. For the reactions where the product is not given, please provide the product. You may write on the reaction scheme, *but only answers within the boxes will be graded.*



(1)	(4)
(2)	(5)
(3)	