

Name _____
Examination III

Slayter Box _____
November 29, 2012

Intermediate Organic Chemistry (CHEM 251-03)

Dr. Fantini

Please do not open until instructed

Organic Chemistry II (CHEM 251-02)
Dr. Fantini

Examination III

November 29, 2012

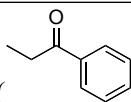
Notes:

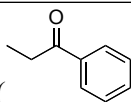
- This exam consists of **9 questions**. Please check to make sure that you have a complete copy of the exam.
 - ***Please do not simply give me answers. Give me well-supported answers. Answers that are not backed by explanations will receive minimal credit.***
 - Please write clearly; if I can't read 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	6	
2	10	
3	40	
4	20	
5	0	
6	24	
7	0	
8	0	
9	0	
<i>TOTAL</i>	100	
	Approx. Letter:	

61. Nomenclature. Please give name for structure or structure for name.

2,3-dimethylbutanal	butyl acetate
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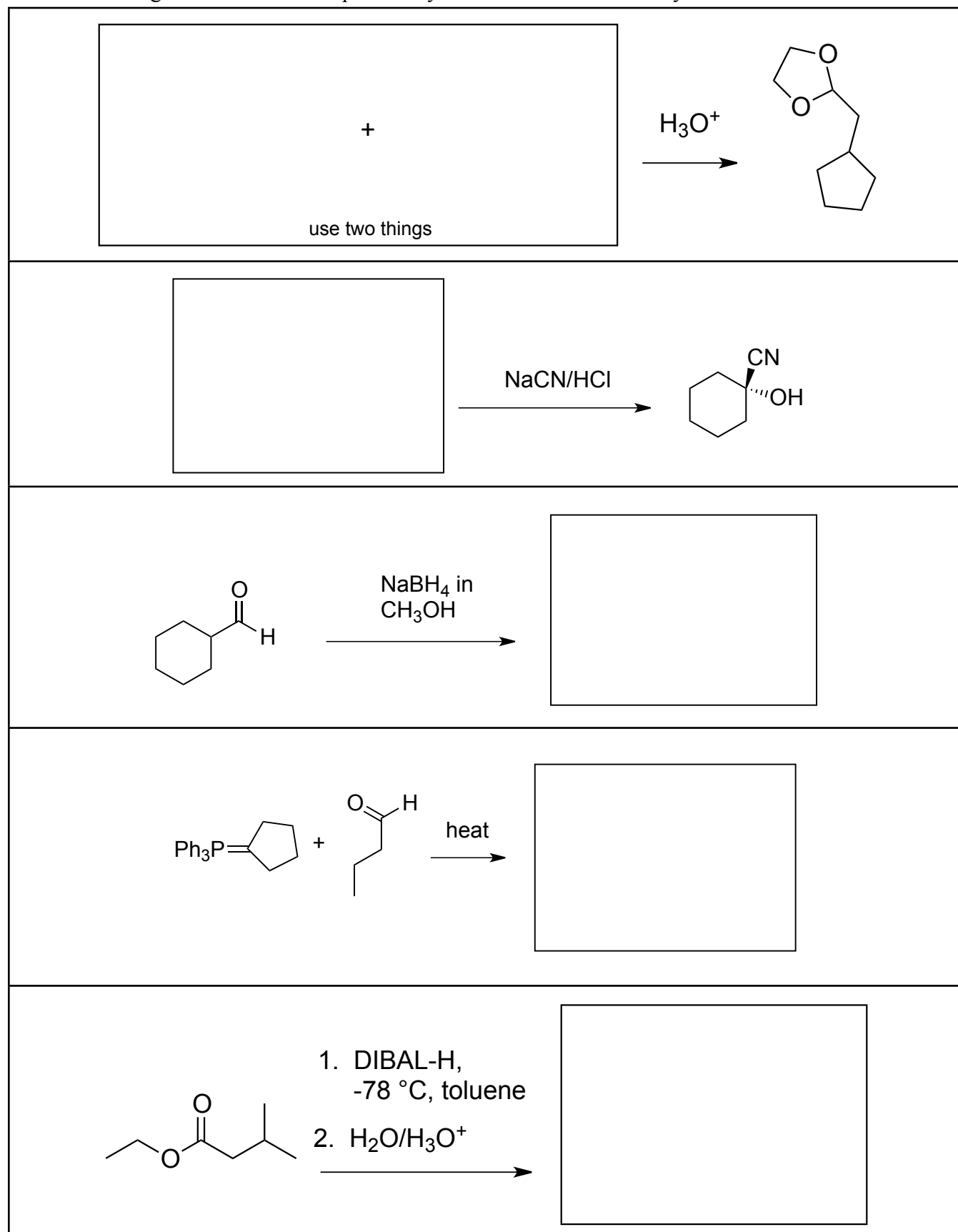


102. When you treat ethylphenylketone () with excess chlorine (Cl_2), a different product is obtained when acid is present than when base is present.

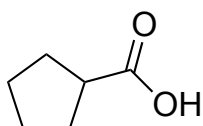
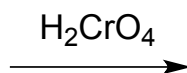
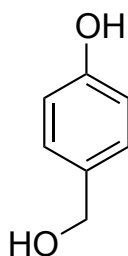
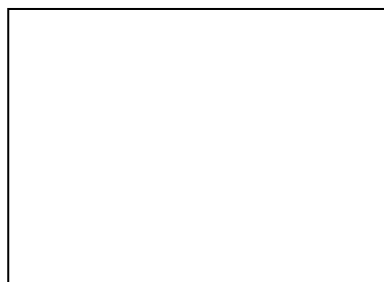
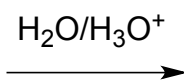
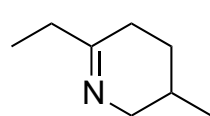
(a) Clearly state what the product of the reaction will be in each case.

(b) **WHY** do the two reactions give different products? Please give a detailed *explanation* rather than a restatement of the facts.

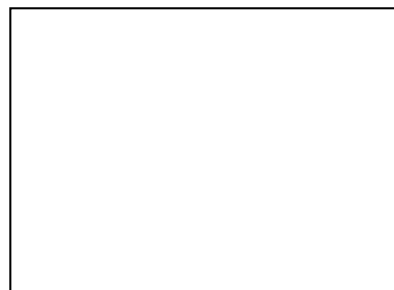
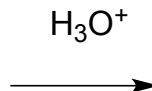
403. Fill in any of the missing starting material(s), reagent(s), and/or dominant **organic** product(s) for each single reaction. Please specifically denote all stereochemistry.



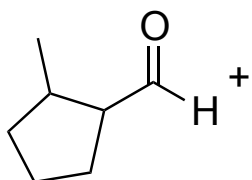
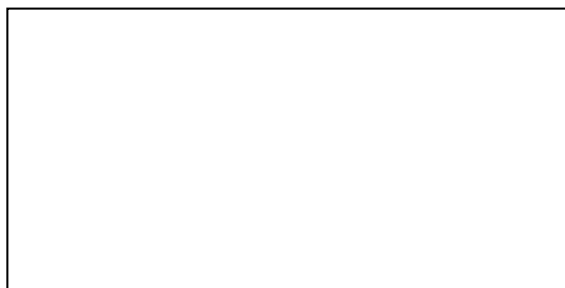
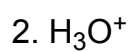
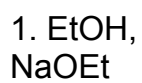
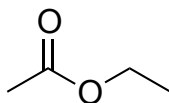
Question 3 continued.



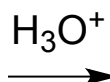
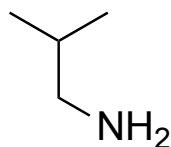
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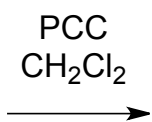
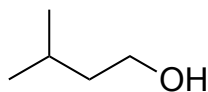
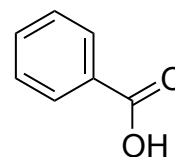
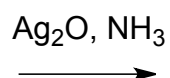
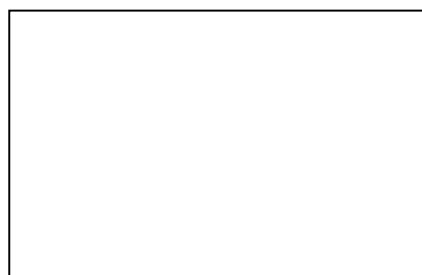
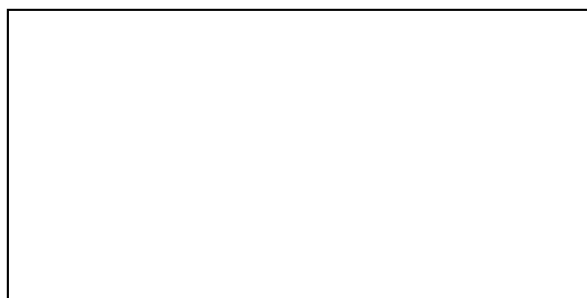
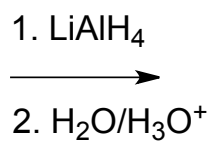
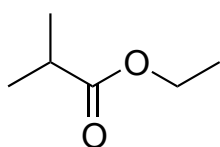
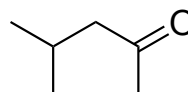
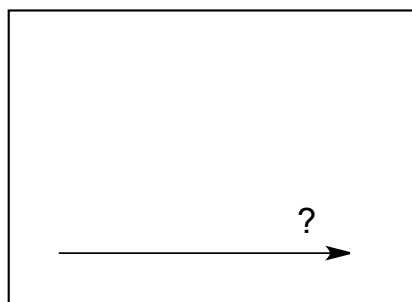
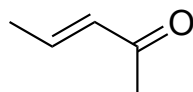
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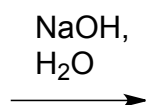
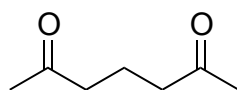
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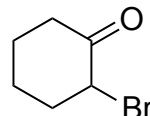
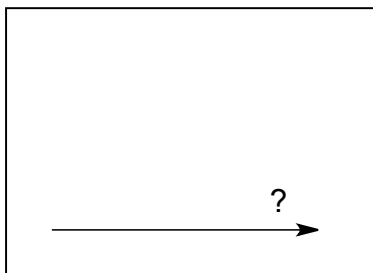
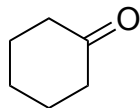
Question 3 continued.



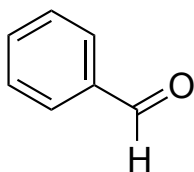
PCC = pyridinium chlorochromate



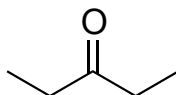
Question 3 continued.



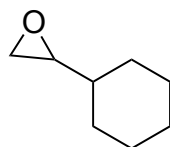
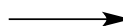
1. LiNHtPr_2 ("LDA")
2. 1-bromopropane



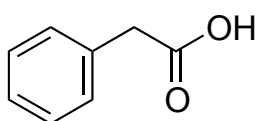
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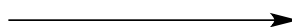
NaOH ,
heat



1. $(\text{CH}_3\text{CH}_2)_2\text{CuLi}$
2. $\text{H}_2\text{O}/\text{H}_3\text{O}^+$

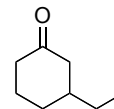


Br_2 , PBr_3

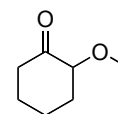


204. Short syntheses.

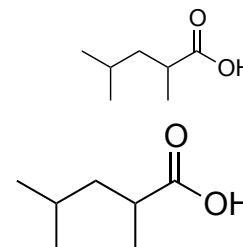
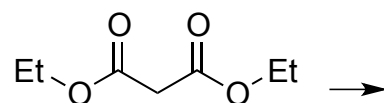
(a) Propose a synthesis of this compound from *cyclohexanone*.



(b) Propose a synthesis of this compound from *cyclohexanone*.



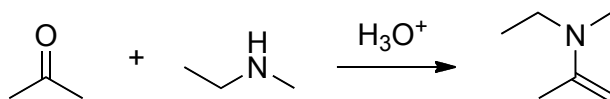
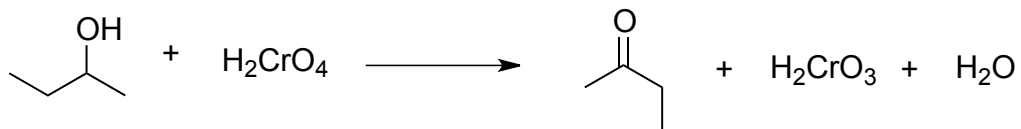
(c) Synthesize this compound by the *malonic ester synthesis*.



(d) Use a *protecting-group strategy* to accomplish this synthesis:



245. Please draw a stepwise electron pushing mechanism for the reactions shown below.



Problem 5, continued.

