

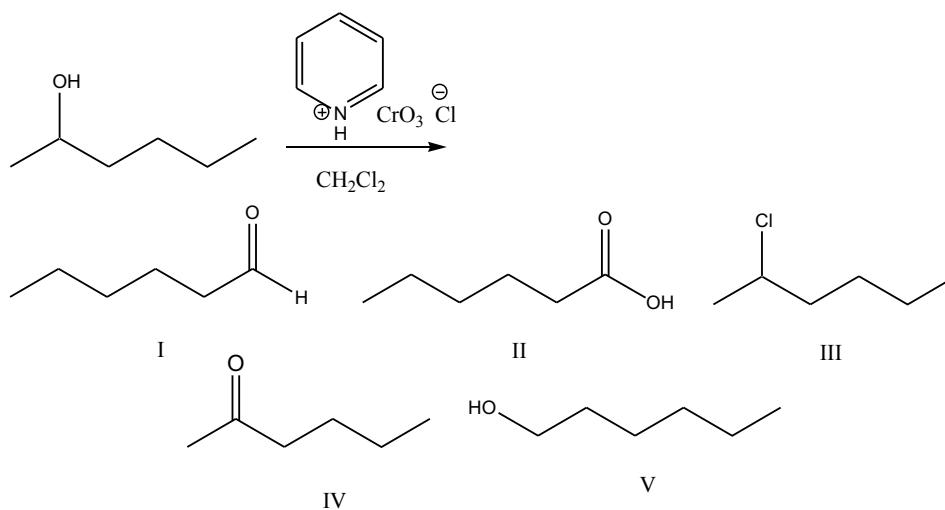
CHM 1321-B**Second Midterm
(Prof. S. Gambarotta)****March 21st– 2017****Your Name:** _____**Student #:** _____

1. You must respond to all exercises.
2. All questions have the same weight.
3. Please be clear with your answers
4. No remarking for exams written in pencil.
5. Take advantage of THE MOLECULAR MODELS

This booklet contains 4 pages. **Please verify and put your initials here :**

1. (1 point)

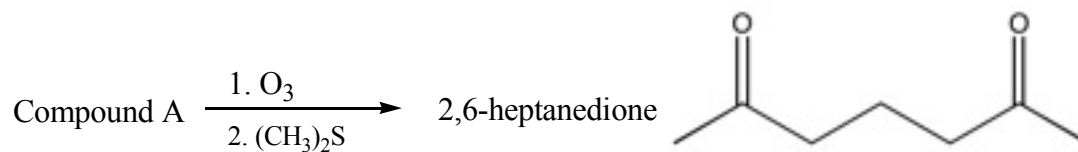
Predict the product for the following reaction (look at the oxidation state of Cr).



Ans: IV

2. (2 points)

Compound A on ozonolysis yields 2,6-heptanedione. What is the structure of compound A?



Ans: 1,2-dimethylcyclopentene

3. (3 points)

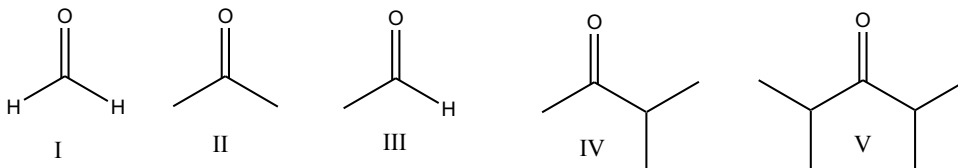
Provide the reagents necessary to carry out the following conversion.



BH_3
 $\text{H}_2\text{O}_2/\text{NaOH}/\text{H}_2\text{O}$
 $\text{CrO}_3/\text{H}_2\text{SO}_4/\text{H}_2\text{O}$ OR $\text{PCC}/\text{CH}_2\text{Cl}_2$

4. (1 point)

Which of the following compounds is least reactive towards nucleophilic addition reaction?

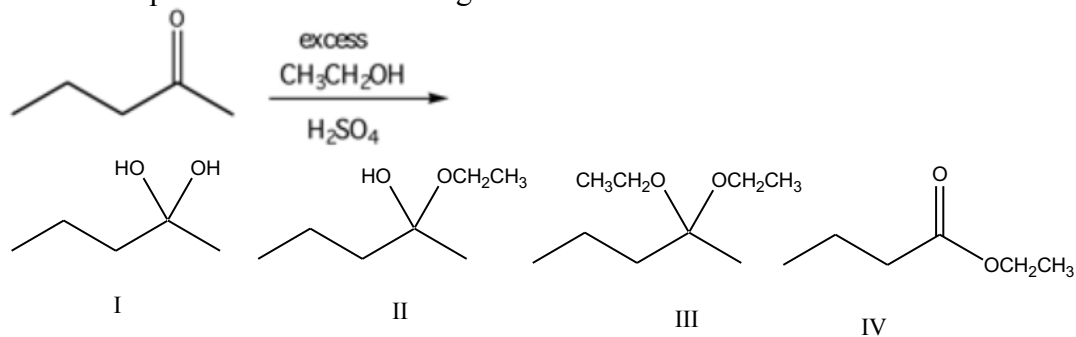


I
 II
 III
 IV
 V

Ans: E

5. (2 point)

Predict the product for the following reaction.



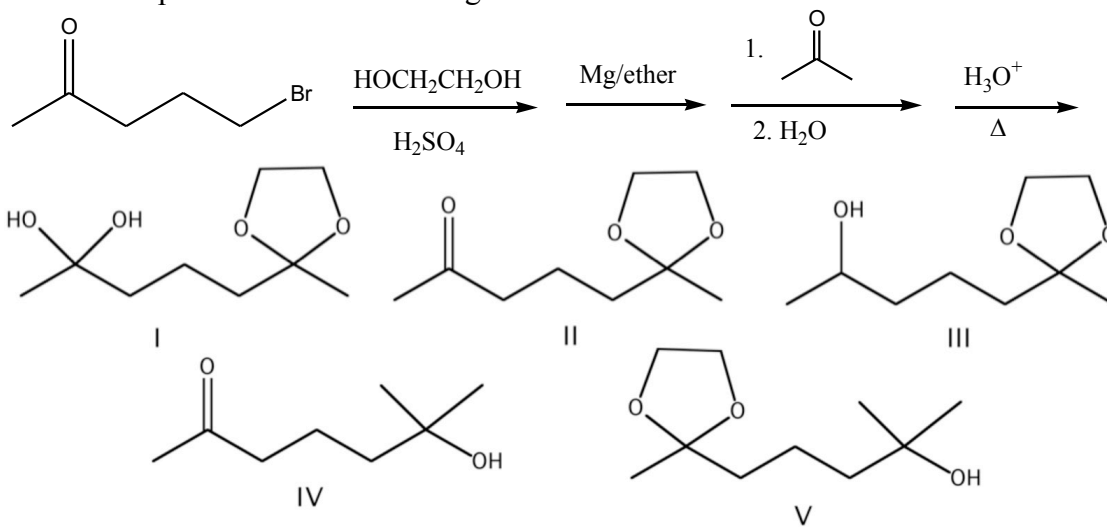
I
 II
 III
 IV

none of these

Ans: C

6. (2 points)

Provide the product for the following reaction

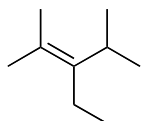


I
II
III
IV
V

Ans: D

7. (1 point)

Which of the following is the IUPAC name for the following compound?

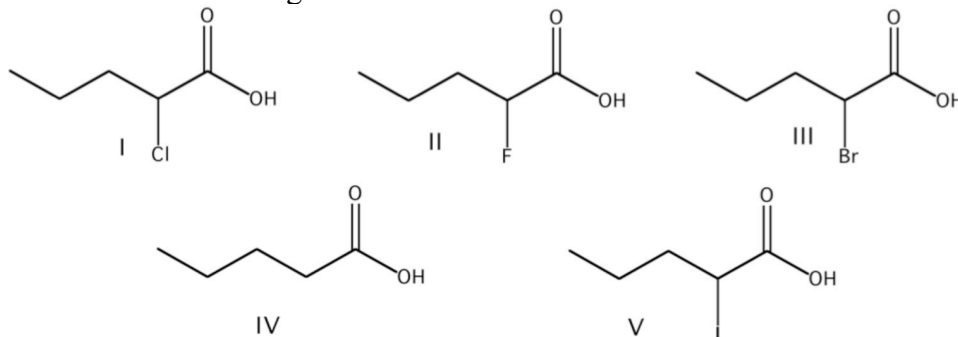


- A. 2-ethyl-1,1,3-trimethylbutene
 B. 3-ethyl-2,4-dimethyl-2-pentene
 C. 2,4-dimethylhexene
 D. 4-ethyl-1,3-dimethyl-3-pentene

Ans: B

8. (1 point)

Which of the following is the weakest acid?

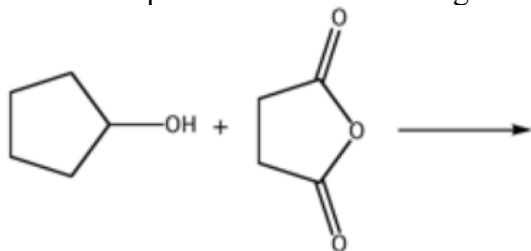


I
II
III
IV
V

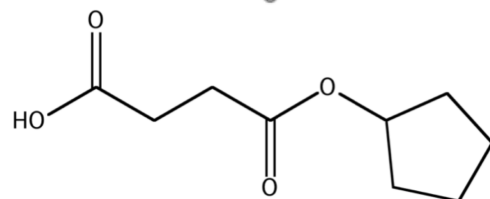
Ans: D

9. (2 points)

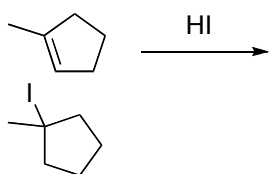
Predict the product for the following reaction.






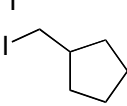
Ans:



10. (1 point)

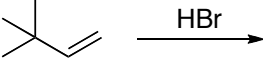
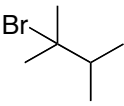
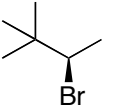
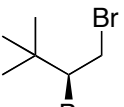
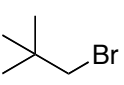
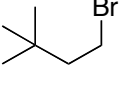
What is the *major* product for the following reaction?

A)

- B) 
- C) 
- D) 
- E) 
- Ans: A

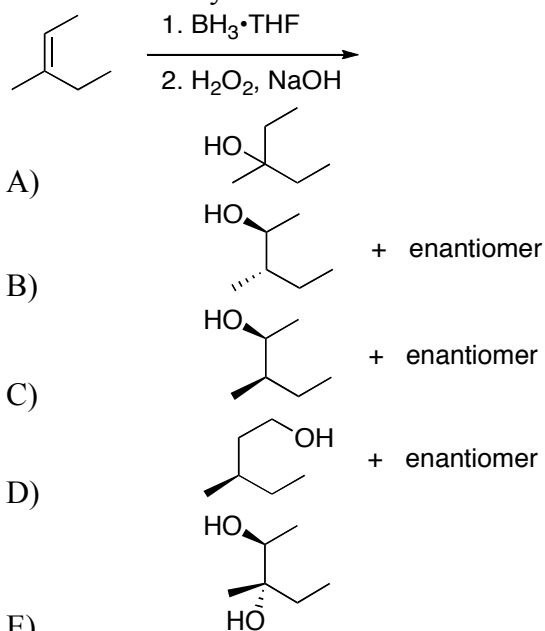
11. (2 points)

The expected *major* product(s) of HBr addition to the alkene shown would be:

- 
- A) 
- B)  + enantiomer
- C)  + enantiomer
- D) 
- E) 
- Ans: A

12. (2 points)

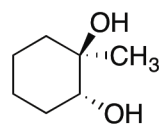
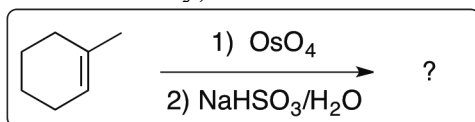
What is the expected *major* product for the following reaction sequence? Specify whether enantiomers may be formed.



Ans: B

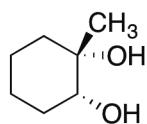
13. (2 points)

Draw the structure of the expected *major* organic product generated from the reaction sequence shown. (indicate stereochemistry)



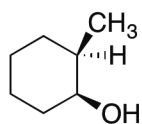
+ enantiomer

I



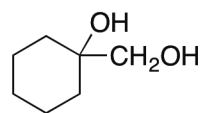
+ enantiomer

II



+ enantiomer

III



IV

Answ: II

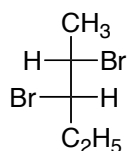
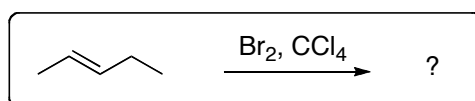
14. (2 points)

What is the expected *major* product upon reaction of 1-pentene with Cl_2 ?

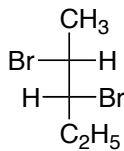
1,2-dichloropentane and enantiomer

15. (3 points)

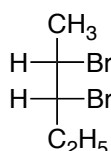
Which of the statements is most correct regarding the products expected from the halogenation reaction shown below?



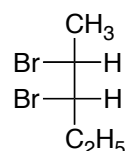
I



II



III



IV

- A) Equal amounts of I and II are produced.
 B) Equal amounts of III and IV are produced.
 C) Equal amounts of I and IV are produced.
 D) Equal amounts of II and III are produced.
 E) Equal amounts of I and III are produced.

Ans: B

BONUS QUESTIONS

- (5 points) Draw the complete mechanism for the di-bromination of 1-methylcyclohexene (see slideshow)
- (5 points) Draw the complete mechanism for acid catalyzed esterification of MeC(O)Cl with EtOH . (see slideshow)