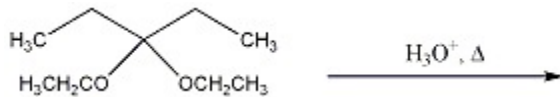


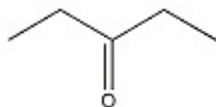
**CHM 1321 - D****Second Midterm****March 21 – 2014****(Prof. S. Gambarotta)****Your Name:** \_\_\_\_\_**Student #:** \_\_\_\_\_

1. Deliver the entire booklet. The solution key will be posted today on the web.
2. You must respond to all exercises.
3. All questions will have the same weight

1) Provide the major organic product of the reaction shown below.

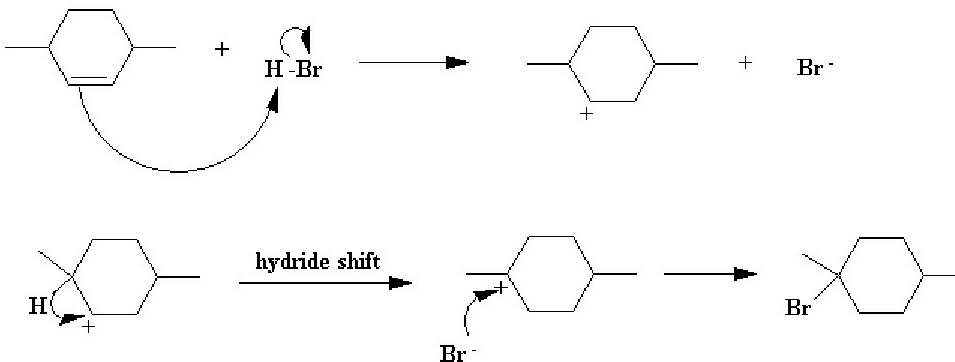


Answer:



2) When 3,6-dimethylcyclohexene is reacted with dry gaseous HBr, one of the products is 1-bromo-1,4-dimethylcyclohexane. Provide a detailed step-by-step mechanism to explain the formation of this product

Answer:

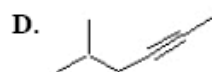
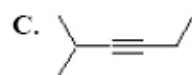
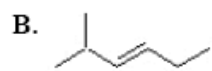
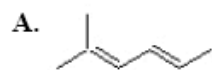


3. What is the predominant product from the reaction of 2-hexanol with  $\text{H}_2\text{CrO}_4$ ?

- A)  $\text{CH}_3\text{CO}_2\text{H}$   
 B)  $\text{CH}_3(\text{CH}_2)_3\text{CO}_2\text{H}$

- C)  $\text{CH}_3(\text{CH}_2)_3\text{C}(=\text{O})\text{CH}_3$   
 D)  $\text{CH}_3(\text{CH}_2)_4\text{CO}_2\text{H}$   
 E) A) and B)
- Ans: C

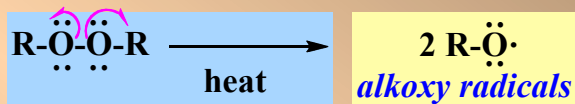
4. An unknown compound, A, has the molecular formula  $C_7H_{12}$ . On oxidation with hot aqueous potassium permanganate, A yields  $CH_3CH_2COOH$  and  $(CH_3)_2CHCOOH$ . Which of the following structures best represents A?



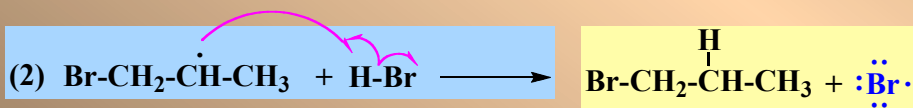
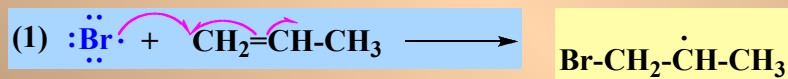
5. Explain with a mechanism the result of the reaction of 1-methylcyclohexene with HBr in the presence of peroxides.

Answer:

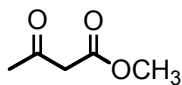
*Initiation*



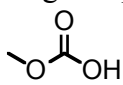
*Propagation*



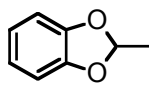
6. Which of the following compounds is an acetal?



I



II



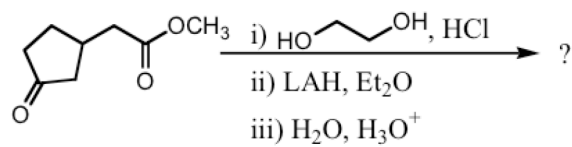
III



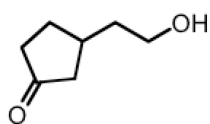
IV

Answer: III

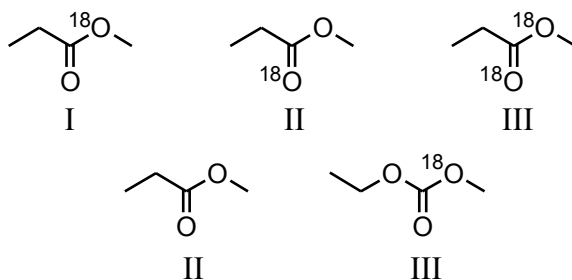
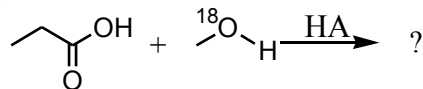
7. What is the major product of the following reaction sequence (LAH =  $\text{LiAlH}_4$ )?



Answer:

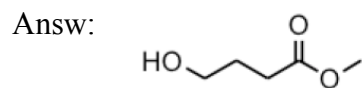
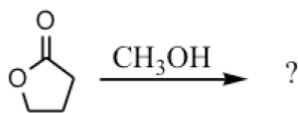


8. What would be the product of the following reaction ( $^{18}\text{O}$  is a stable isotope of oxygen)?

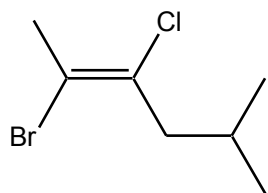


- A) I  
 B) II  
 C) III  
 D) IV  
 E) V  
 Ans: A

9. What is the product of this reaction?

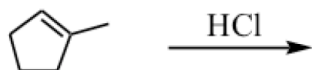


10. The correct IUPAC name for the following compound is:

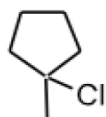


Answer: (E)-2-Bromo-3-chloro-5-methyl-2-hexene

11. What would be the major product of the following reaction?

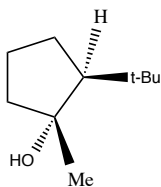


Answer:

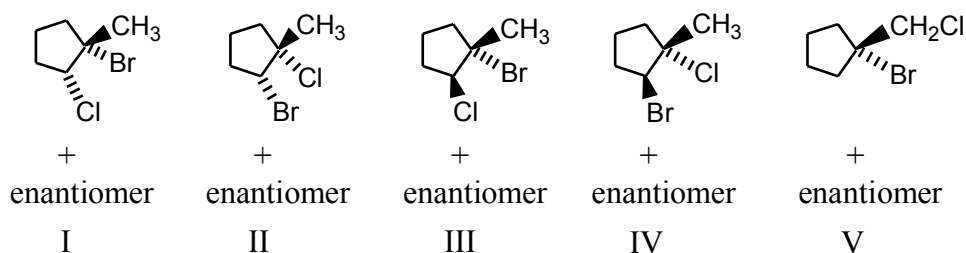


12. Make a stereo-drawing (bold and broken lines) of the product of the hydroboration/oxidation/hydrolysis of 1-tert-butyl, 2-methylcyclohexene

Ans:



13. The reaction of BrCl (bromine monochloride) with 1-methylcyclopentene will produce as the predominant product:



- A) I  
 B) II  
 C) III  
 D) IV  
 E) V

Ans: D

14. Draw the mechanism for the hydromercuriation of 1-methylcyclohexene

