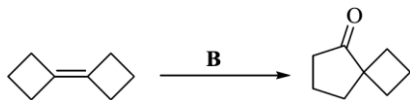


中國醫化學命中事實詳細解析

20. 下列反應方程式中，試劑 **B** 為何？



(A) $\text{H}_2\text{O}_2 / \text{NaOH}$

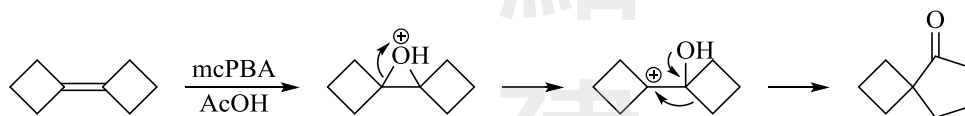
(B) $m\text{CPBA} / \text{AcOH}$

(C) $\text{Zn} / \text{CH}_2\text{I}_2$

(D) $\text{CCl}_2\text{HCOCl} / \text{Et}_3\text{N}$

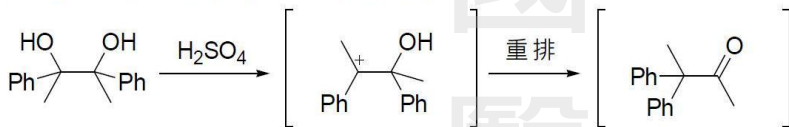
(E) $\text{CH}_2\text{N}_2 / \text{Pd}(\text{OAc})_2$

解析：

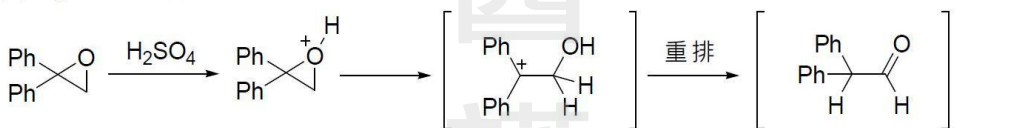


與有機講義Page 9-21幾乎一模一樣

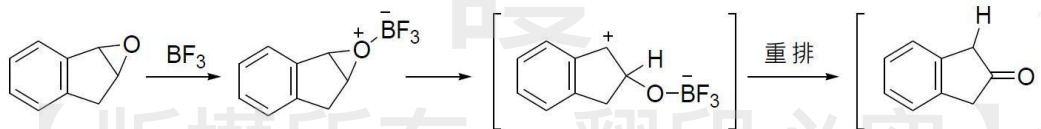
(b) 骨架左右兩邊相同，Ph 優先重排



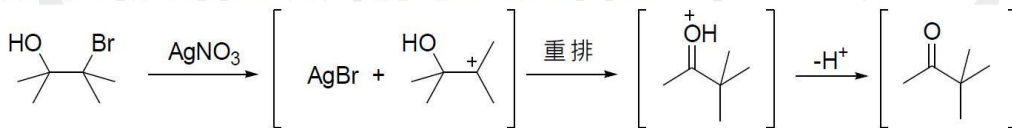
(c) Epoxide 在質子酸中也能產生 C^+ ，優先產生較穩定的 C^+



(d) epoxide 在路易斯酸中也能產生 C^+ ，優先產生較穩定的 C^+

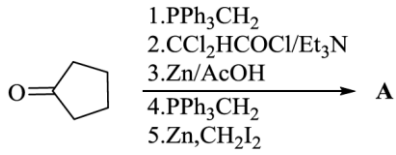


(e) Ag^+ 可促使 Br 離開，產生 AgBr 沉澱，幫助 C^+ 生成



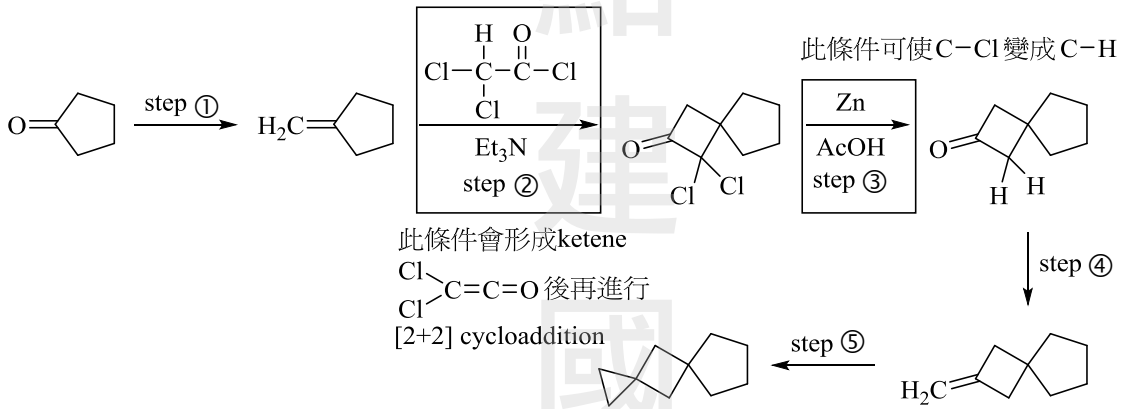
版權所有 9-21 翻印必究

22. 環戊酮經下列反應生成化合物 A，請問化合物 A 之結構為何？



- (A) C1CCC2(C1)CC2 (B) C1CCC2(C1)C2 (C) C1CCC2(C1)C2C2 (D) C1CCC2(C1)CC2 (E) C1CCC2(C1)C2C2

解析：



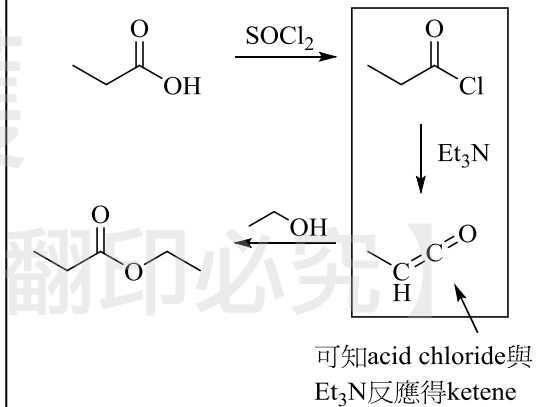
本題關鍵的幾個步驟分別在正課講義、解析班和題庫班都有提到

Step 2: 產生 ketene 的步驟(有機解析班 02 回第 22 題)

22. 請問主產物為？

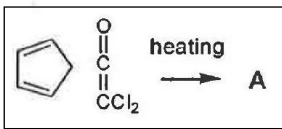
CCC(=O)O
 $\xrightarrow{\text{SOCl}_2}$
 $\xrightarrow{\text{Et}_3\text{N}}$
 $\xrightarrow{\text{CH}_3\text{CH}_2\text{OH}}$
 ?

(A) CCC(=O)OCC (B) CCC(=O)OCC
 (C) CCC=C(O)O (D) CCC(=O)OCC
 (E) 以上皆非



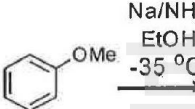
Step 2: ketene與C=C進行thermal [2+2] 步驟(有機總複習班第4回講義, page 43)

20. What are the principal products for the following reactions? 請問主產物為?



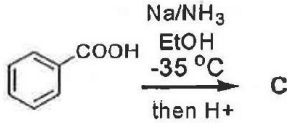
heating

A



Na/NH₃
EtOH
-35 °C

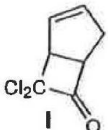
B



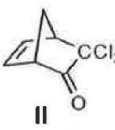
Na/NH₃
EtOH
-35 °C
then H⁺

C

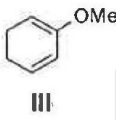
Ketene 與 C=C 進行 [2+2]



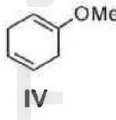
I



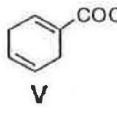
II



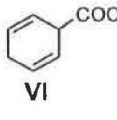
III



IV



V



VI

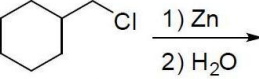
a. A = I; B = III, C = V b. A = II; B = III, C = V c. A = I; B = IV, C = VI d. A = II; B = IV, C = VI

NCHU105(20)

Step 3: 把C-Cl還原成C-H

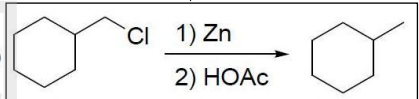
2017-2018 最新版本 梁傑老師編授

練習一：Draw the product of each reaction.

(a) 

有機鋅與 醇 或 水 的反應速率很慢

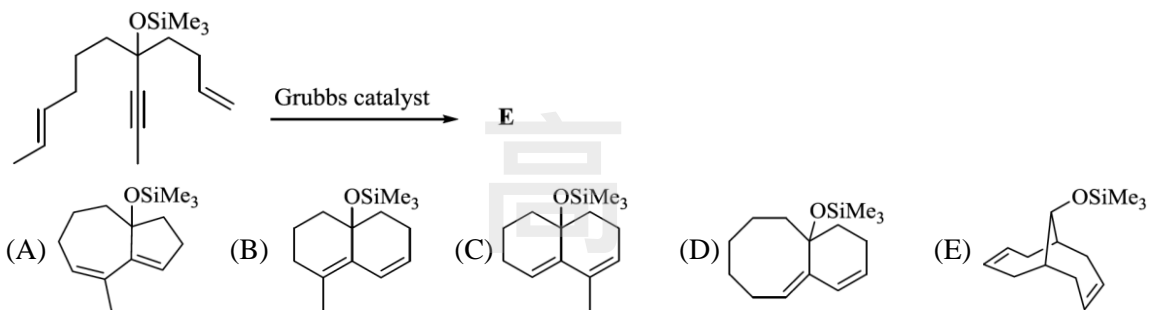
完全相同的反應條件

(b) 

有機鋅可順利與 酸 反應

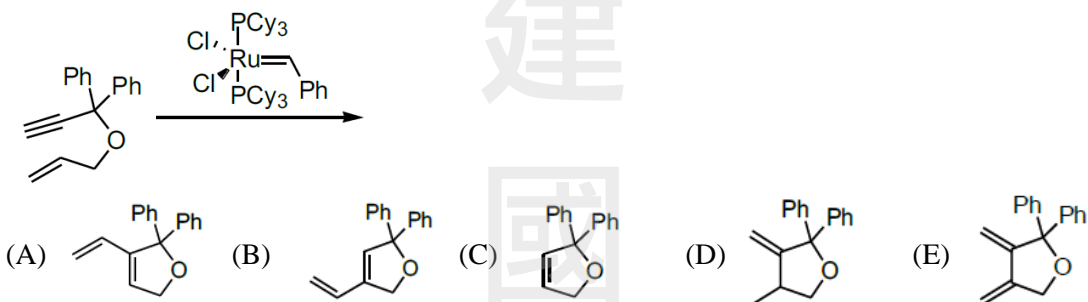
【版權所有，翻印必究】

31. 請問下列反應得到的主要產物 **E** 之結構為何？



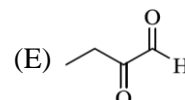
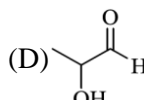
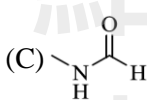
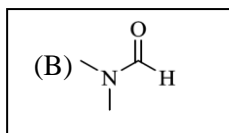
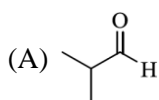
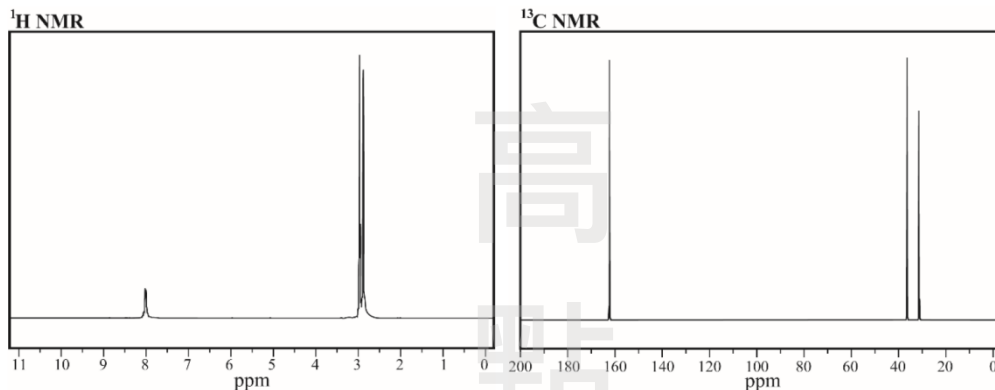
本題考enyne metathesis，類似觀念正好出現在第三次模擬考第31 題(其實也是中國醫106 年化學第13 題的考古題)

13. 以下烯炔化合物利用Grubbs試劑進行複分解反應(metathesis)，得到的產物為何？



【版權所有，翻印必究】

45. 下圖為某化合物 **L** 之核磁共振光譜，請問此化合物 **L** 之結構為何？



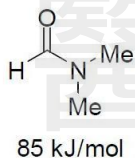
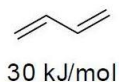
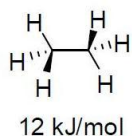
解析：

DMF 因為單鍵旋轉速度較慢，因此結構上的兩個甲基可被 ^1H NMR 和 ^{13}C NMR 區分，展現不同吸收(此觀念出現在正課講義 page 1-7)

1.2 烷類的構形分析(conformational analysis)：利用單鍵旋轉探討化學分子之能量變化

1.2A 化學鍵的旋轉(Bond Rotation)

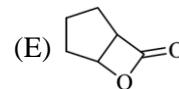
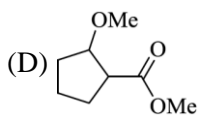
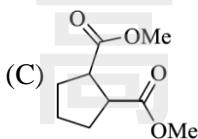
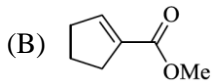
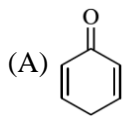
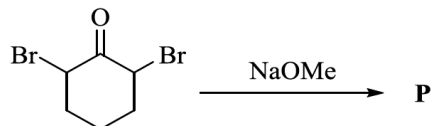
觀念(1)：sigma bond 可以在室溫下自由旋轉



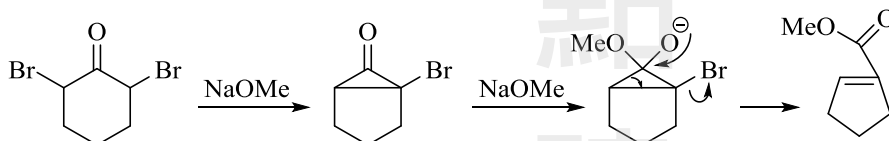
- (1) 不同結構的 sigma bond 旋轉所需的 能量障礙 不同，旋轉的速度也不同
- (2) 如果 sigma bond 旋轉的速度 很慢，則儀器有能力分辨其不同構形

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49. 經由下列反應後生成化合物 **P**，請問化合物 **P** 之結構為何？

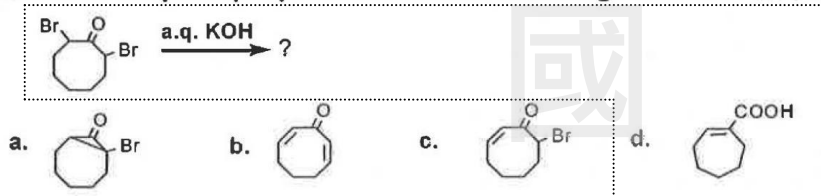


解析：



本題為Favorskii reaction，結構與有機總複習班第3回講義，page 14頁的題目幾乎完全相同

5. What is the principal product from the following reaction? 請問主產物為？



NCHU105(5)

版權所有 14 翻印必究

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