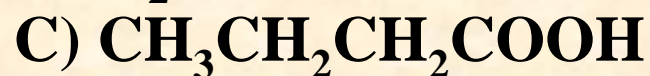


同步训练九

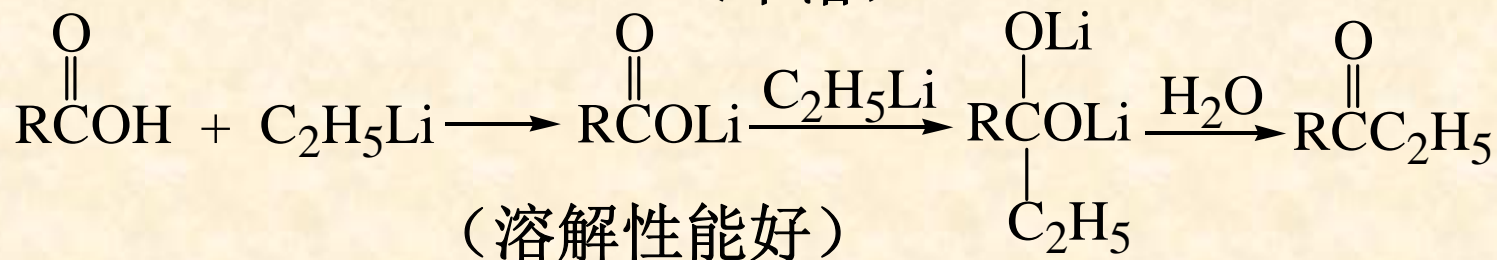
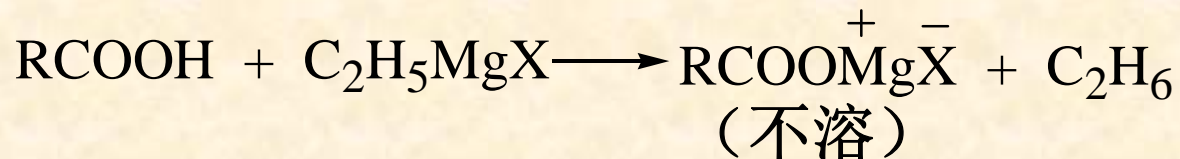
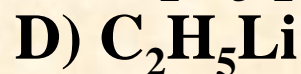
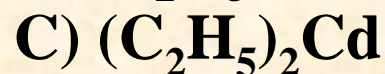
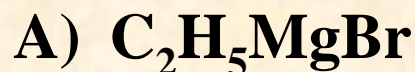
羧酸和羧酸衍生物

一、选择题:

1. 下列化合物 中酸性最强者为:(A)



2. 欲将 RCOOH 转化为 RCOC_2H_5 ,应选用哪一种试剂? (D)



是合成酮的一般方法

3. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CO}_2\text{C}_2\text{H}_5$ 还原为 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$ 应用什么还原剂?(C)

A) Na/二甲苯 B) Mg(Hg) C) Na+EtOH D) Zn(Hg)/HCl

4. 下面哪种试剂可方便区分甲酸乙酯和乙酸甲酯:(C)

A) NaOH B) X_2, NaOH C) $\text{Ag}(\text{NH}_3)_2^+$ D) NH_2OH



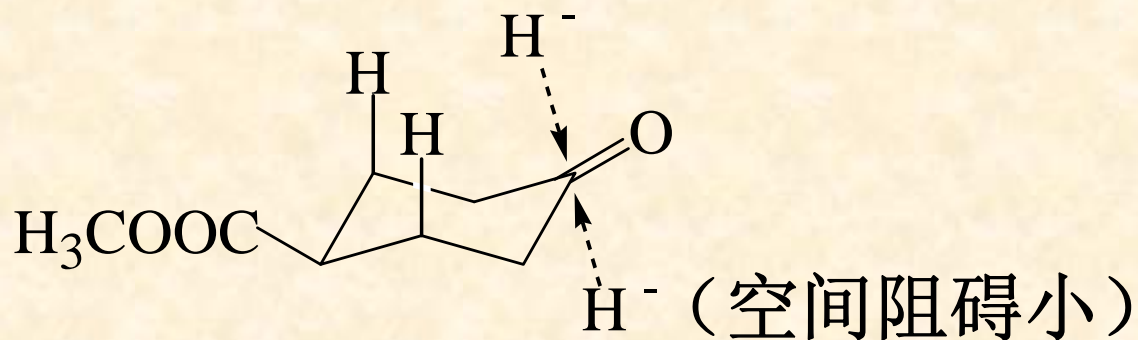
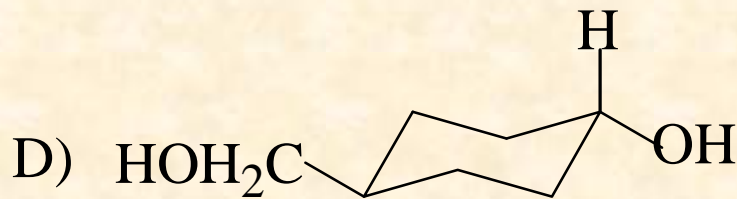
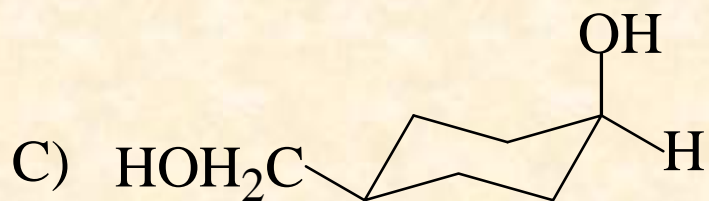
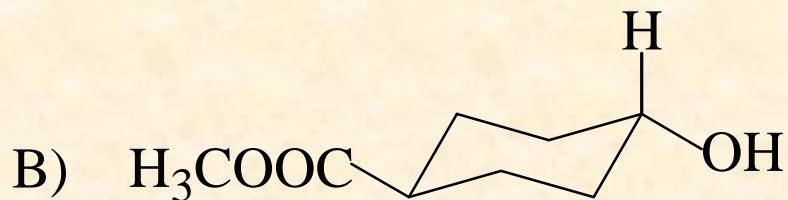
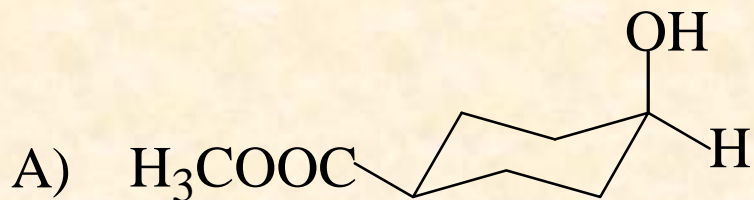
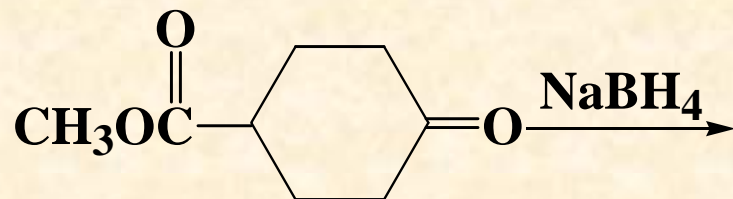
5. 制备 β -羟基酸最好的方法是:(D)

A) β -卤代酸与 NaOH 水溶液反应 B) α, β -不饱和酸加水

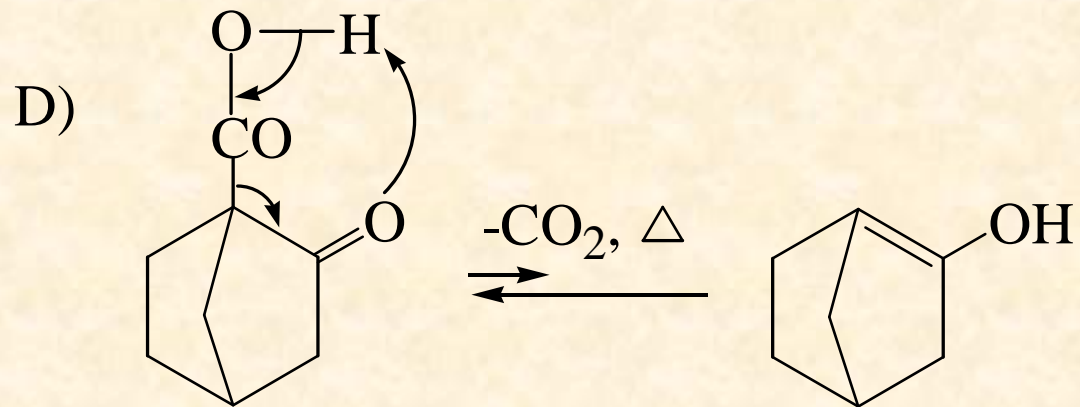
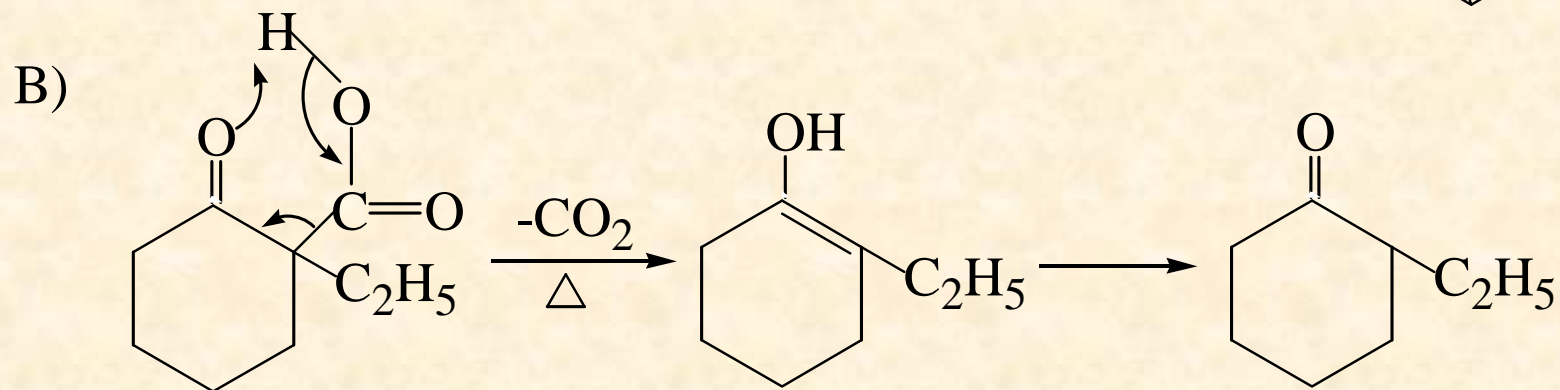
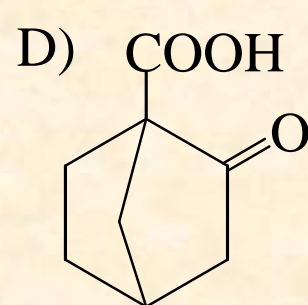
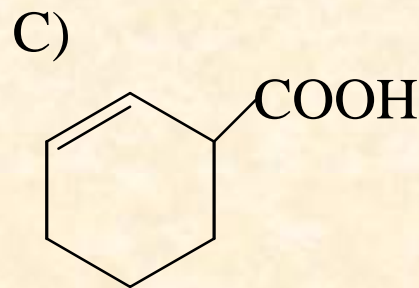
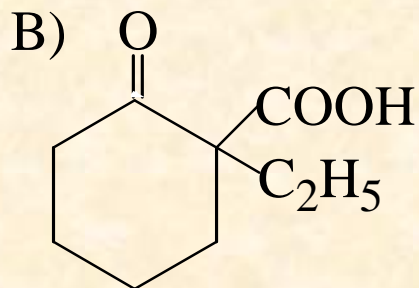
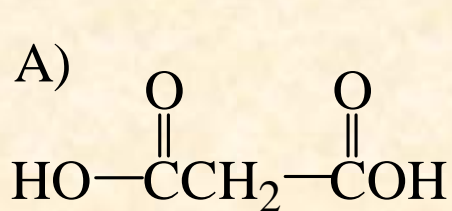
C) α -卤代酸酯与酮通过 Reformatsky 反应制取

D) α -卤代酸酯与醛酮在 LDA(THF) 作用下进行缩合反应

6. 下列反应的主要产物是：(A)



7. 下面哪个化合物不发生脱羧反应？ (D)



不稳定，难形成

8. 羧酸的沸点比分子量相近的烃, 甚至比醇还高, 主要的原因是: (D)

A) 分子极性 B) 酸性 C) 分子内氢键 D) 形成二缔合体

9. 取代羧酸 FCH_2COOH (I), ClCH_2COOH (II), BrCH_2COOH (III), ICH_2COOH (IV) 的酸性大小为: (A)

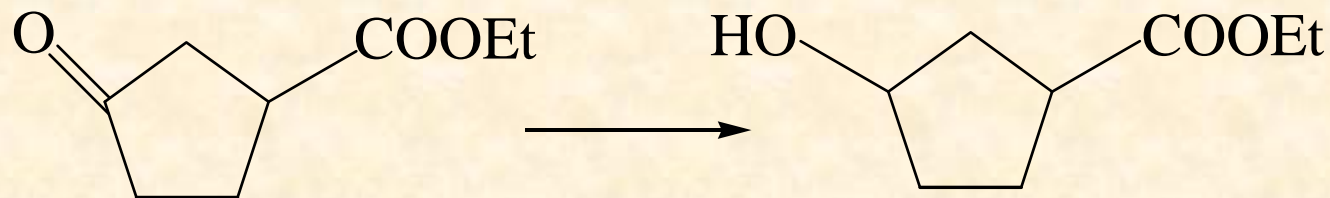
A) $\text{I} > \text{II} > \text{III} > \text{IV}$

B) $\text{IV} > \text{III} > \text{II} > \text{I}$

C) $\text{II} > \text{III} > \text{IV} > \text{I}$

D) $\text{IV} > \text{I} > \text{II} > \text{III}$

10. 下列反应应用何种试剂完成? (B)



A) LiAlH_4 B) NaBH_4 C) $\text{Fe} + \text{CH}_3\text{COOH}$ D) $\text{Pt} + \text{H}_2$

11. 当R为何基团时, 醋酸烷基酯(CH_3COOR)的碱性水解相对速率最慢?(**D**)

- A) Et B) i-Pr C) Me D) t-Bu

12. $\text{C}_6\text{H}_5\text{CHO}$ 与 $(\text{CH}_3\text{CO})_2\text{O}$ 在 CH_3COONa 加热下反应, 主要产物是: (**D**)

- A) $\text{C}_6\text{H}_5\text{CH}(\text{OH})\text{CH}_2\text{COOH}$ B) $\text{C}_6\text{H}_5\text{CH}(\text{OH})\text{CH}_2\text{COOCOCH}_3$
C) $\text{C}_6\text{H}_5\text{CH}=\text{CHCOOCH}_3$ D) $\text{C}_6\text{H}_5\text{CH}=\text{CHCOOH}$

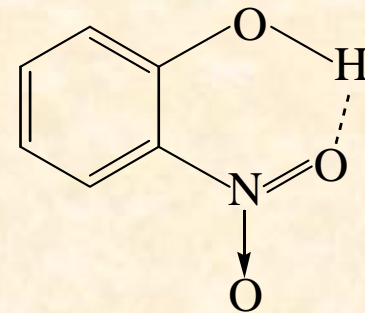
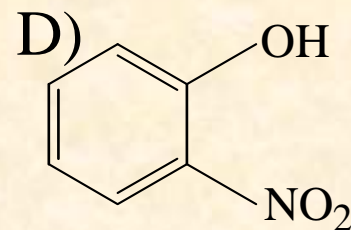
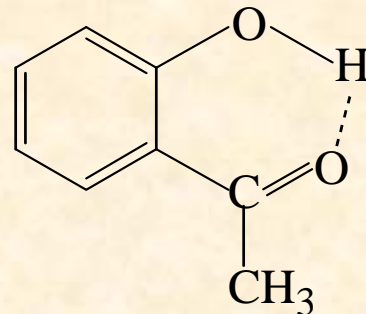
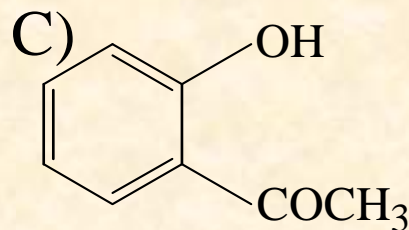
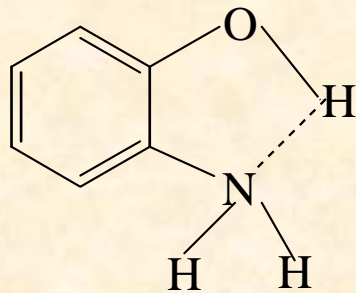
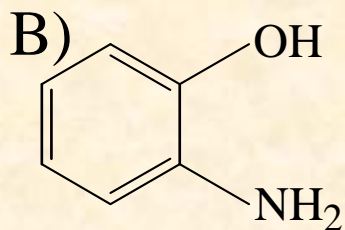
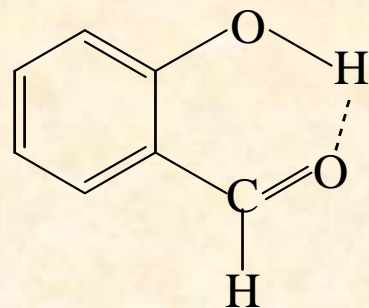
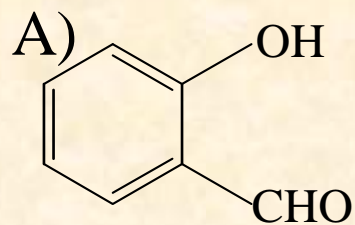


Perkin反应

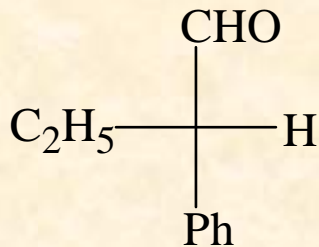
13. Claisen缩合是用强碱催化的反应,也可用以增长碳链,从反应活性中心看,它们是: (C)

- A) 一个羧酸酯出羰基,一个醛出 α -C
- B) 一个羧酸酯出羰基,一个酮出 α -C
- C) 两个羧酸酯,一个出羰基,一个出 α -C
- D) 两个醛或酮,一个出羰基,一个出 α -C

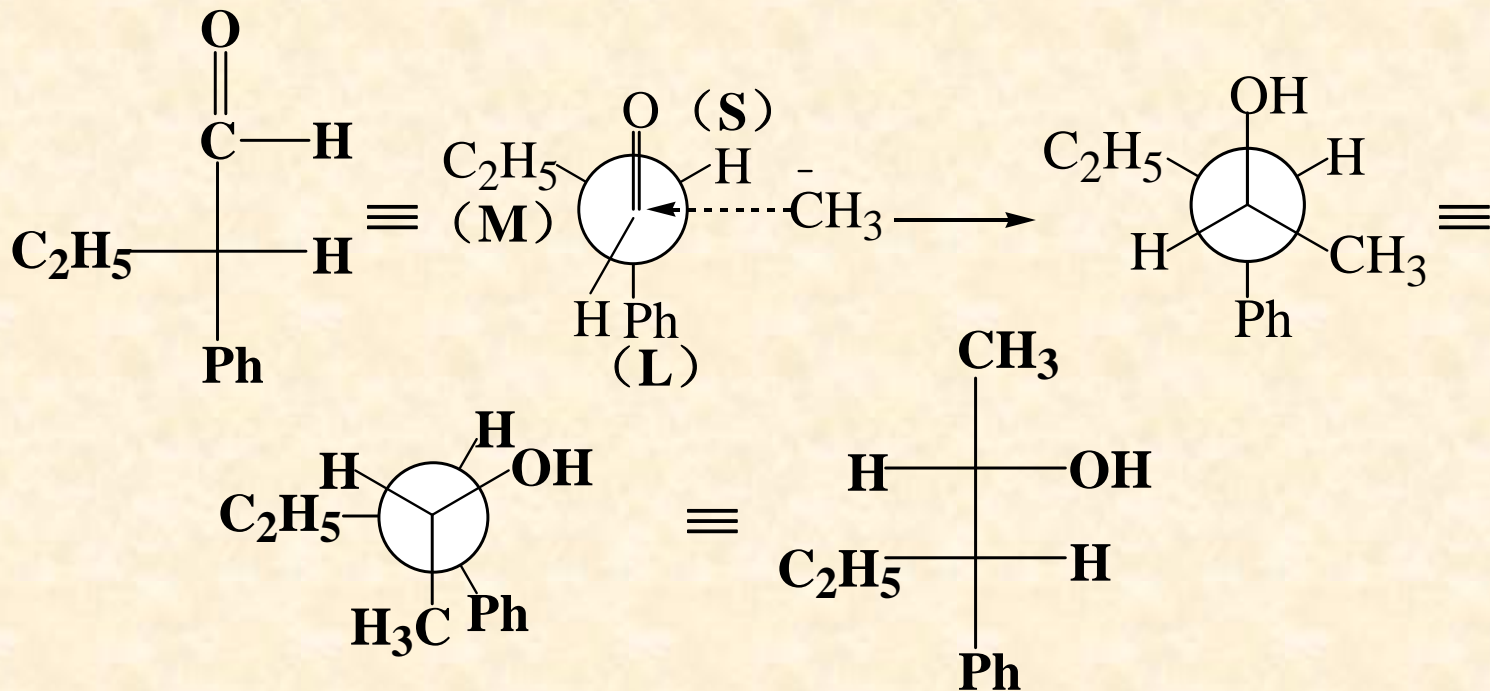
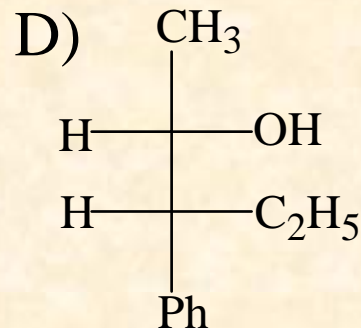
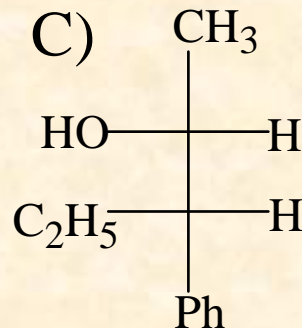
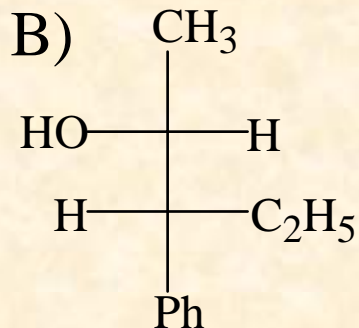
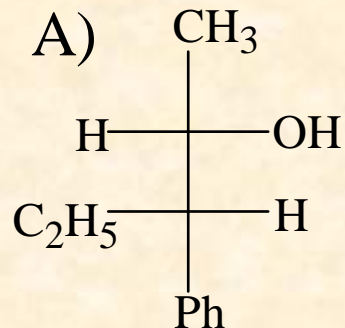
14. 下列4个化合物,哪一个不能通过分子内氢键形成六元环: (B)



15. (S)-2-苯基丁醛
的主要产物是： ()



与 CH_3MgI 反应后水解所获得

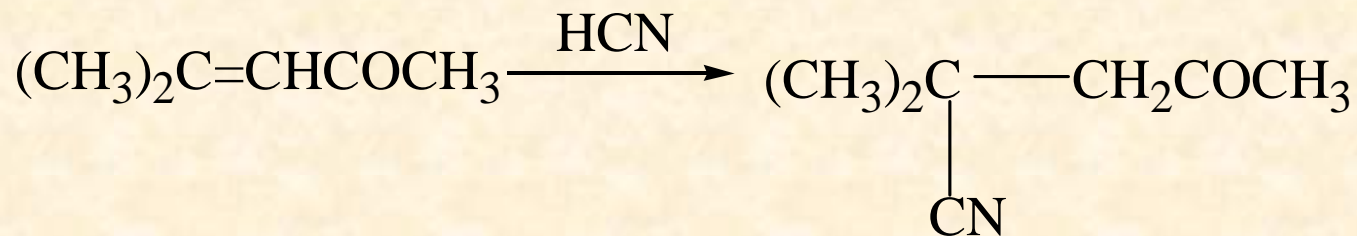


如果羰基与一手性碳原子相连，这一手性碳原子分别连有大(L)、中(M)、小(S)三个基团，而 >C=O 中的O一般处于最大取代基的反位，这样的构象较为稳定，这种羰基化合物在加成反应中遵从克拉姆(Cram)规则，即：亲核试剂更优先从位阻小的S基团一边进攻羰基，这样的加成产物为主要产物。

16. 氧化醛类的Fehling试剂指的是：(B)

- A) AgNO_3 和 $\text{NH}_3(\text{H}_2\text{O})$ 生成的溶液
- B) CuSO_4 溶液与 NaOH 和酒石酸钾钠生成的溶液
- C) CuSO_4 溶液与 NaOH 和柠檬酸生成的溶液
- D) CuSO_4 与 NH_3 水的溶液

17. 根据关键一步确定下面的有机反应属于哪种类型? (C)



A) 亲电反应 B) 亲核反应 C) 亲核加成 D) 自由基反应

18. 苯甲醛与丙醛在NaOH溶液作用下生成什么产物? (D)

A) 苯甲酸与苯甲醇

B) $\text{PhCH}=\text{CH}_2\text{CH}_2\text{CHO}$

C) 苯甲酸与丙醇

D) $\text{PhCH}=\text{CH}(\text{CH}_3)\text{CHO}$

19. 下列酚:①苯酚②邻硝基苯酚③间硝基苯酚④2,4-二硝基苯酚的酸性大小次序为: (C)

A) ① > ② > ③ > ④

B) ③ > ② > ④ > ①

C) ④ > ② > ③ > ①

D) ④ > ③ > ② > ①

20. 下面的还原反应，应选用什么还原剂？ (B)



A) Na+EtOH

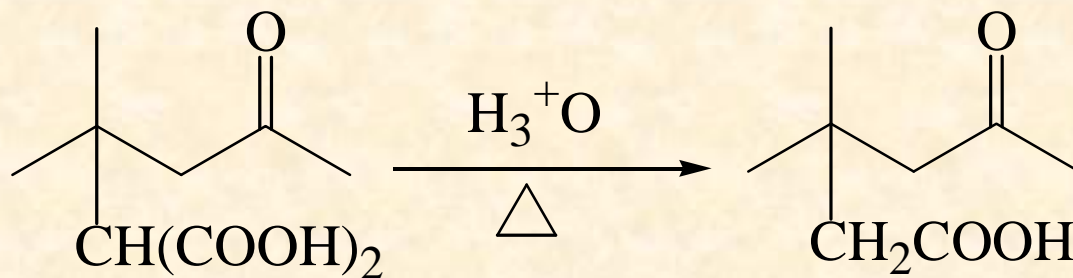
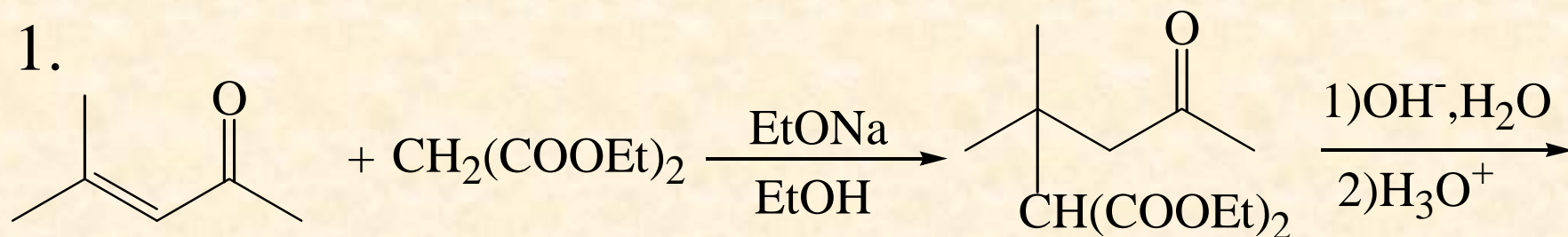
B) LiAlH₄

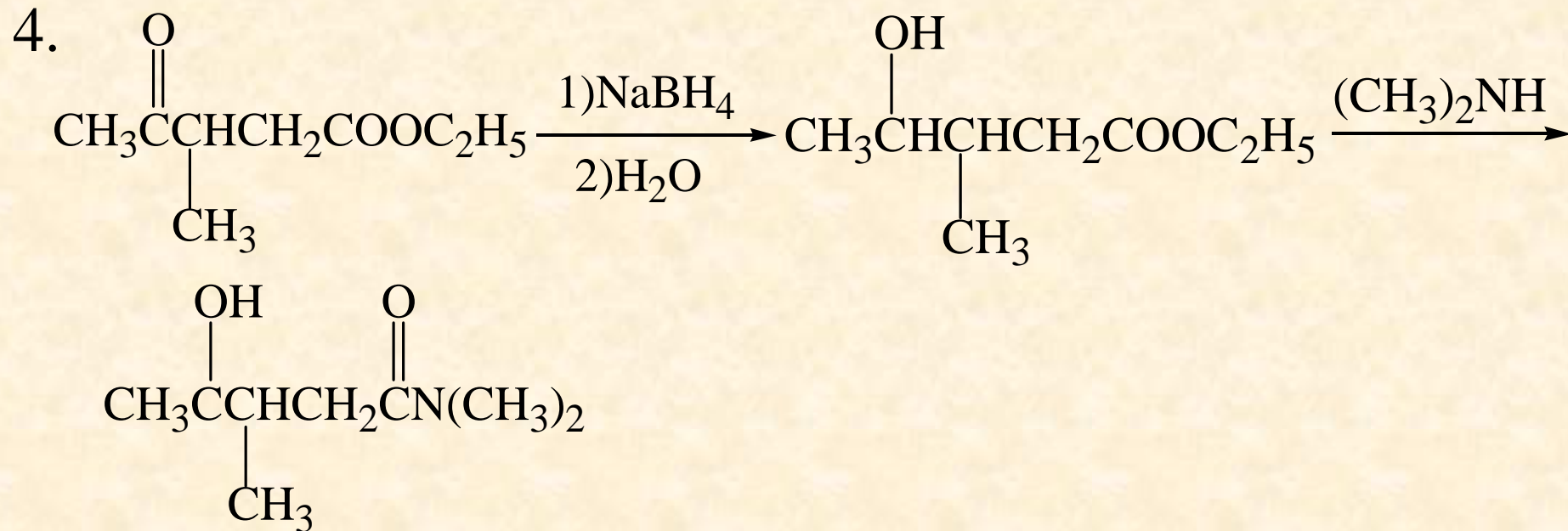
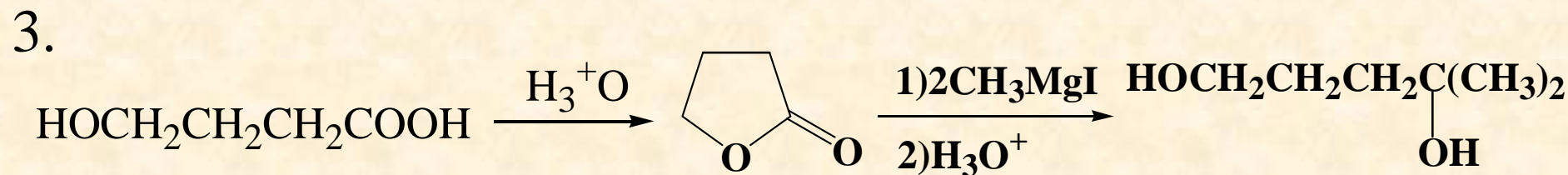
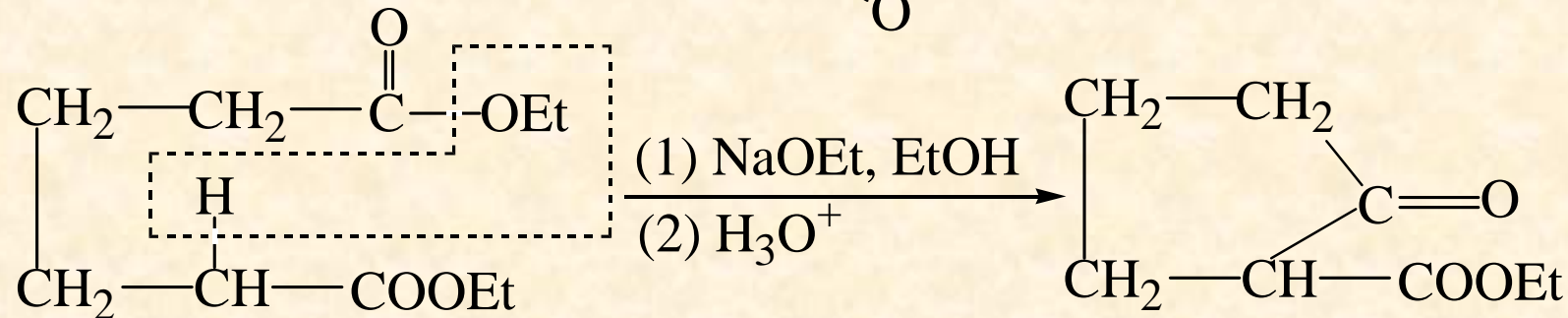
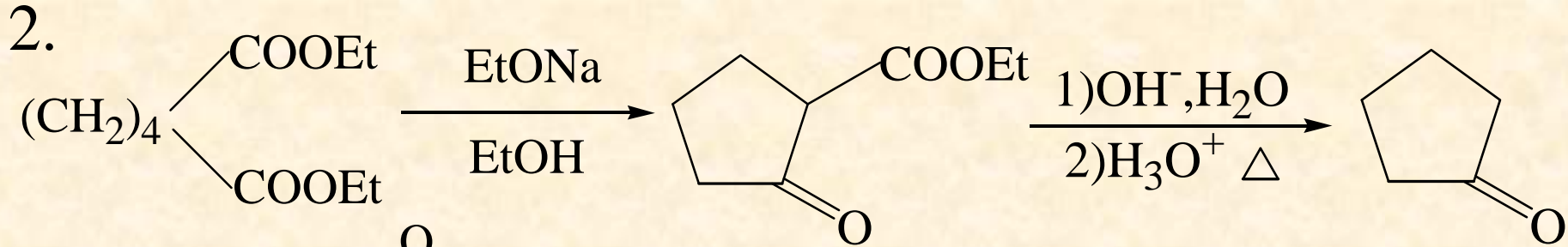
C) NaBH₄

D) Na/NH₃ (l)

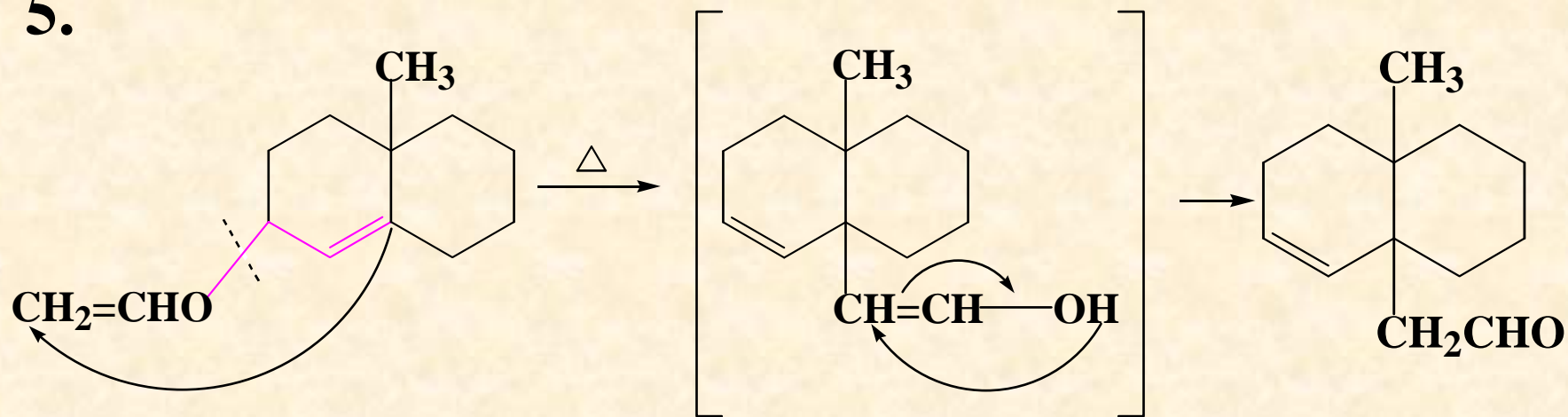
二、写出下列反应的主要有机产物或所需之原料，试剂（如有立体化学问题，请注明）

1.

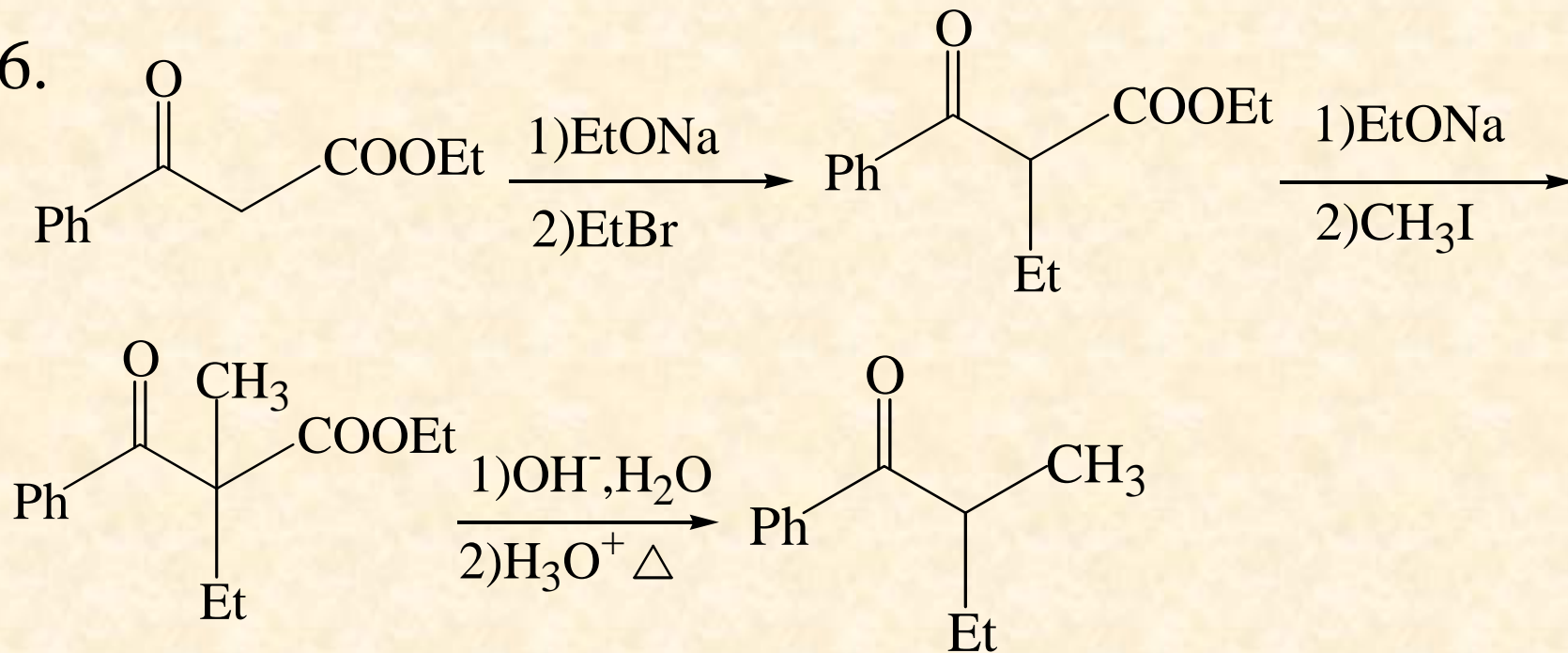




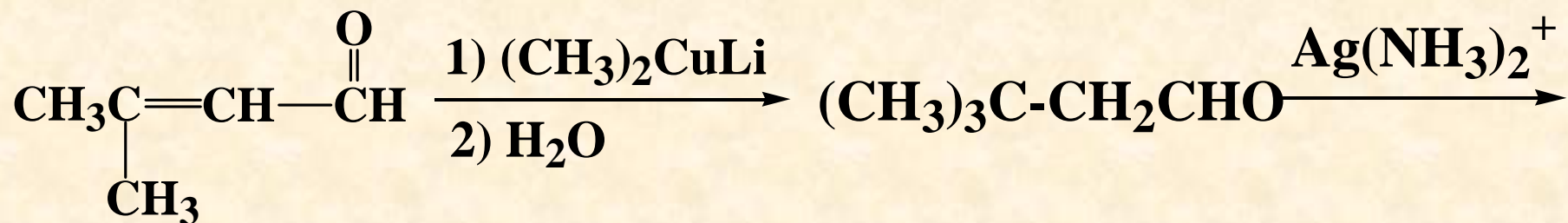
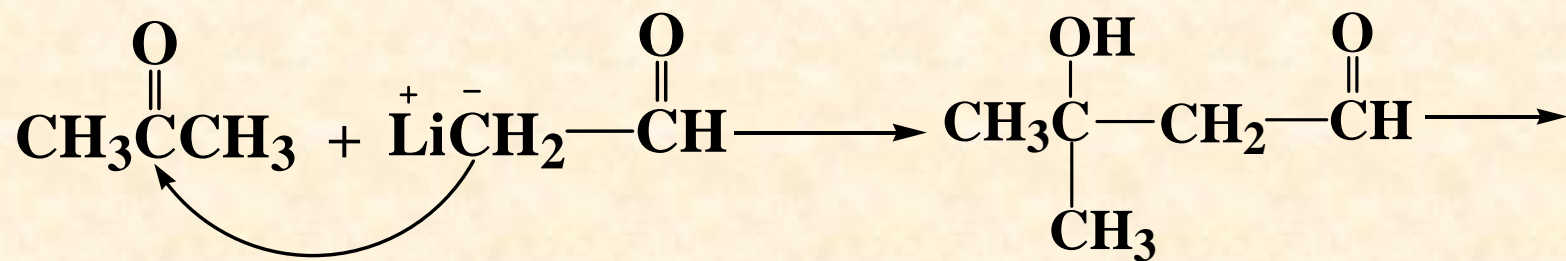
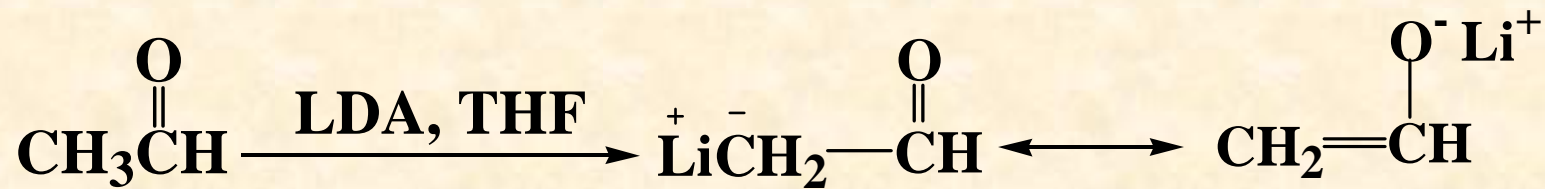
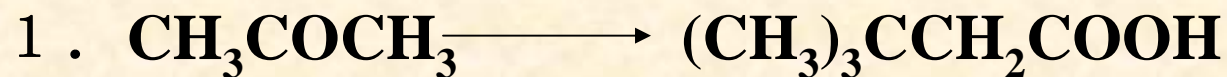
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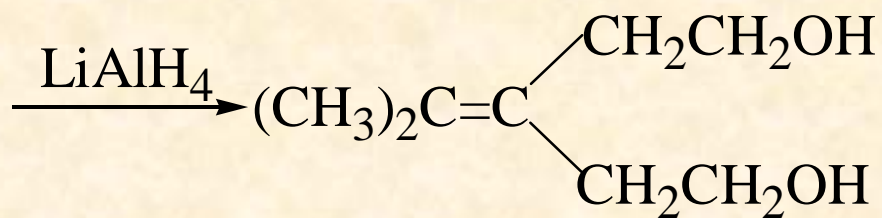
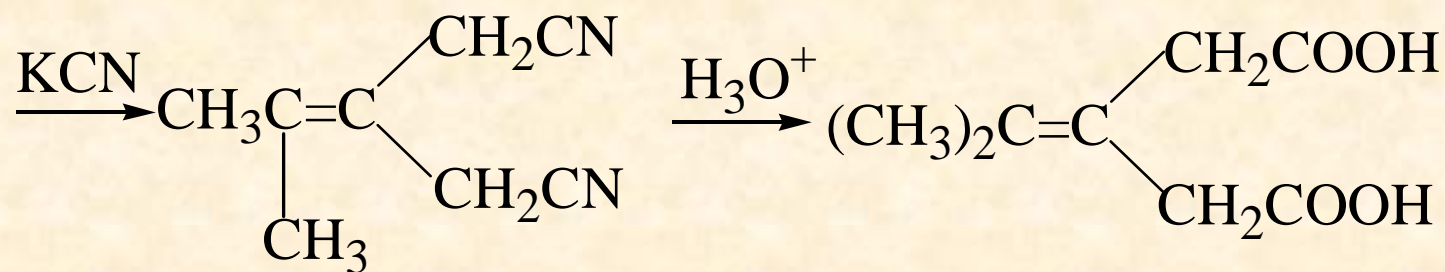
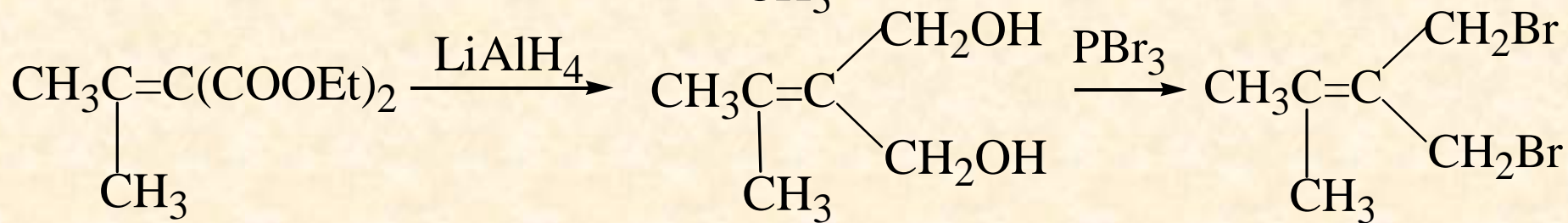
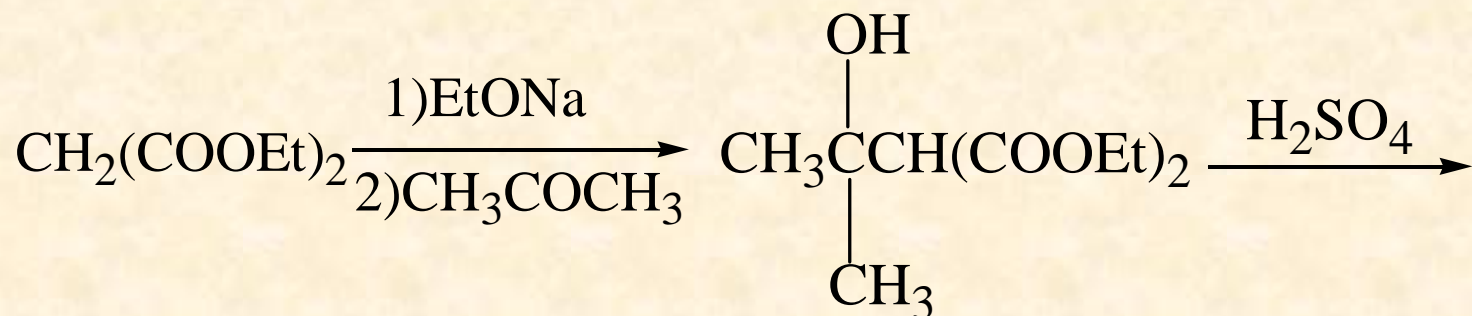


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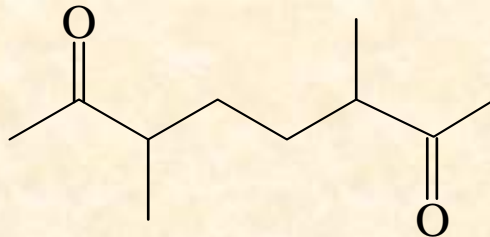


三、合成

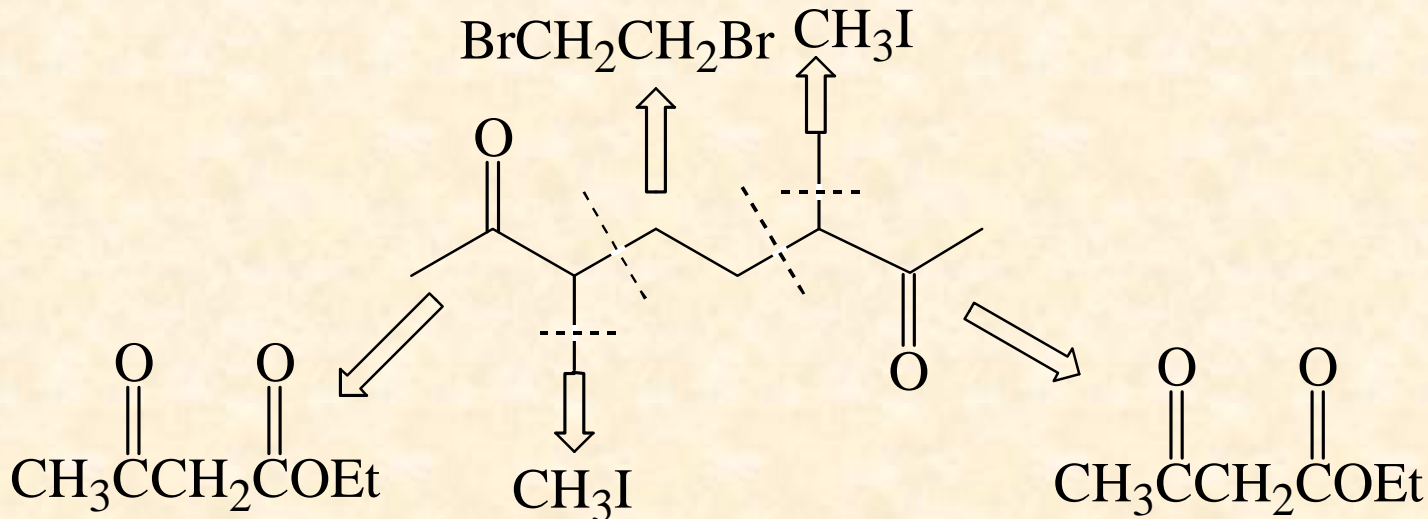




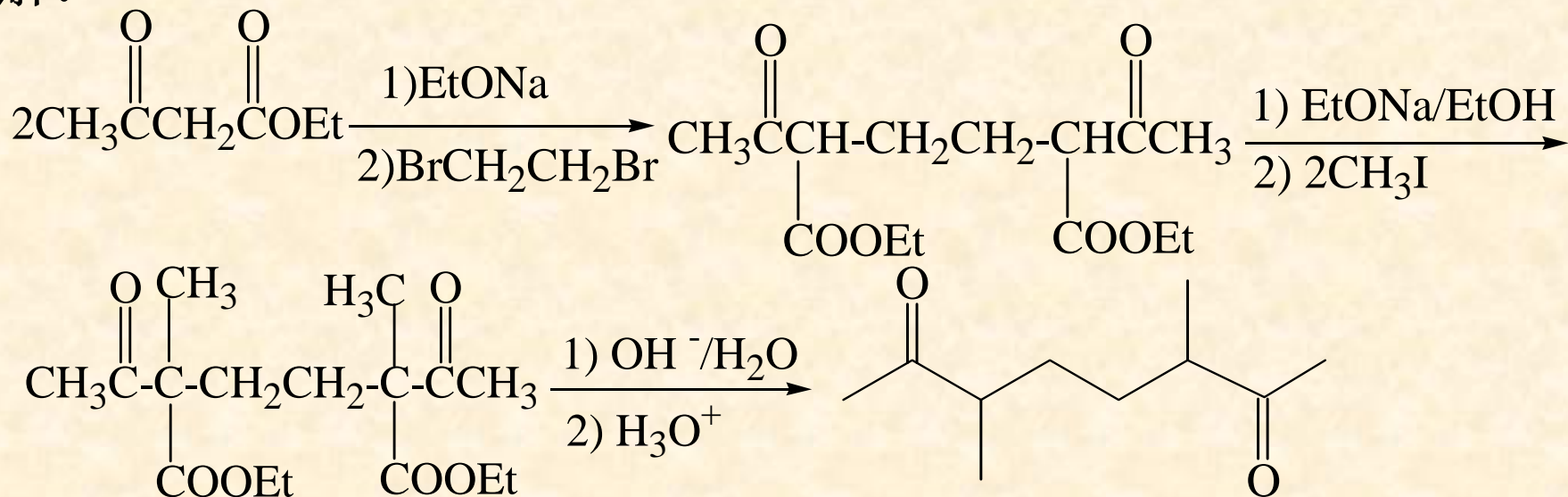
3. 用乙酰乙酸乙酯合成

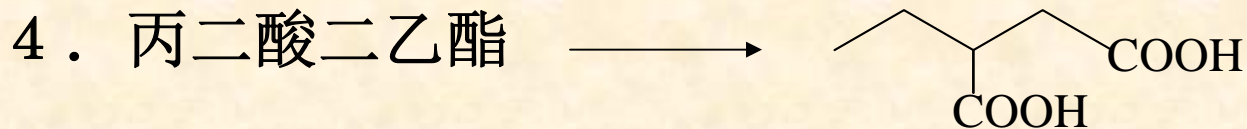


分析:

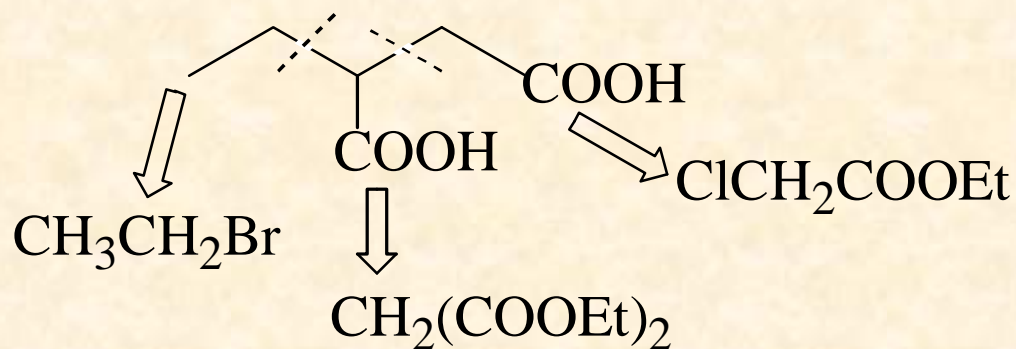


解:

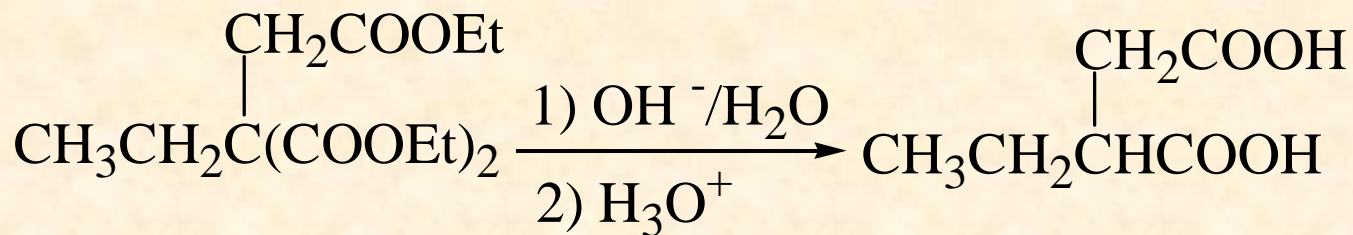
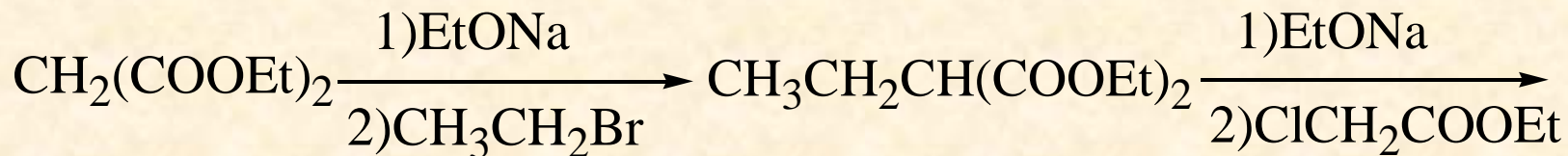


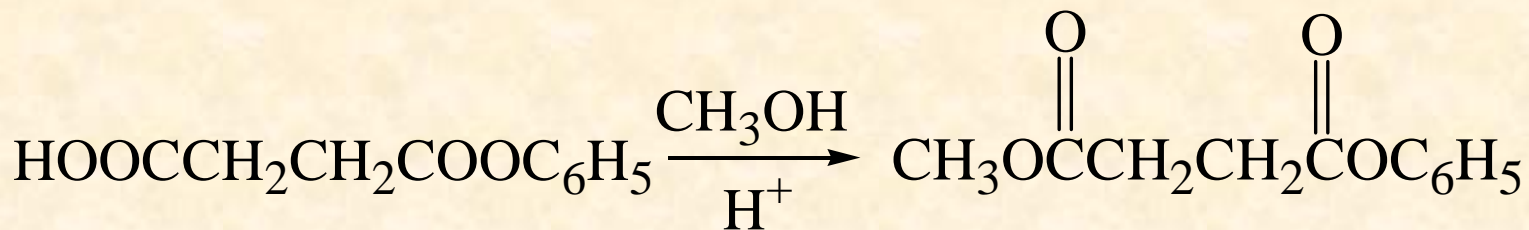
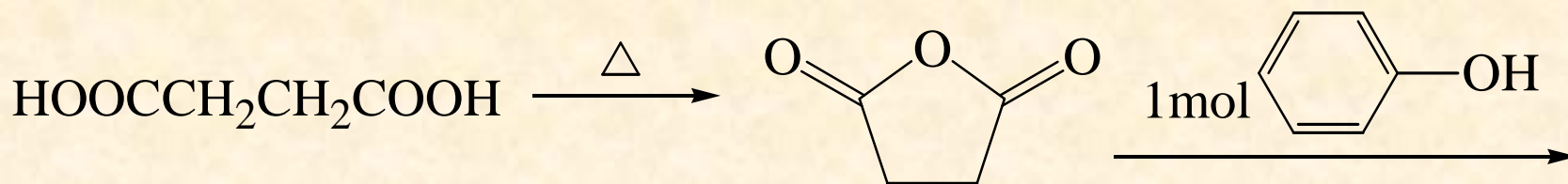


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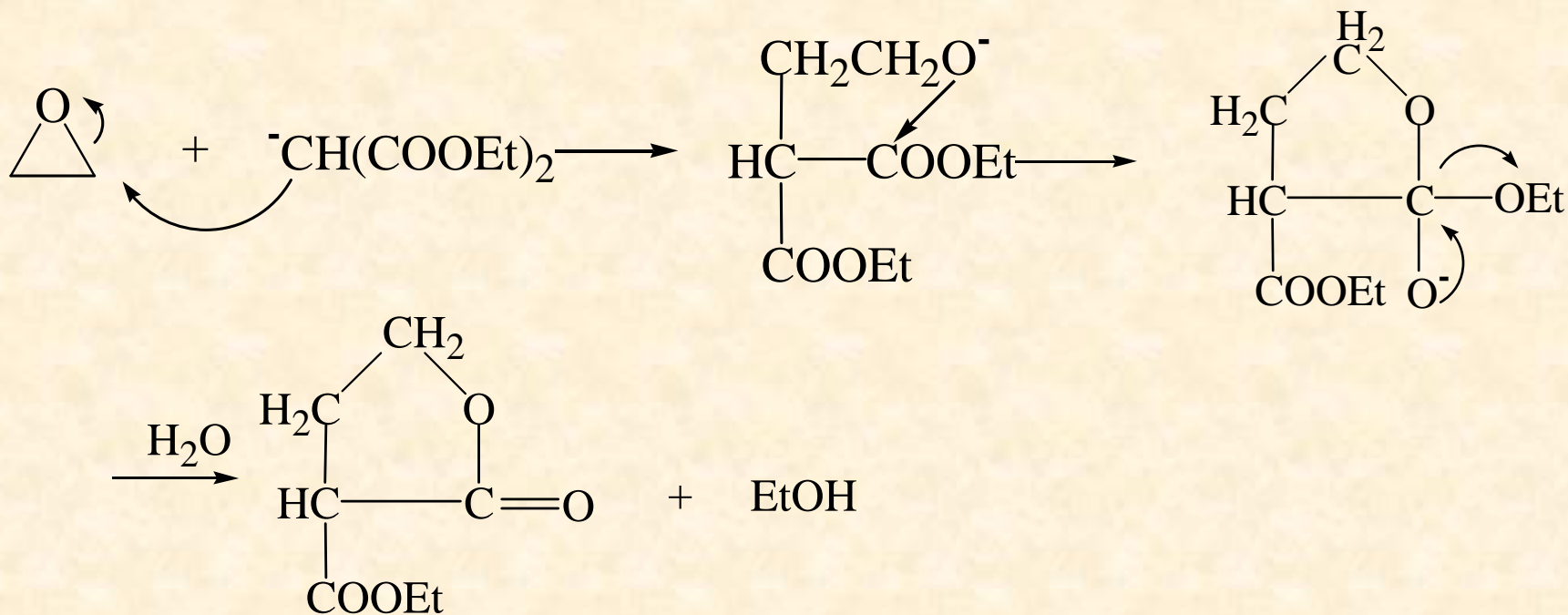
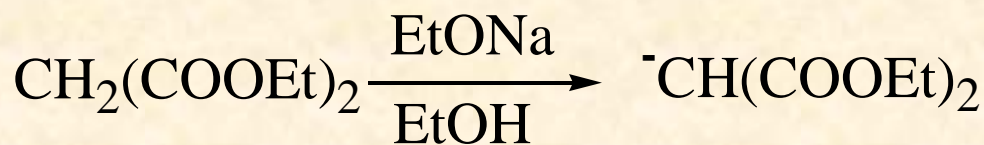
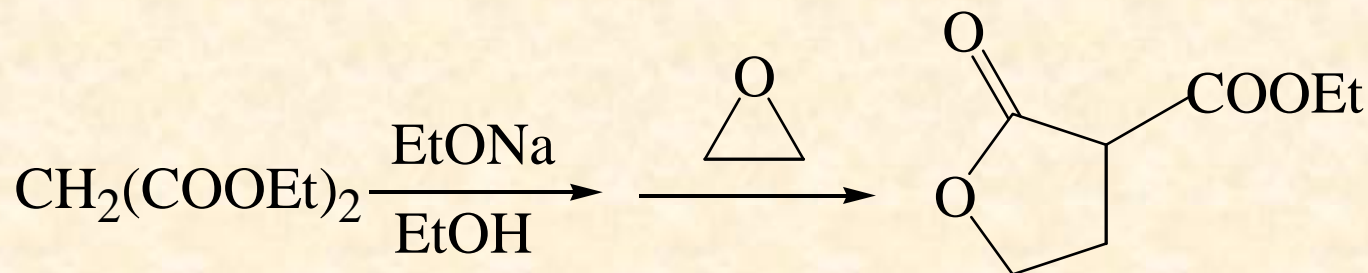


解:





四、对下列反应作出合理的解释：



五、推理题：

1. 某不饱和烃 A (C_9H_{16})，催化加氢得到 B (C_9H_{18})。A 先臭氧化再还原水解得到 C ($C_9H_{16}O_2$)，C 被 Ag_2O 氧化得到羧酸 D ($C_9H_{16}O_3$)，D 被 $Br_2/NaOH$ 氧化得到二羧酸 E ($C_8H_{14}O_4$)，E 受热得到 4-甲基环己酮，请推测 A、B、C、D、E 的结构。

解：A (C_9H_{16}) \implies 不饱和度 = 2

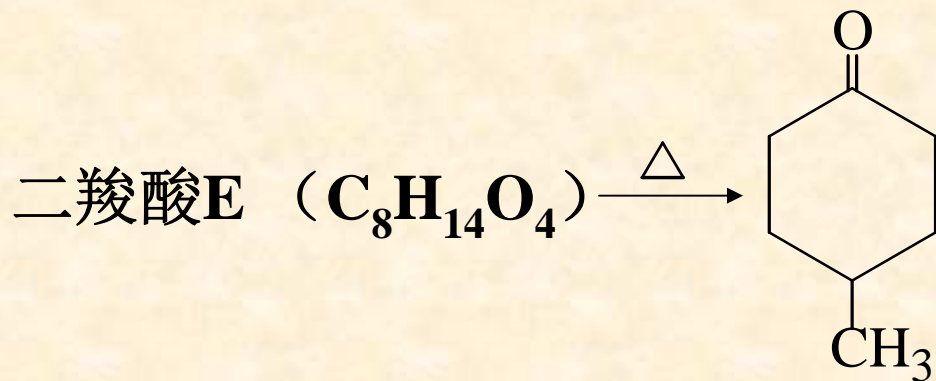
A $\xrightarrow{\text{催化加氢}}$ B (C_9H_{18}) \implies 不饱和度 = 1 \implies
有一个五元以上环

A 先臭氧化再还原水解得到 C \implies A 为环状化合物并带有双键

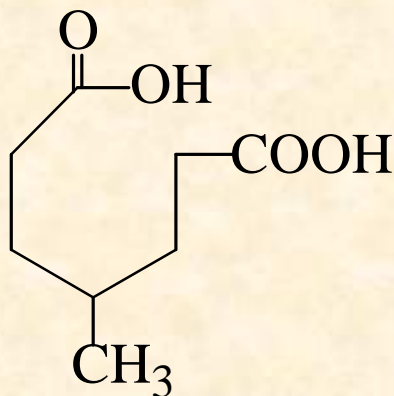
C ($C_9H_{16}O_2$) $\xrightarrow{Ag_2O}$ 羧酸 D ($C_9H_{16}O_3$) \implies

C 含有醛基和酮基

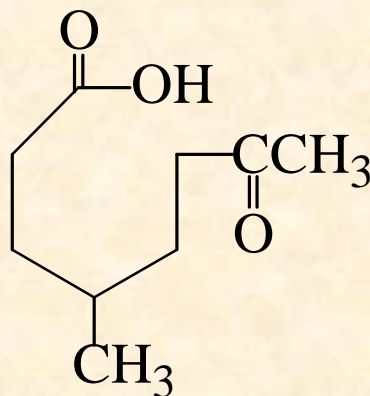
D $\xrightarrow{Br_2/NaOH}$ 二羧酸 E \implies D 具有 $CH_3\overset{O}{\parallel}C-$



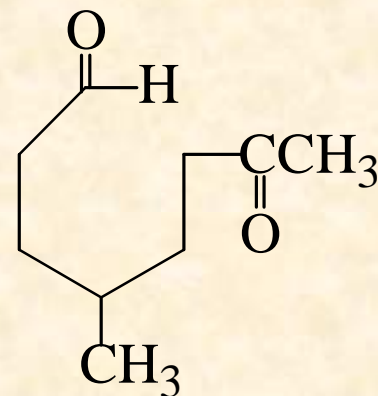
∴ E为:



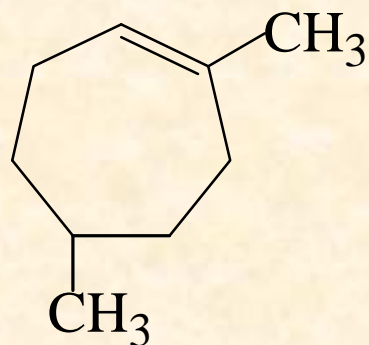
D为:



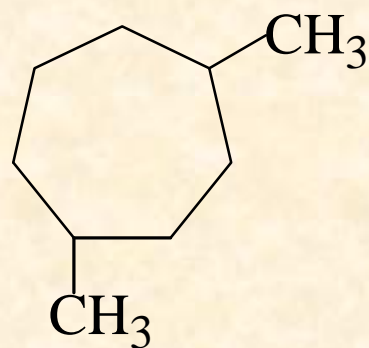
C为:



A为:



B为:



2. 某化合物A, $C_7H_{12}O$, 具有光学活性, 对 $KMnO_4$ 呈正反应, 将A加氢得B, $C_7H_{14}O$, B无光学活性。将A用铬酸氧化生成C, $C_7H_{14}O$, 其IR谱上在 $1700cm^{-1}$ 处有吸收峰, 将C臭氧化, 再用铬酸氧化, 生成D, $C_7H_{10}O_5$, D可溶于 $NaHCO_3$ 水溶液, 加热D, 产生气体, 生成E, $C_6H_{10}O_3$, E的NMR谱上 $\delta = 2.07$ 处呈单峰, E也溶于 $NaHCO_3$ 水溶液, 经碘仿反应生成戊二酸, 试推出A、B、C、D、E的结构。

解: A, $C_7H_{12}O \implies$ 不饱和度 = 2

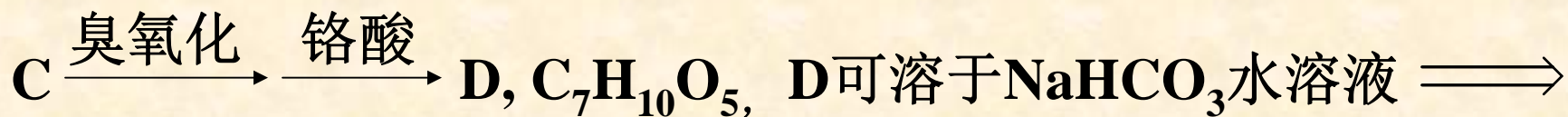
对 $KMnO_4$ 呈正反应 \implies 具有碳碳双键或三键

A $\xrightarrow{\text{催化加氢}}$ B, $C_7H_{14}O \implies$ 不饱和度 = 1 \implies

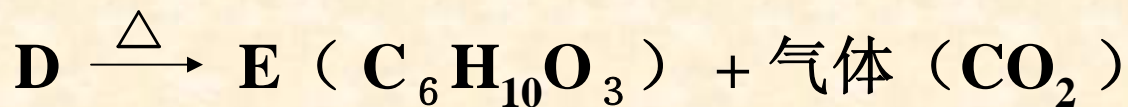
有一个五元以上环 \implies A为环状化合物并带有双键

A $\xrightarrow{\text{铬酸}}$ C, $C_7H_{14}O$, 其IR谱上在 $1700cm^{-1}$ 处有吸收峰

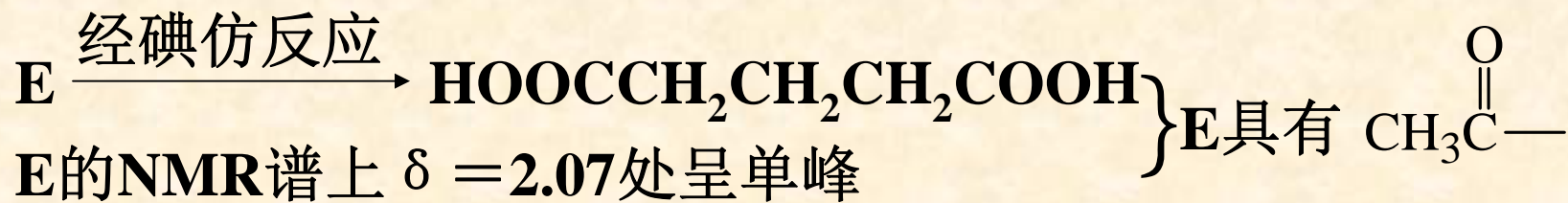
\implies C中有 >C=O



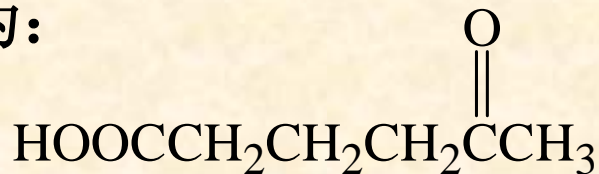
D带有 $-\text{COOH}$



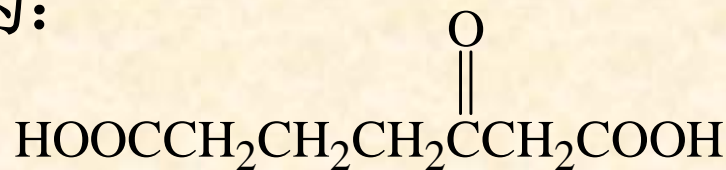
E可溶于 NaHCO_3 水溶液 \implies E带有 $-\text{COOH}$



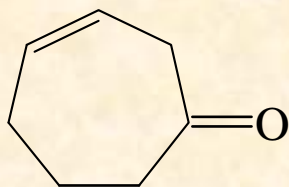
\therefore E为:



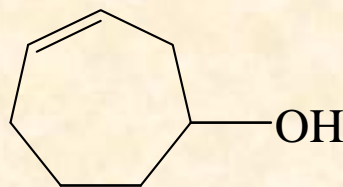
D为:



C为:



A为:



B为:

