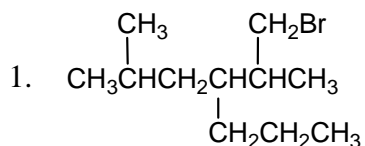


有机化学期中考试参考答案

2004-04

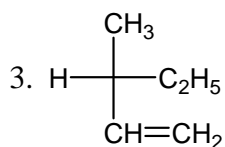
一、用系统命名法命名或根据名称写结构 (10分)



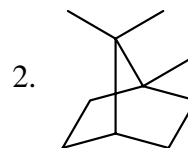
2,5-二甲基-3-丙基-1-溴己烷

2-溴甲基-5-甲基-3-丙基己烷

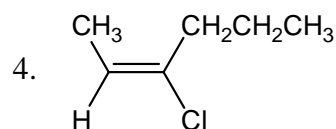
2-甲基-4-(1-溴-2-丙基)庚烷



(R)-3-甲基-1-戊烯

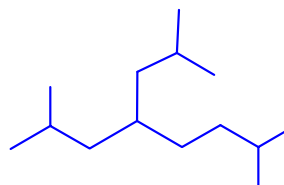


1,7,7-三甲基二环[2.2.1]庚烷

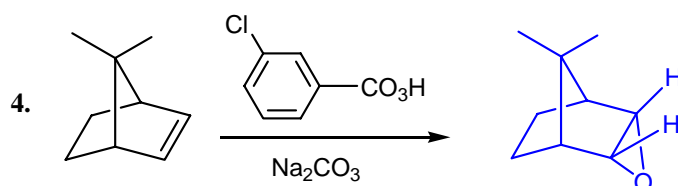
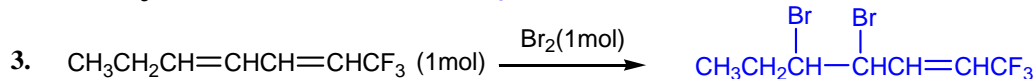
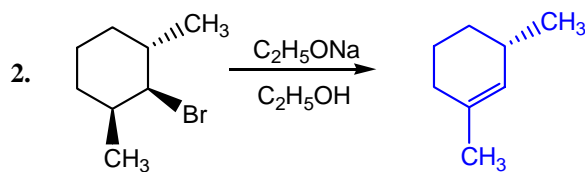
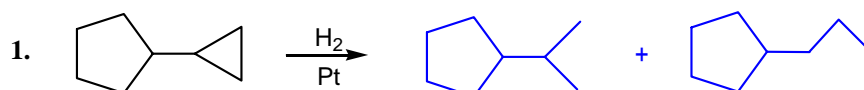


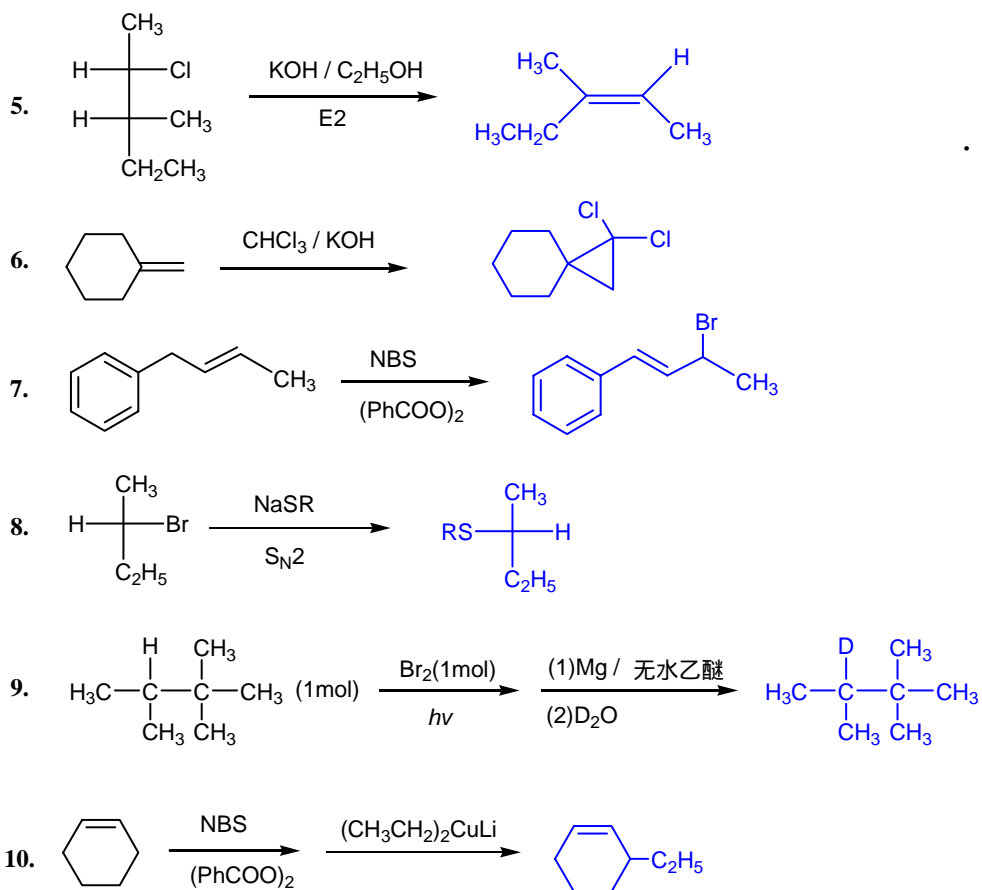
(E)-3-氯-2-己烯

5. 2,7-二甲基-4-异丁基辛烷

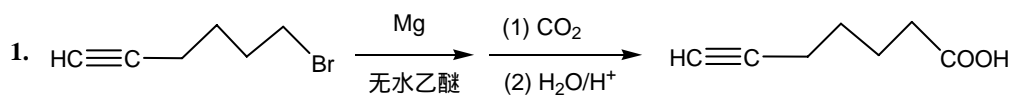


二、写出主要产物，必要时注明产物的立体化学 (20分)

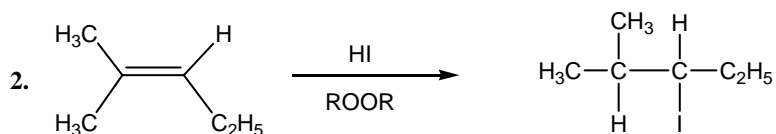




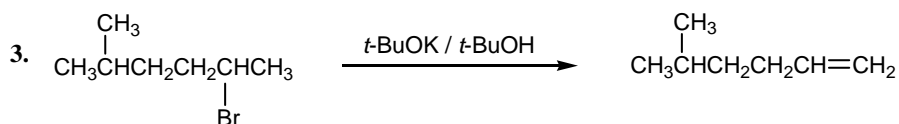
三、下列哪些合成设计可能不合理，简述问题所在或写出正确的产物（15分）



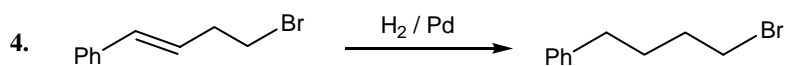
炔基上有活泼氢，会与生成的Grignard试剂反应，故不会发生图示反应。



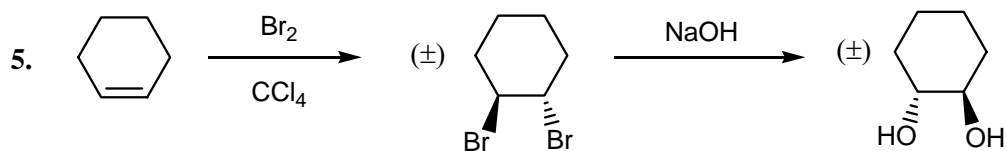
HI加成时无过氧化效应



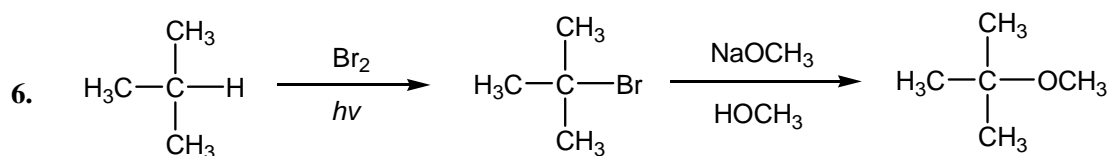
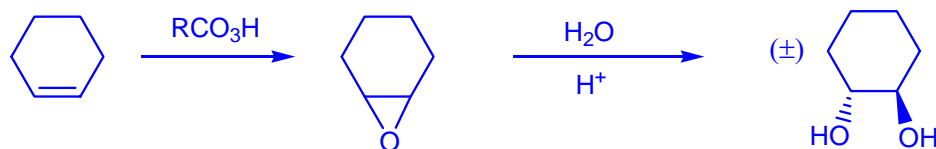
设计合理，大体积碱消除为Hofmann取向



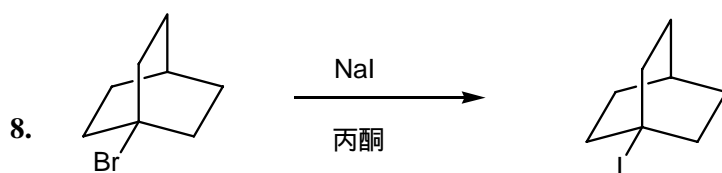
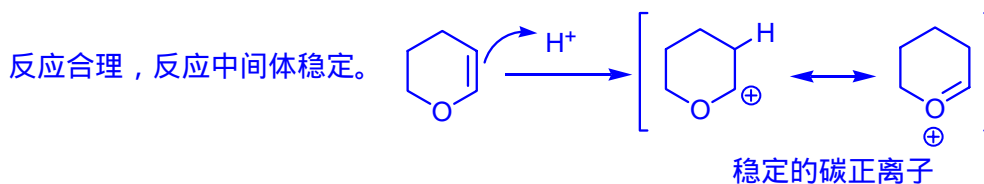
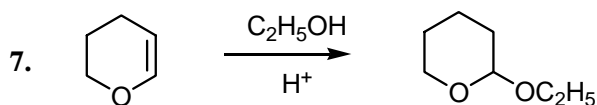
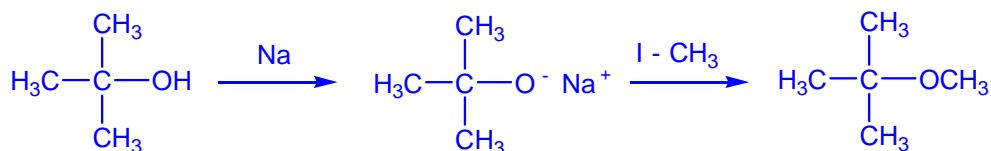
卤素也会被还原



不太合理。第二步的立体化学难保证，还可能有消除。反式邻二醇最好用以下方法制备：



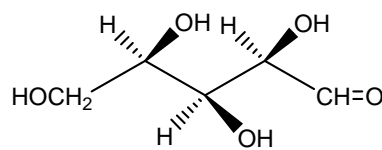
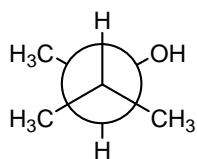
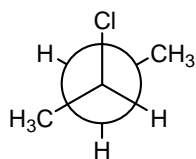
不太合理。第二步主要发生消除。应采用以下路线制备

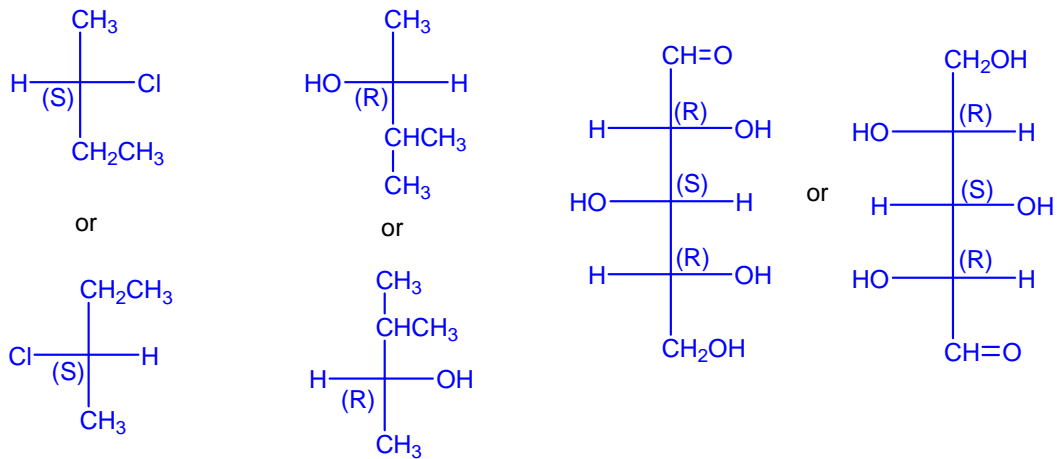


反应不合理，桥头卤代烃 S_N1 和 S_N2 均难发生。

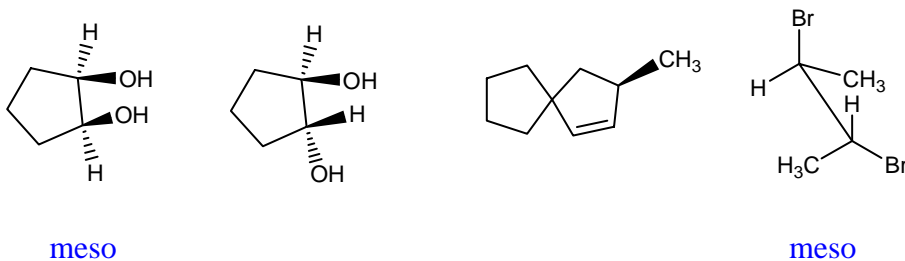
四、按要求回答（20分）

1. 将下列结构式改成十字式，并用 R 或 S 标出各手性碳的构型

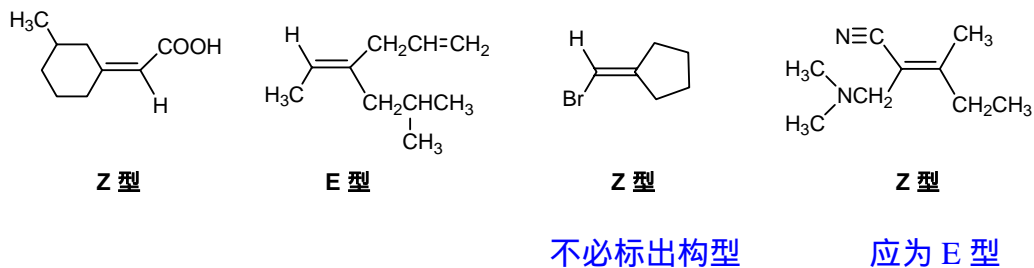




2. 下列哪几个结构为 meso 型化合物？

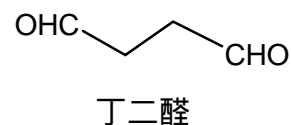


3. 下列哪几个化合物的双键构型标错了，请更正。

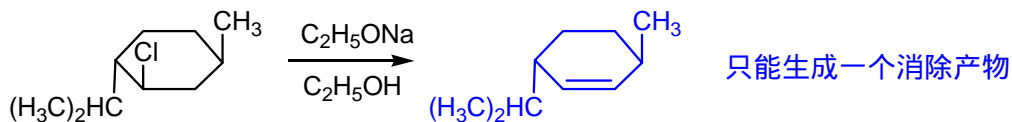


4. 化合物A为烃类化合物，1mol的A催化氢化可吸收 2mol H₂。A用O₃氧化，并进一步用锌粉还原水解后只得到丁二醛。写出A得结构。

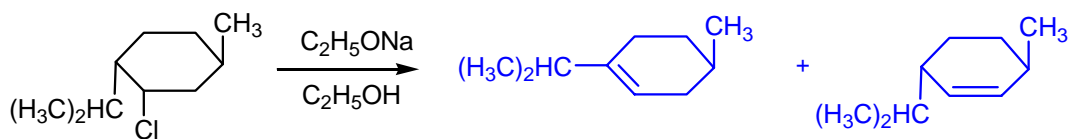
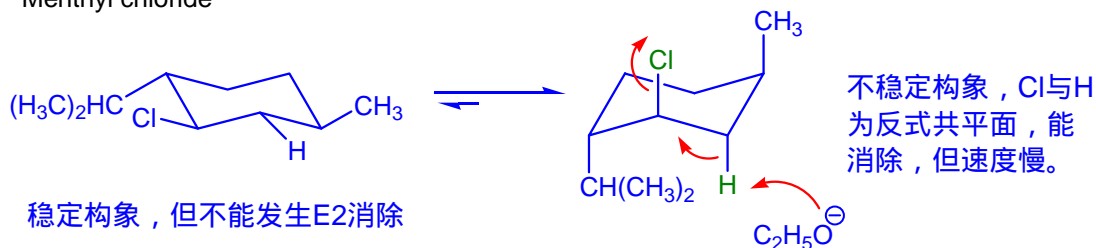
A 的结构为



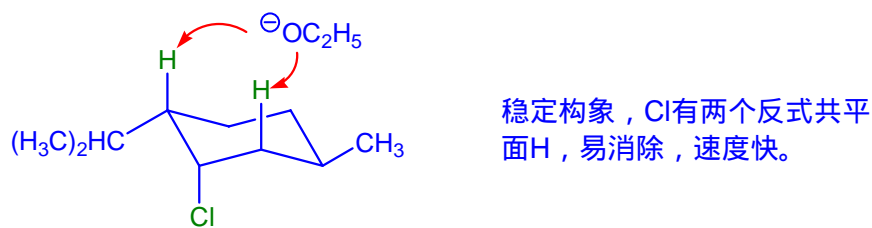
5. 实验室存放 Menthyl chloride 和 Neomenthyl chloride 试剂瓶上的标签脱落，为区分这两个化合物，学生设计了以下 E2 消除反应，通过分析产物及观测反应速率，成功地将两者鉴别开来。请说明其中原因。



Menthyl chloride



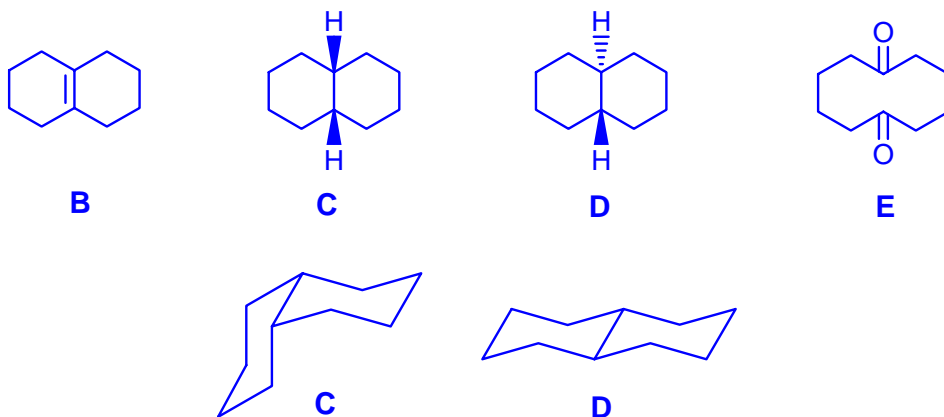
Neomenthyl chloride



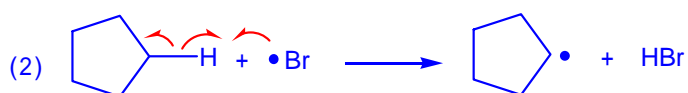
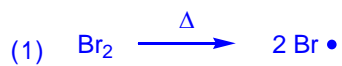
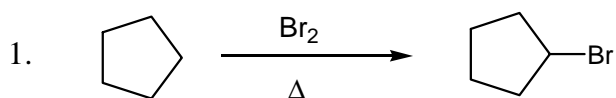
6. 化合物B(C₁₀H₁₆)，与H₂/Pd反应得化合物C和D(C₁₀H₁₈)，C与D为立体异构体，其中C为主要产物。B用O₃氧化，并进一步水解后得到一个对称的环状二酮E(C₁₀H₁₆O₂)。

(1) 写出B、C、D和E的结构。

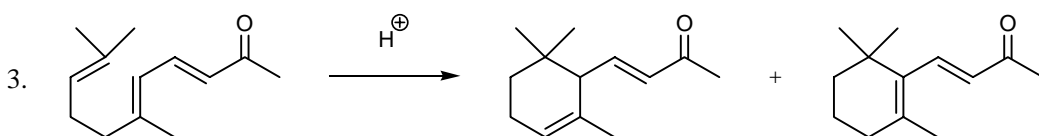
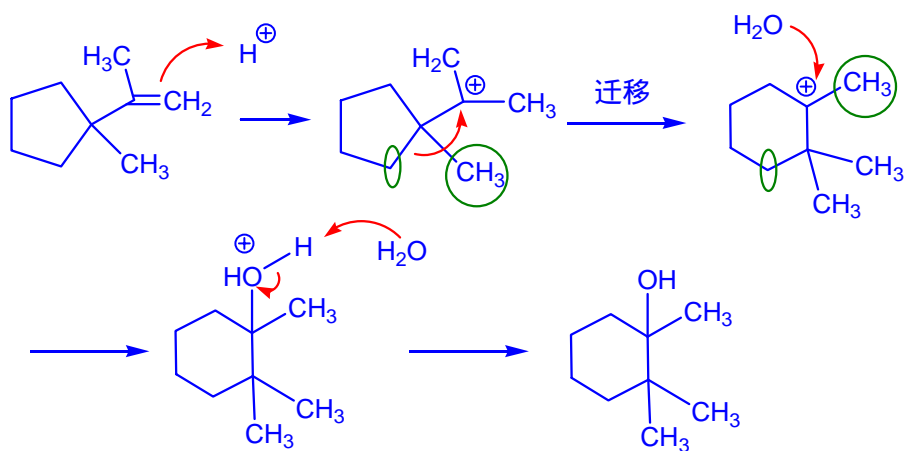
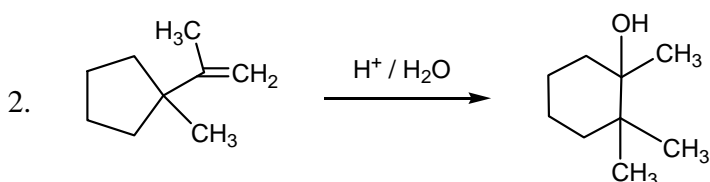
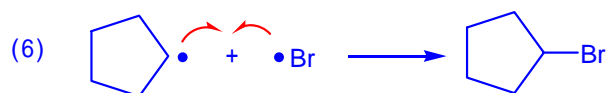
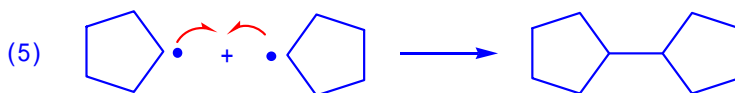
(2) 画出产物C和D的最稳定构象。

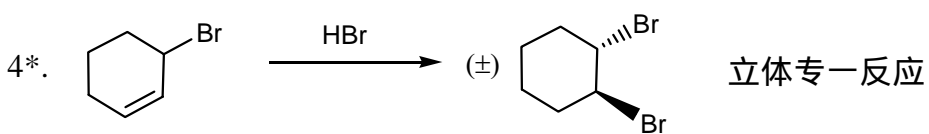
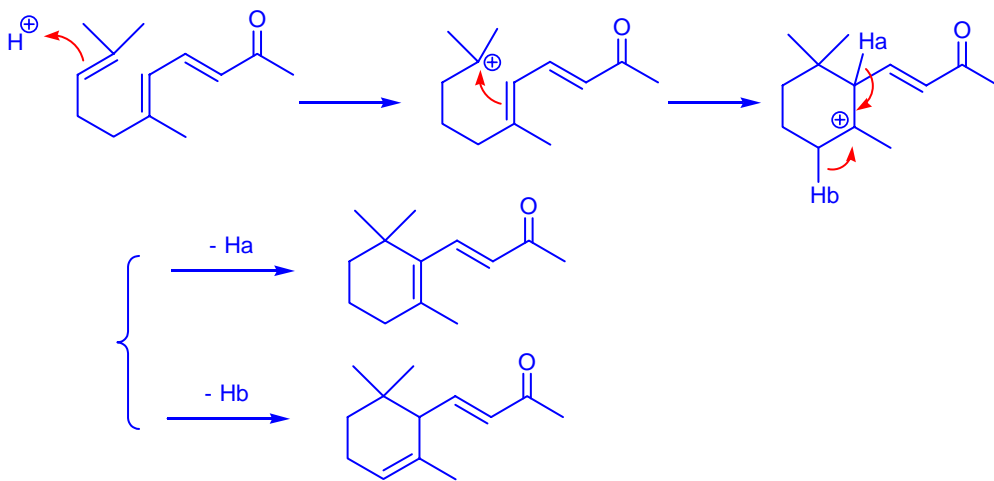


五、写出下列反应的机理或解释下列结果（15分。第4题为附加题，5分）

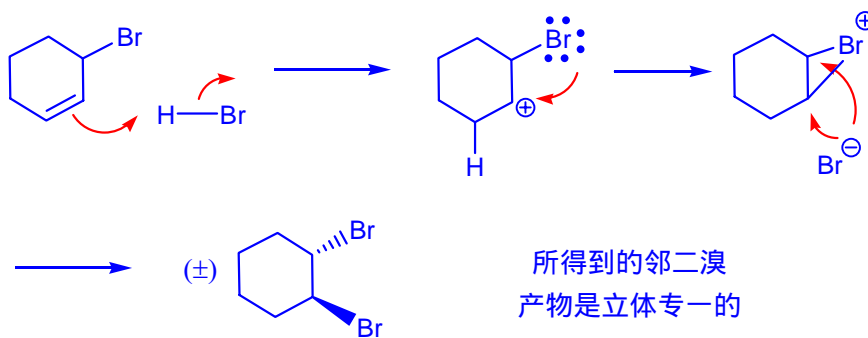


第(2), (3)步重复进行

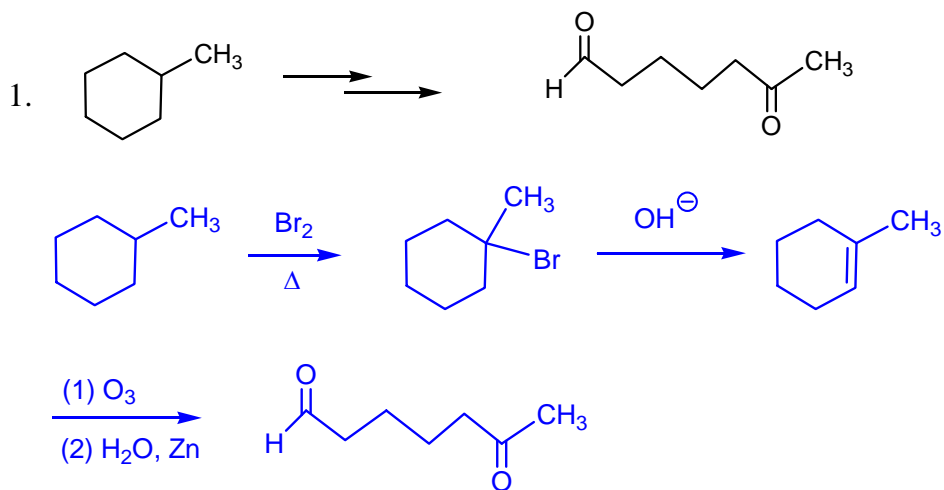


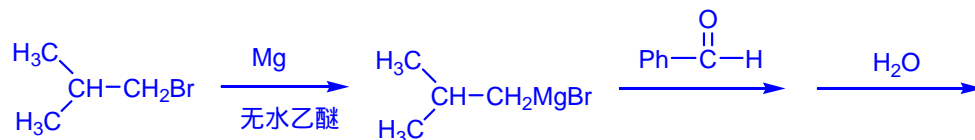
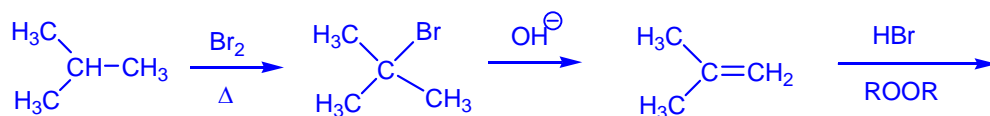
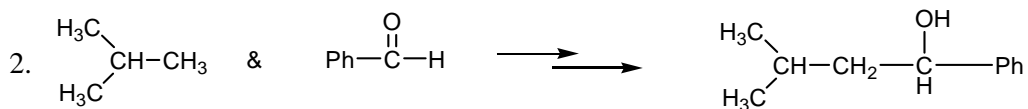


(附加题)



六、用必要的有机或无机试剂完成下列合成 (20分)





Grignard试剂

