

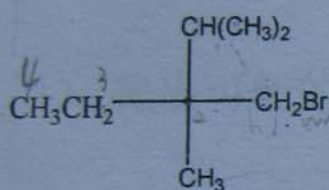
# 浙 江 大 学

## 二〇〇七年攻读硕士学位研究生入学考试试题

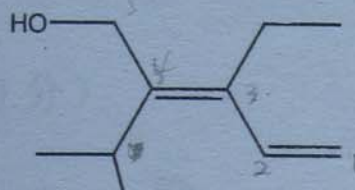
考试科目 有机化学 编号 429

注意: 答案必须写在答题纸上, 写在试卷或草稿纸上均无效。

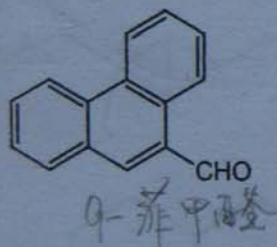
1. 用 IUPAC 命名下列化合物 (含立体化学) (10 分):



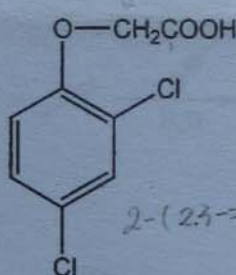
(2R)-2-甲基-2-溴戊烷



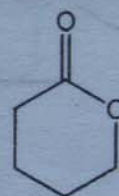
(E)-3-乙基-4-甲基-1-戊烯



9-蒽甲醛



2-(2,3-二氯苯基)乙酸



δ-戊内酯

2. 解释戊烷异构体的沸点、熔点规律 (3 分):

	正戊烷	异戊烷	新戊烷
沸点 (°C)	36.1	27.9	9.5
熔点 (°C)	-129.8	-159.9	-16.6

沸点: 支链越多, T<sub>b</sub> 越低

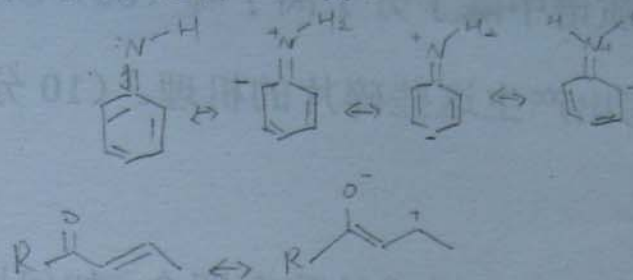
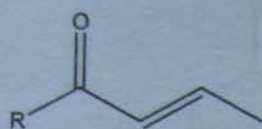
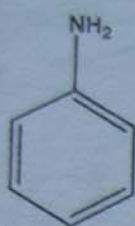
熔点: 戊烷对称性高, 堆积力强, 熔点高

3. 将下列试剂按亲电试剂、亲核试剂分类 (4 分):

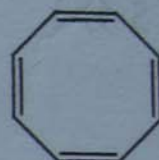
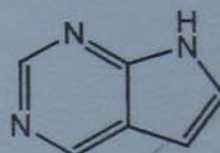
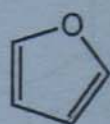
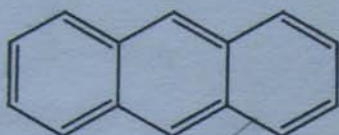
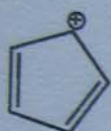
H<sup>+</sup>; AlCl<sub>3</sub>; CH<sub>3</sub>O<sup>-</sup>; CH<sub>3</sub>C≡CH; CH<sub>3</sub>CH<sup>+</sup>CH<sub>3</sub>; NH<sub>3</sub>

B A B B A B

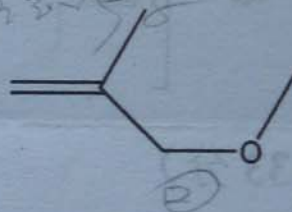
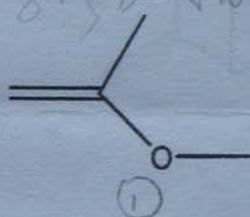
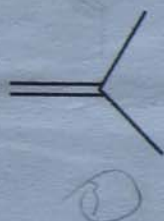
4. 写出下列结构的共振式和共振杂化体 (6 分)



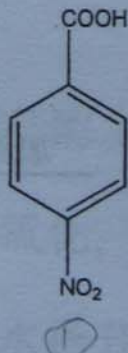
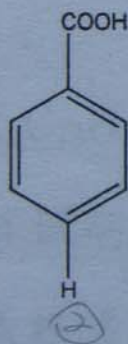
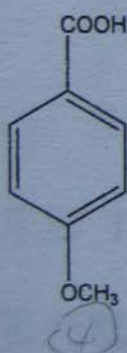
5. 下列化合物哪些具有芳香性 (5 分)



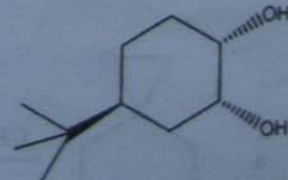
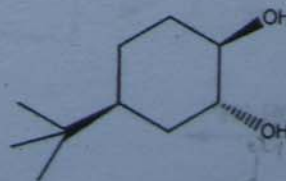
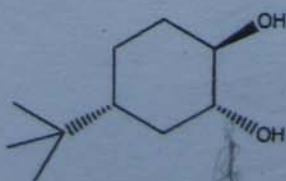
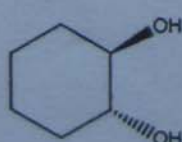
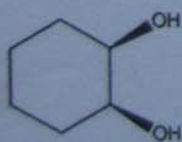
6. 下列底物和 HBr 反应的相对速度, 为什么? (2 分)



7. 下列活泼质子的相对酸性大小: (2 分)



8. 下列邻二醇不可以用高碘酸氧化的是哪一个? 为什么? (5 分)

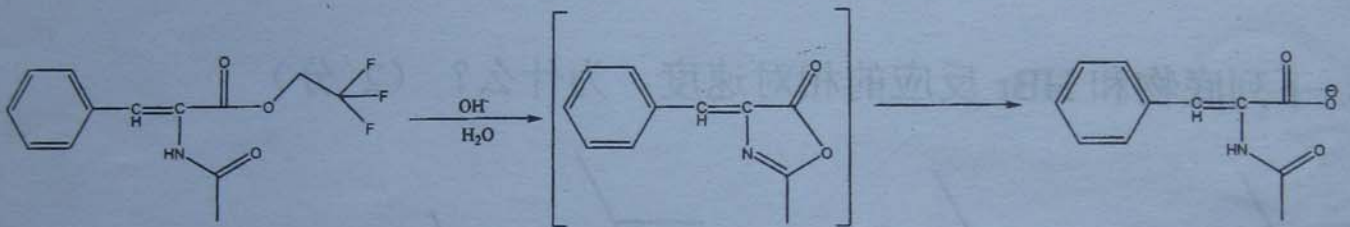




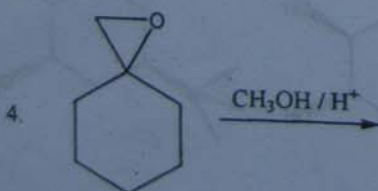
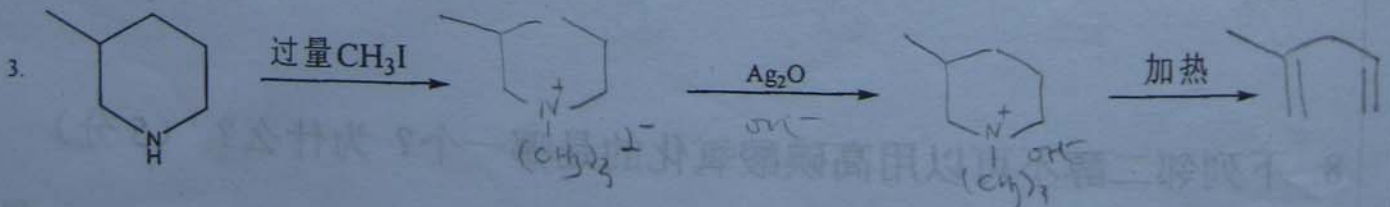
9. 2-戊酮质谱中除了分子离子峰 (86) 以外, 还观察到 43, 58, 71 等碎片, 试写出产生这些碎片的机理。(10 分)

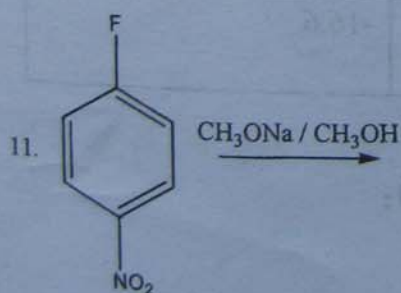
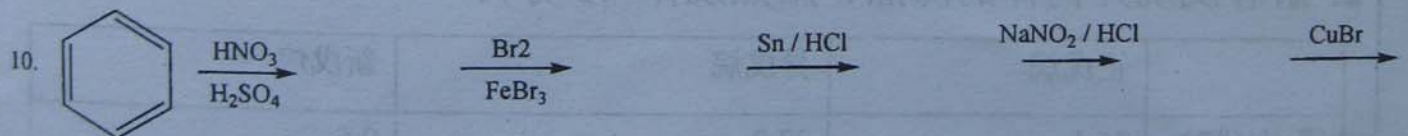
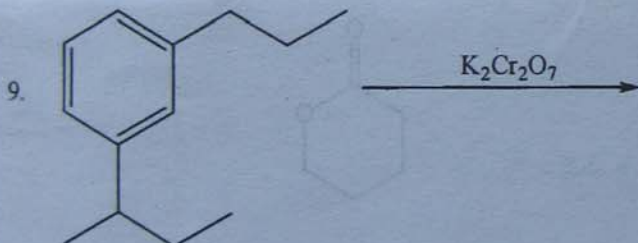
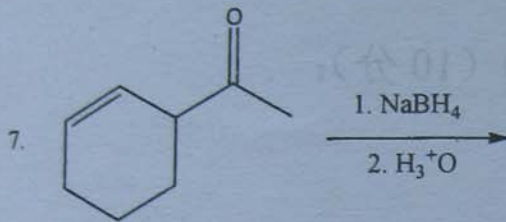
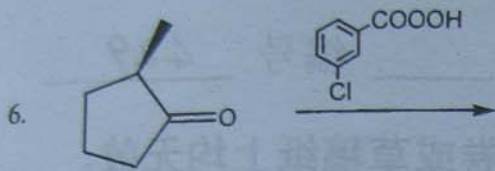
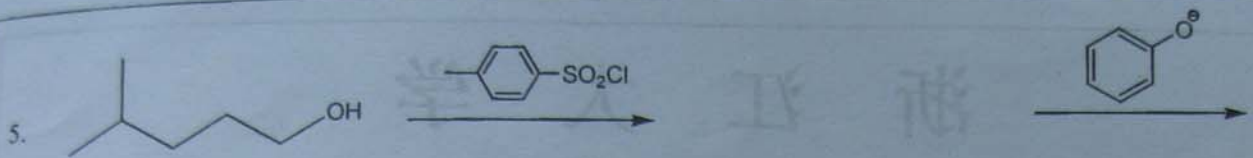
10. 符合  $C_4H_8O_2$  化学式的酯有四个, 如何用  $^1H NMR$  的方法鉴别它们。(5 分)

11. 碱催化酯水解经过下列中间体, 用机理解释其过程 (5 分)。

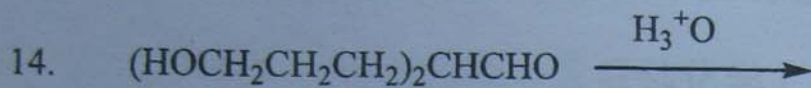
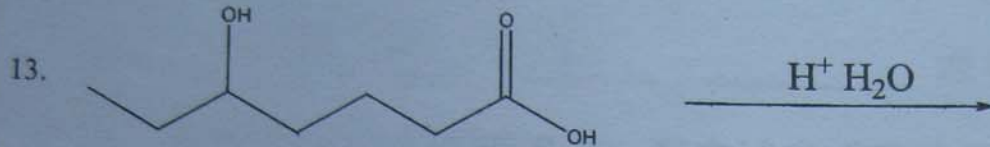
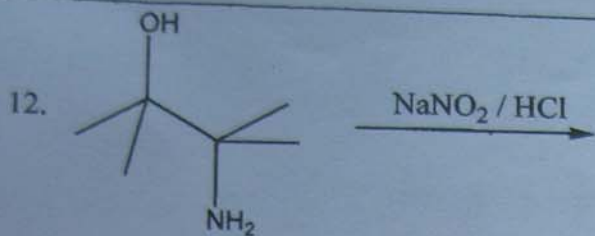


12. 完成反应方程式 (33 分)

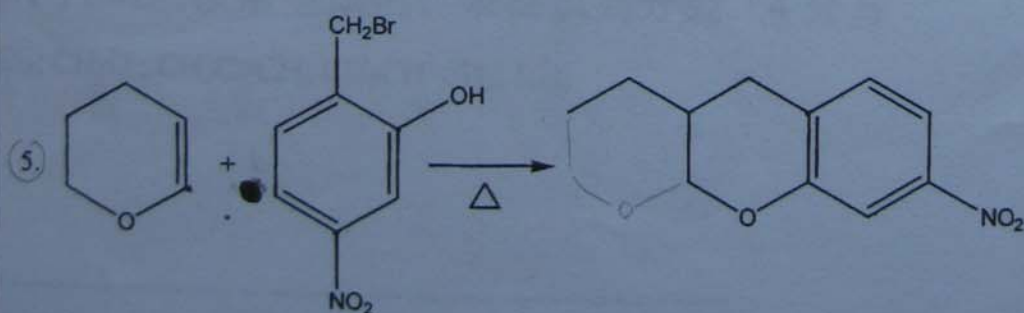
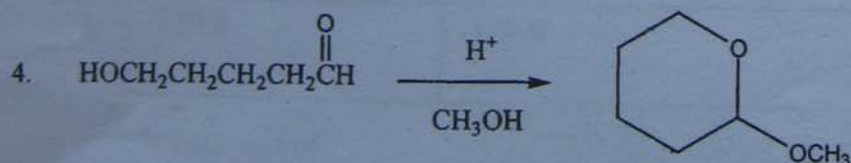
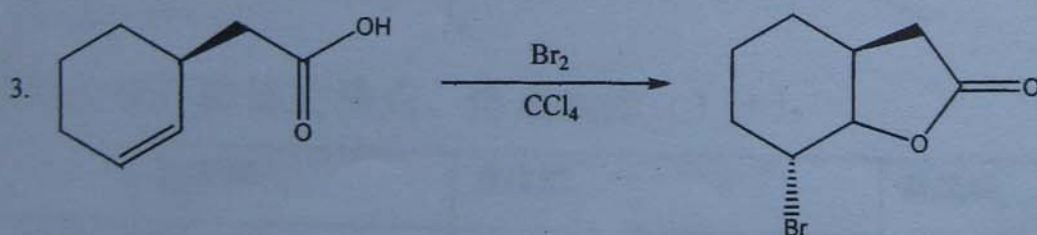
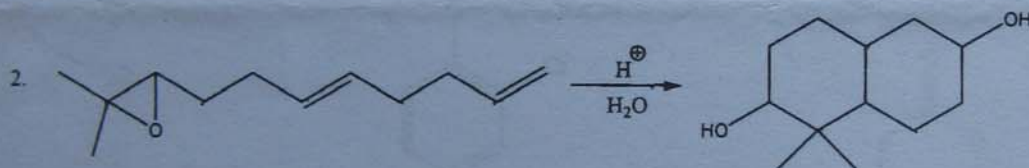
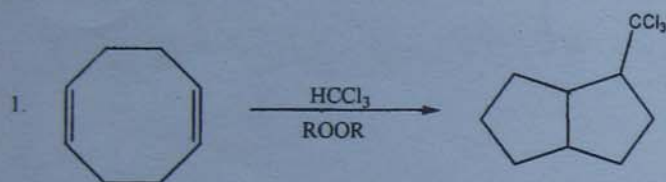




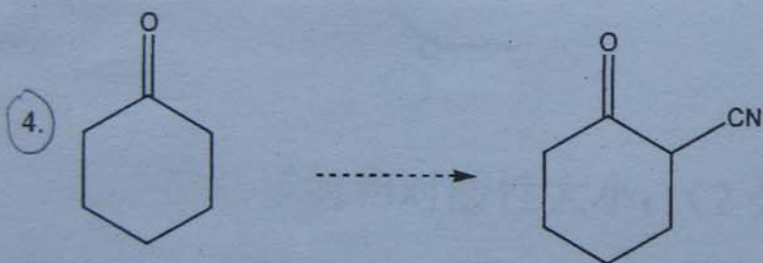
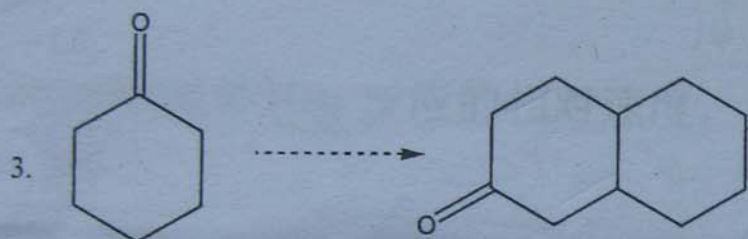
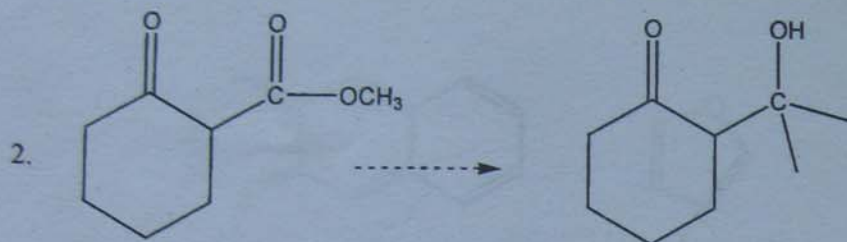
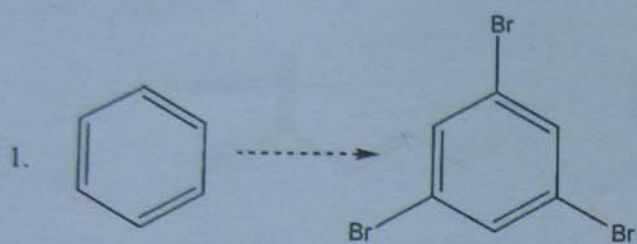




13. 提出可能的机理 (30 分)



## 14. 实现下列转变 (20 分)



15. 水杨苷  $C_{13}H_{18}O_7$  被  $\beta$ -葡萄糖苷酶水解成 D-葡萄糖和  $C_7H_8O_2$ , 水杨苷对 Tollen 试剂呈阴性, 用硝酸氧化, 然后经  $\beta$ -葡萄糖苷酶水解成 D-葡萄糖和水杨醛. 对用硫酸酯对水杨苷进行甲基化, 得五甲基化产物, 问水杨苷的结构, 并写出各步反应式. (10 分)

