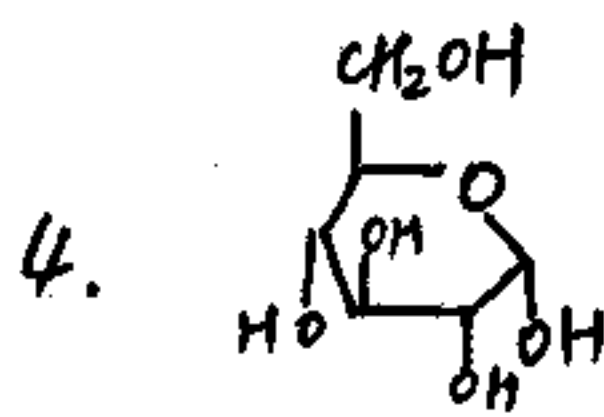
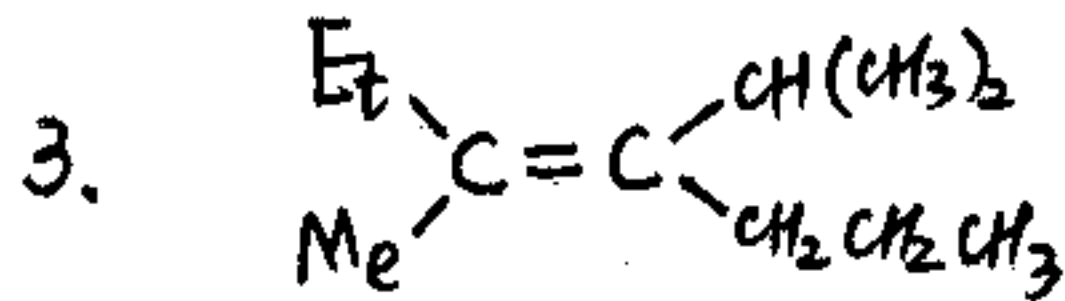
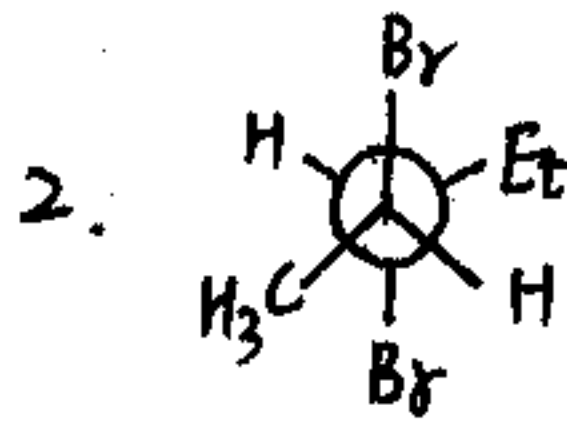


河南师范大学

2012 年硕士研究生入学考试业务课试卷

科目代码: 623 名称: 有机化学 适用专业或方向: 有机化学, 药物化学, 高分子化学与物理
 (必须在答题纸上答题, 在试卷上答题无效, 答题纸可向监考老师索要)

一、命名或写结构式。(共 20 分, 每小题 2 分)



5. 8-羟基喹啉

6. DMSO 的构造式

7. 樟脑

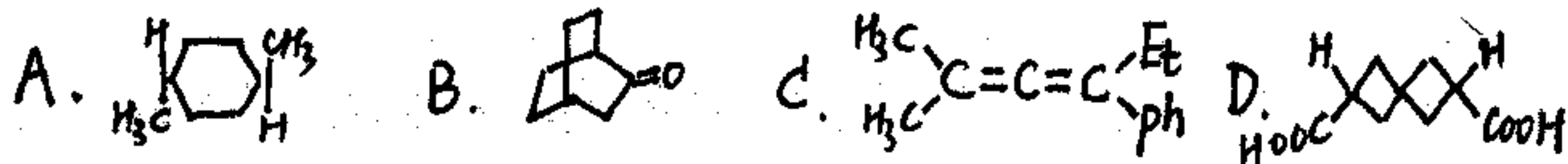
8. 己内酰胺(尼龙-6单体)

9. o-benzenedicarboxylic anhydride 的构造式

10. 丙氨酸苯丙氨酸(丙苯丙肽)

二. 选择题。(共20分, 每小题2分)

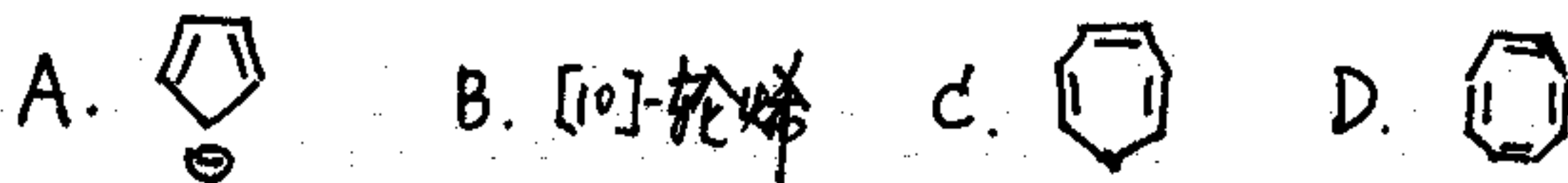
1. 下列化合物有手性的是 ()



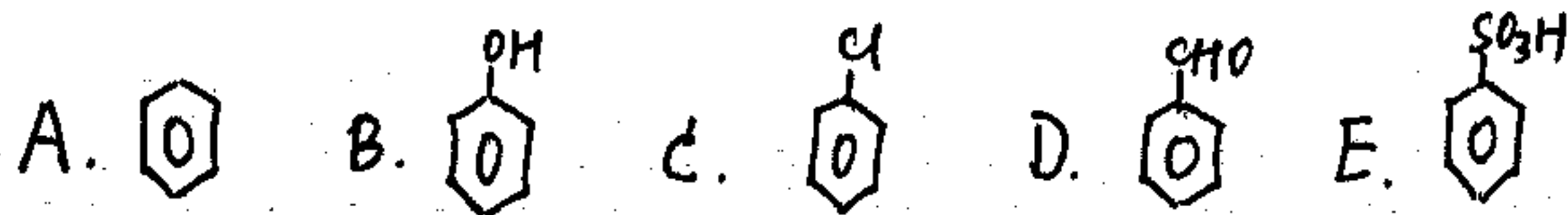
2. 下列化合物加入银氨溶液有白色沉淀的是 ()



3. 下列化合物有芳香性的是 ()



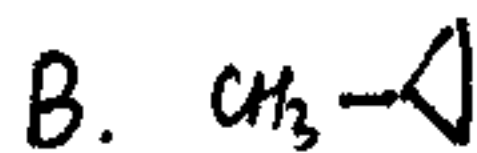
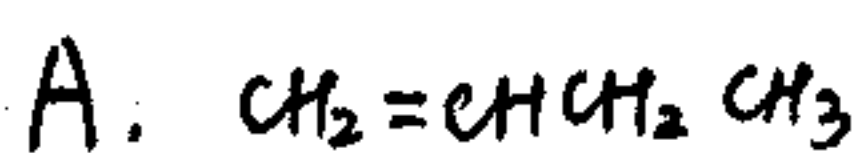
4. 下列化合物硝化反应活性最大的是 ()



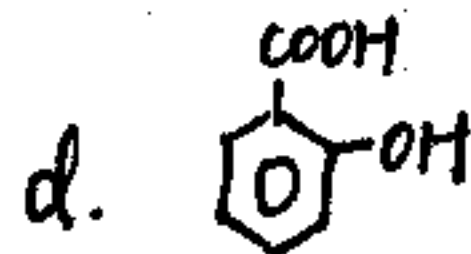
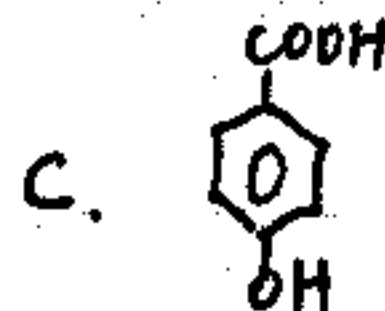
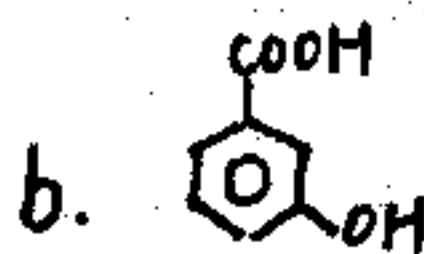
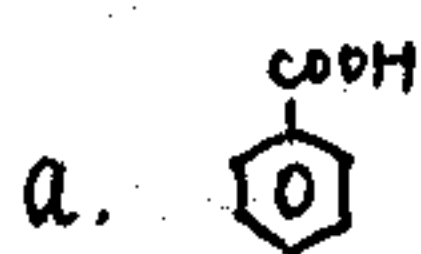
5. 下列化合物最易烯醇化的是 ()



6. 分子式为 C_4H_8 的化合物, 1H NMR 谱 δ 1.65 处有一双峰 (6H), δ 5.30 处有一四重峰 (2H), 其可能结构为 ()

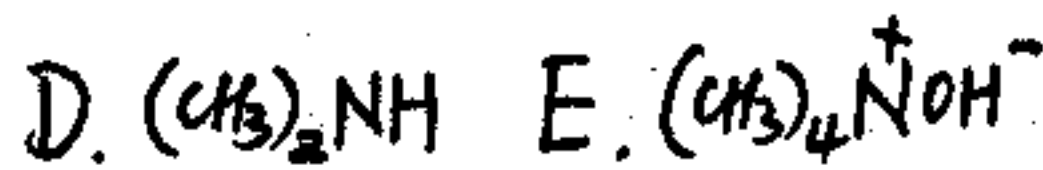
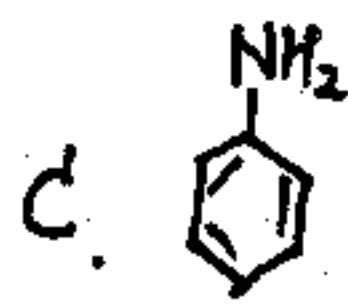
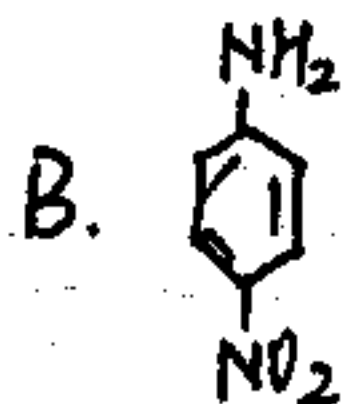
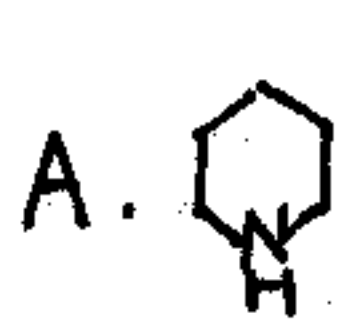


7. 下列化合物的酸性由强至弱排列正确的是 ()

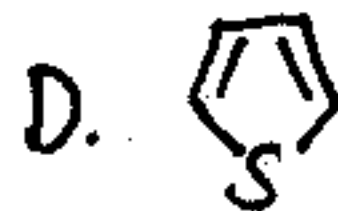
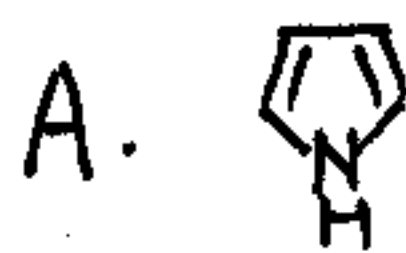


A. $a > b > c > d$ B. $b > c > d > a$ C. $d > b > a > c$ D. $c > b > d > a$

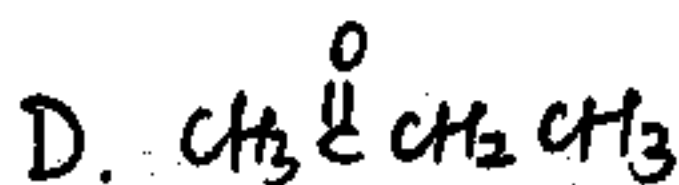
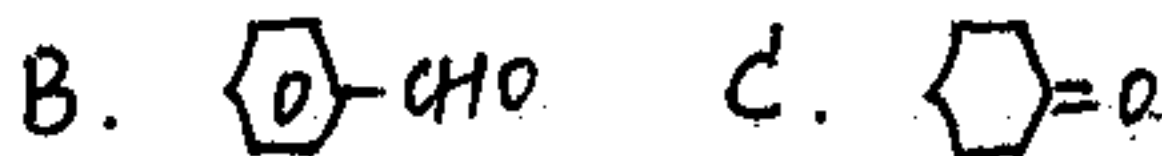
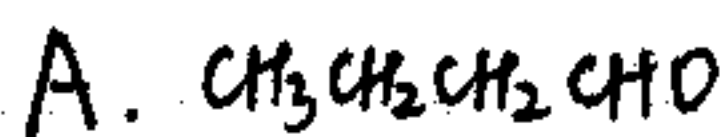
8. 下列化合物碱性最强的是 ()



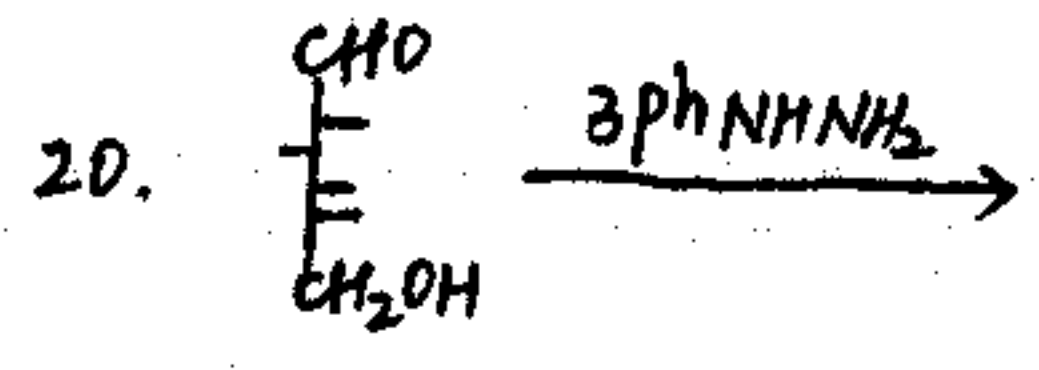
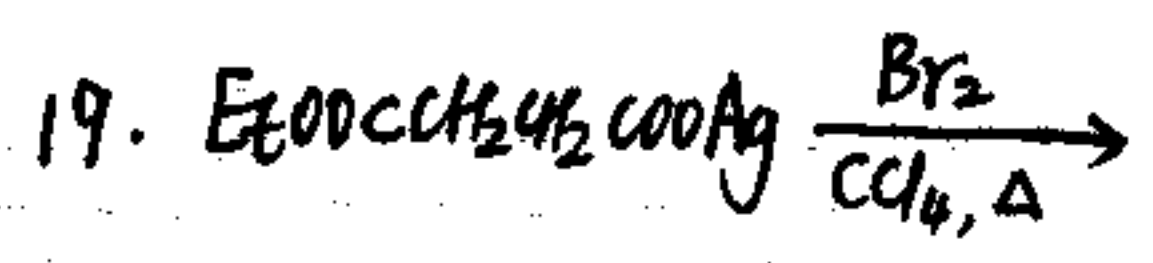
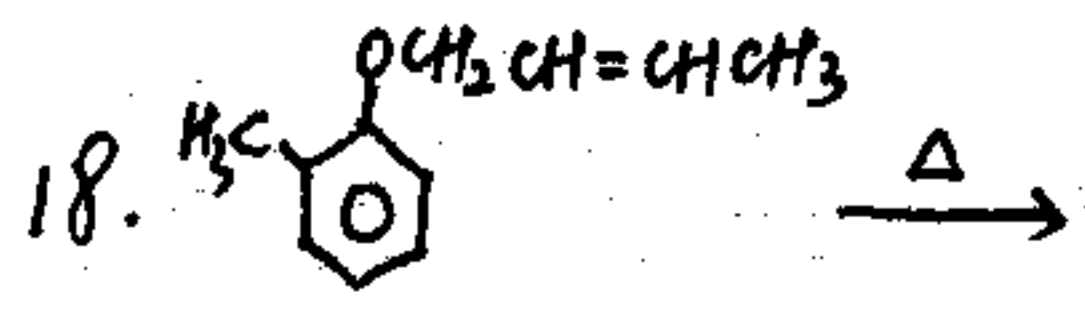
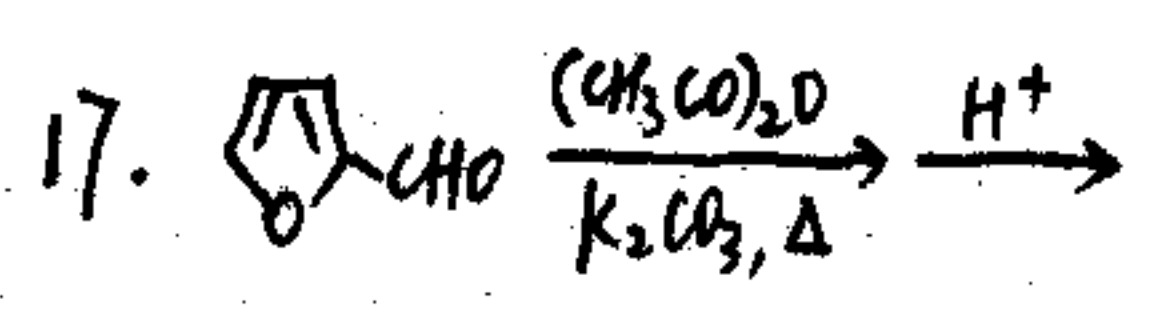
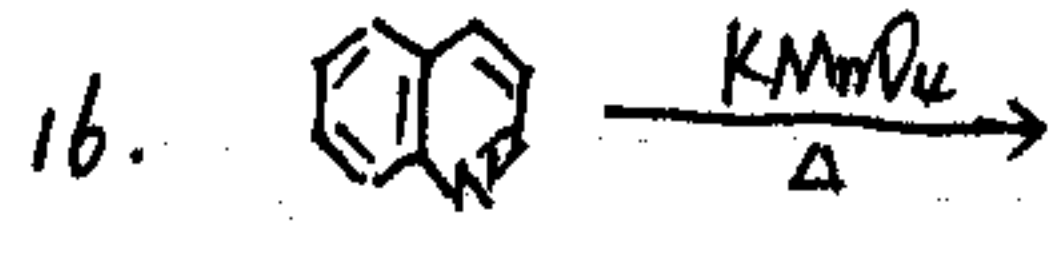
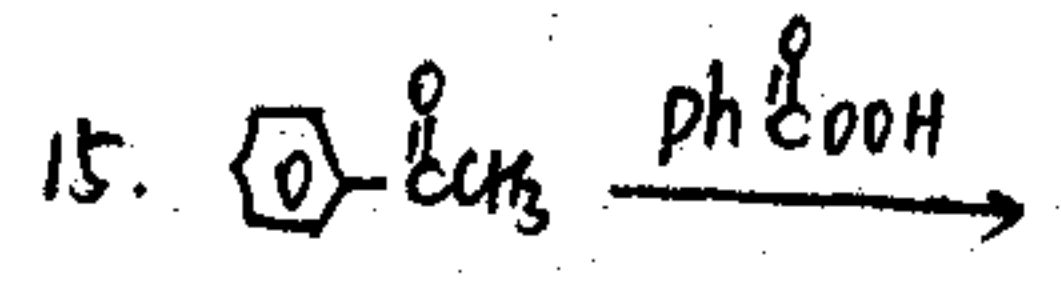
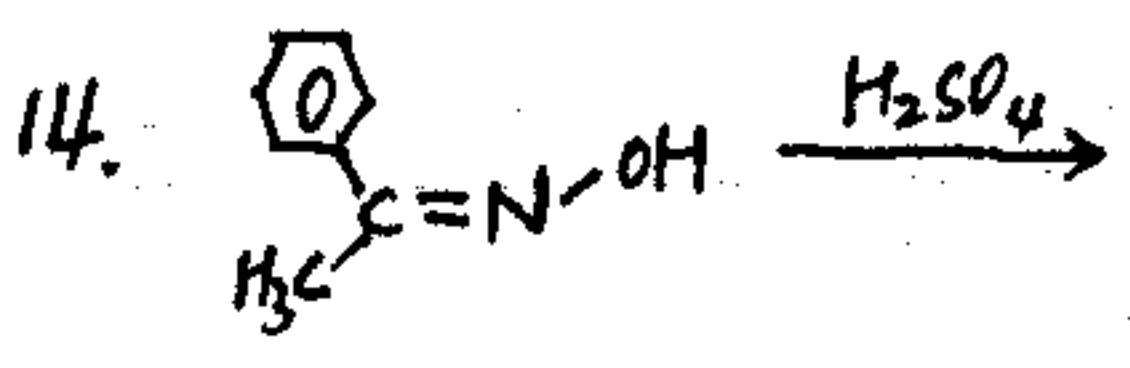
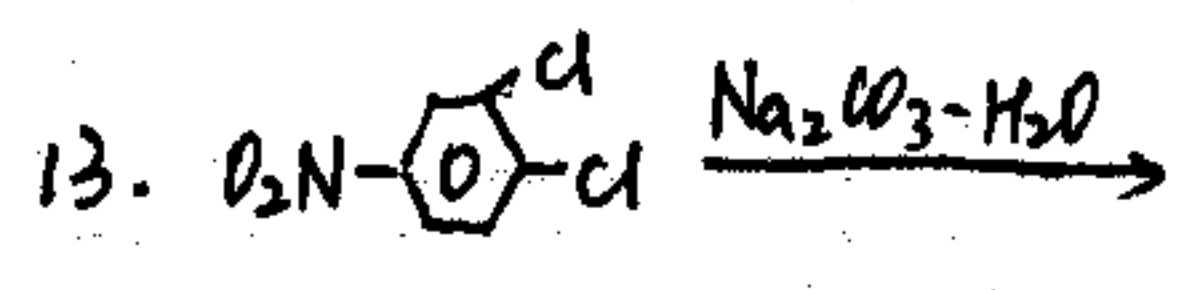
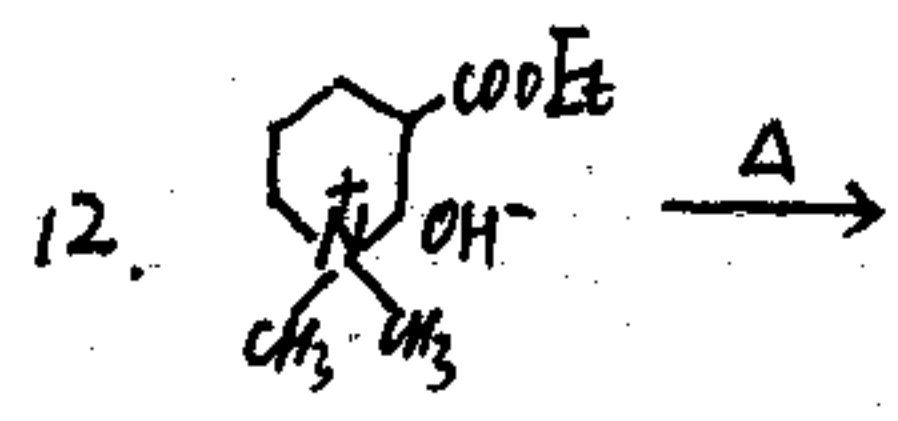
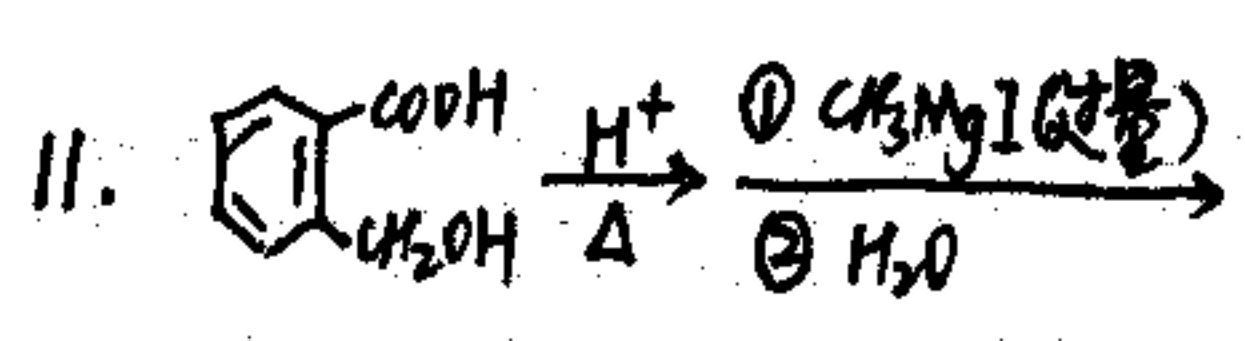
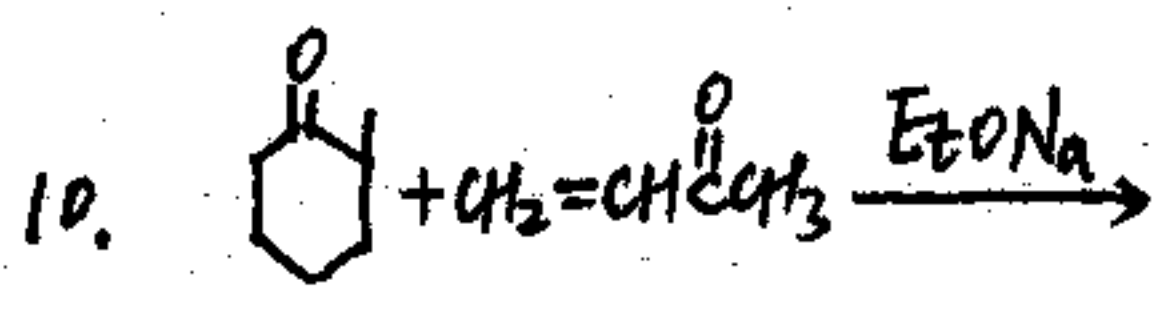
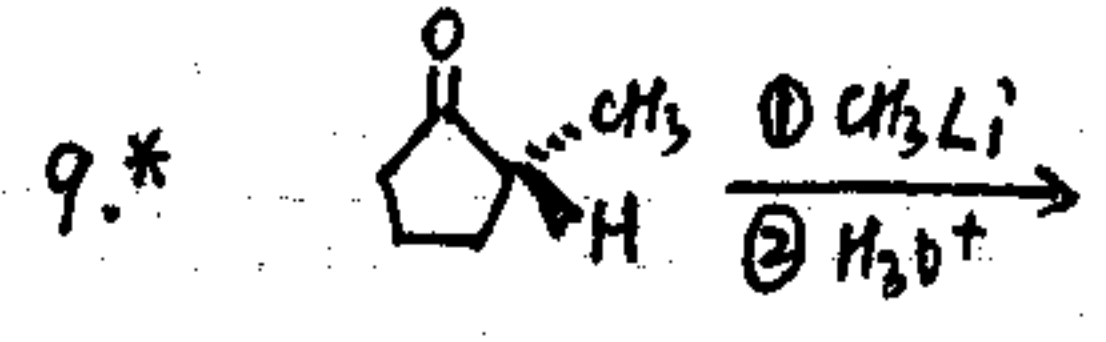
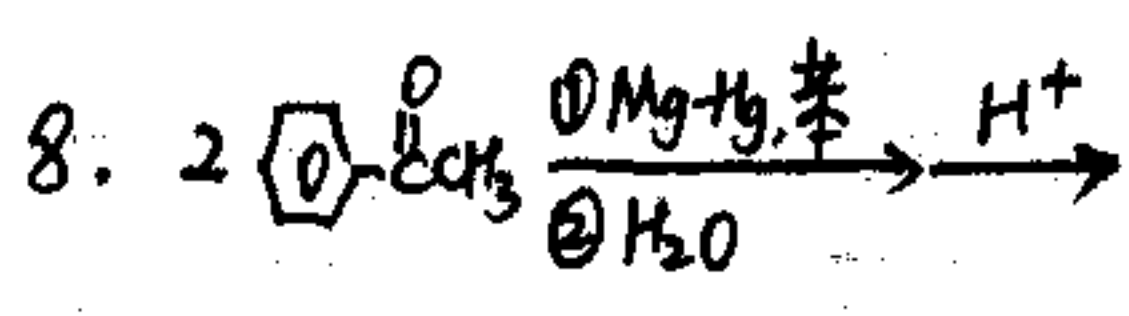
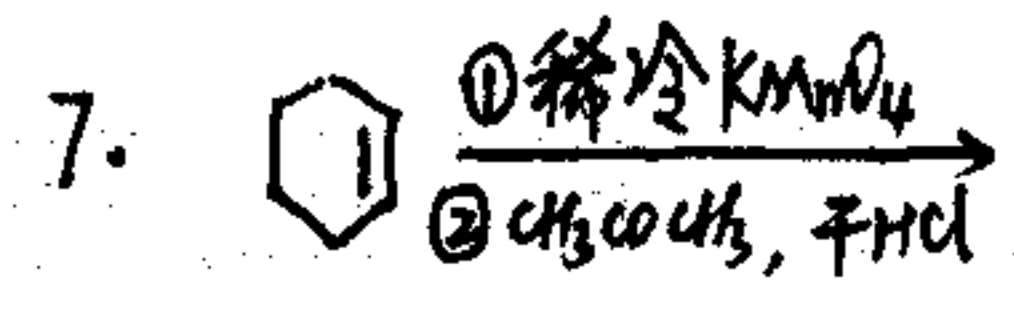
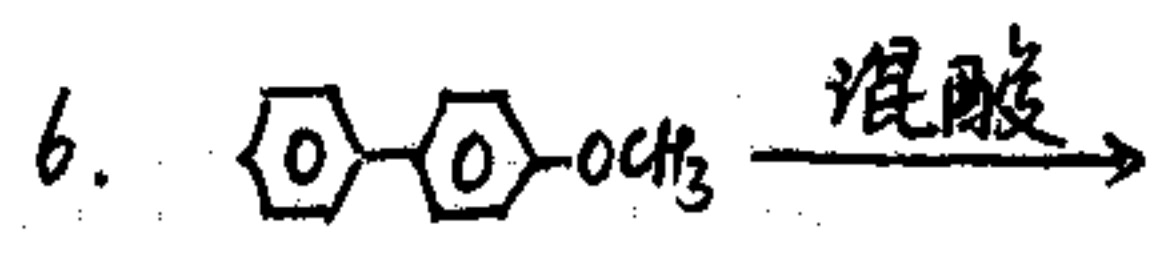
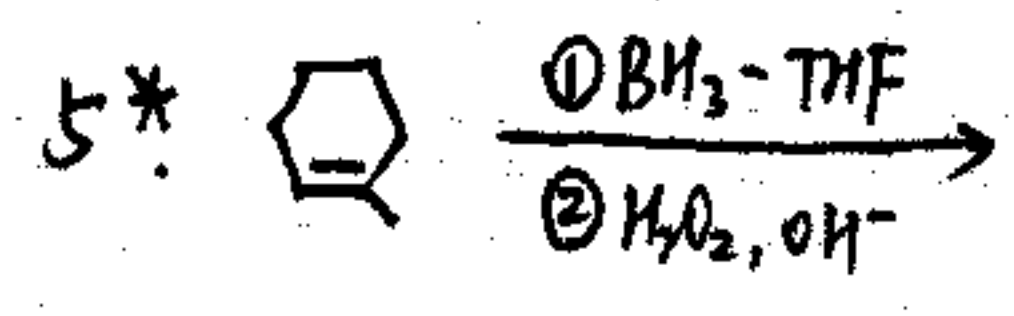
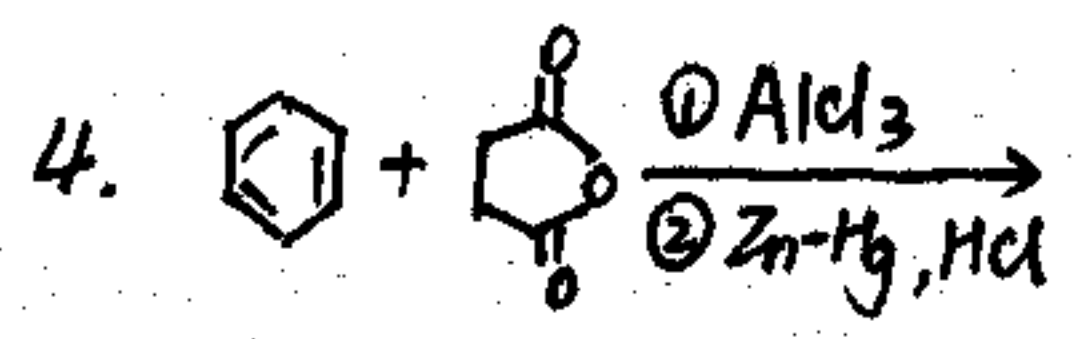
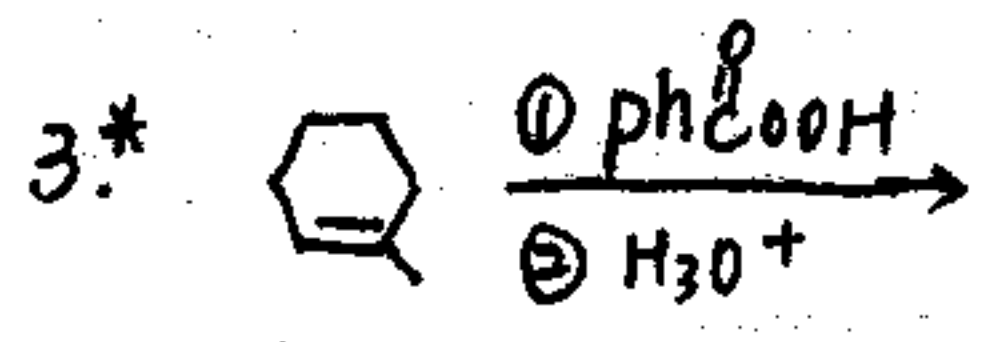
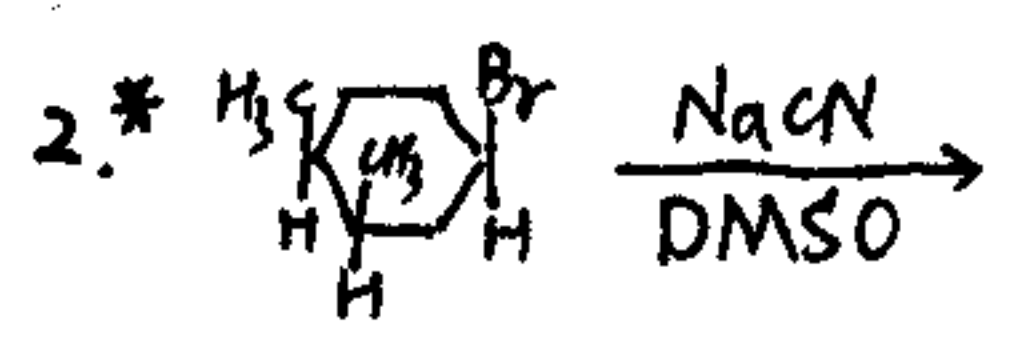
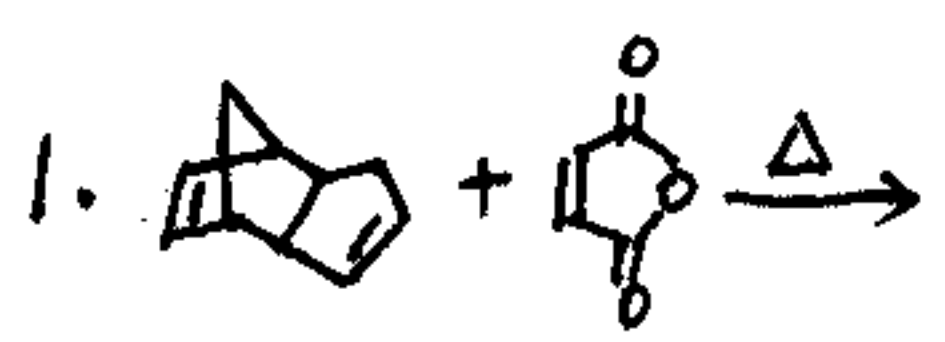
9. 下列化合物亲电取代活性最大的是 ()



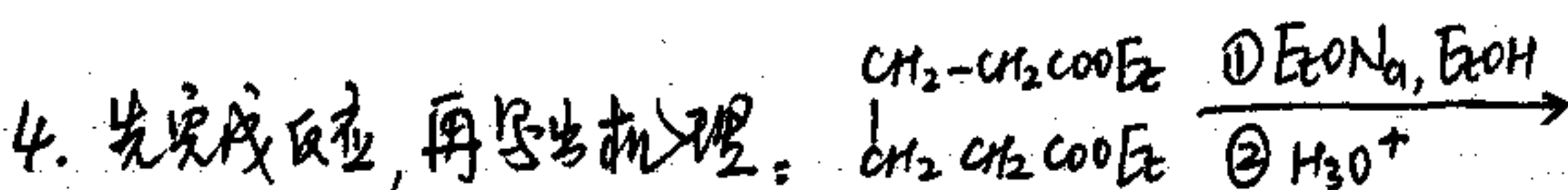
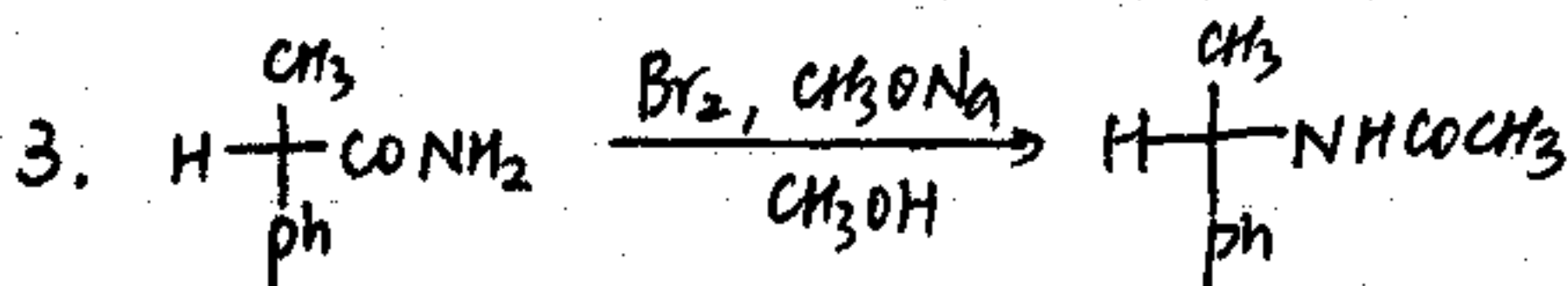
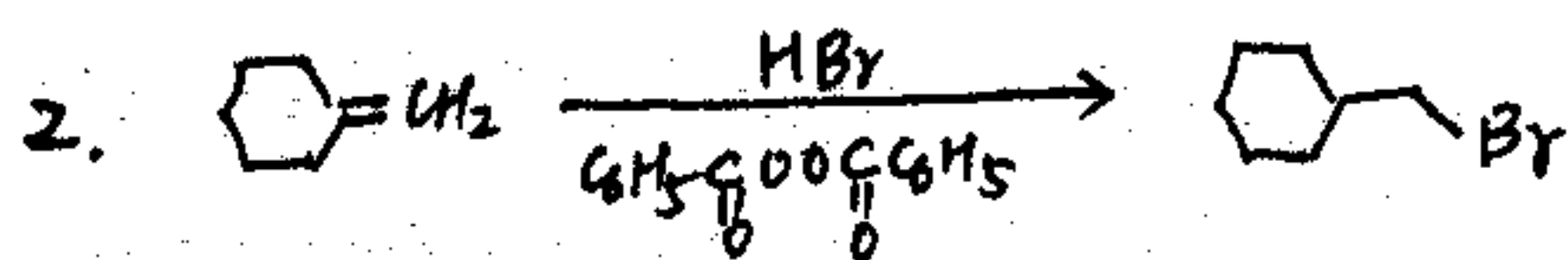
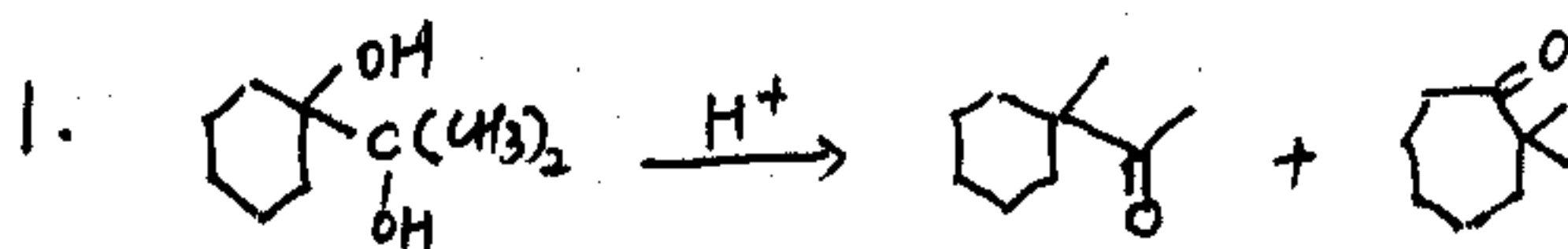
10. 下列化合物不能与 HCN 作用的是 ()



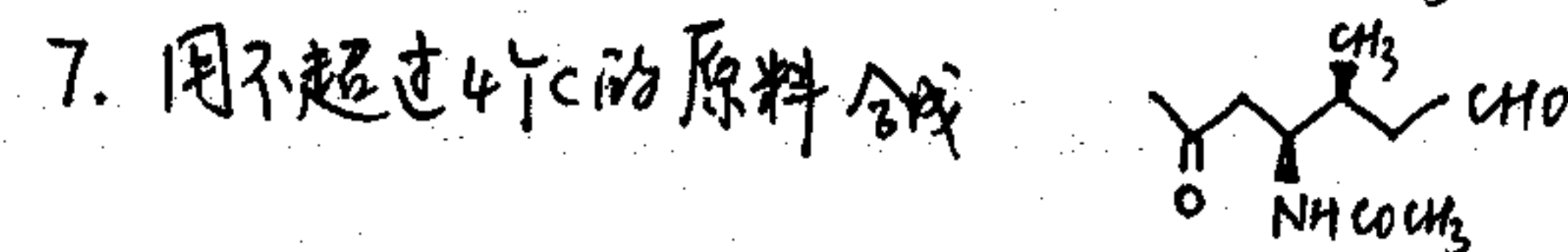
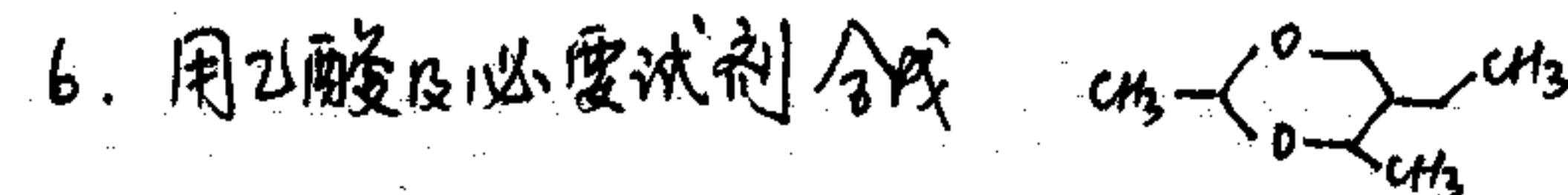
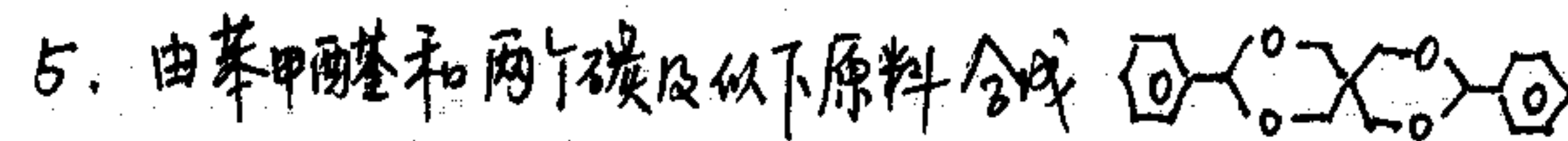
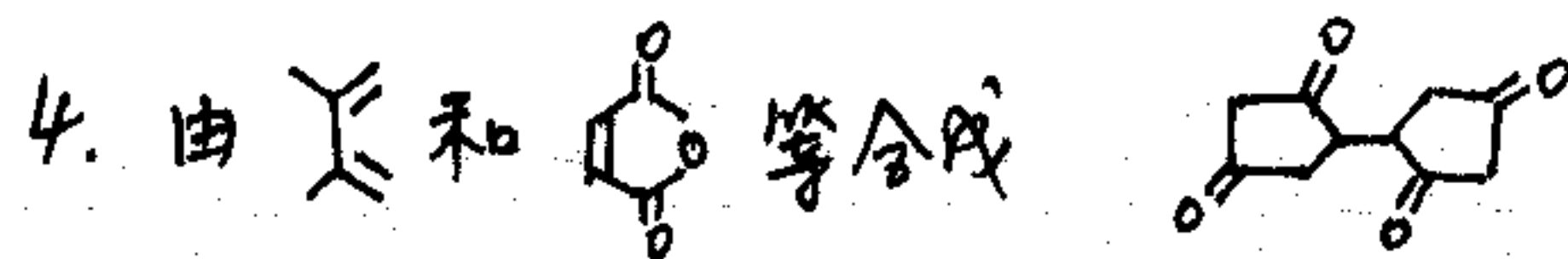
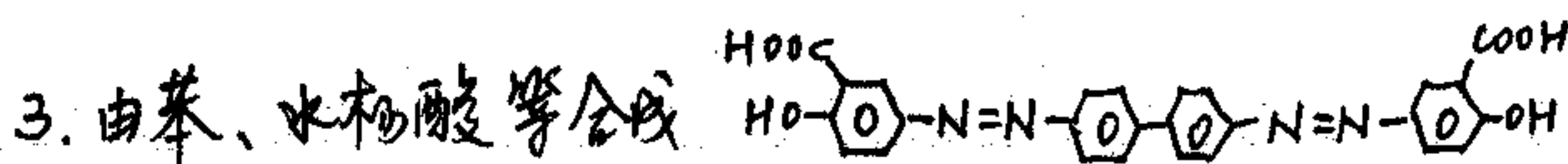
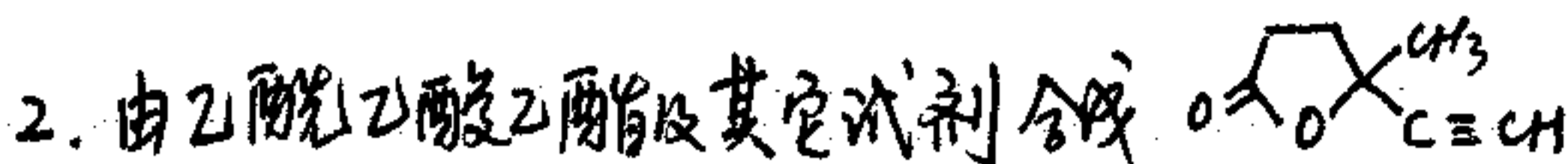
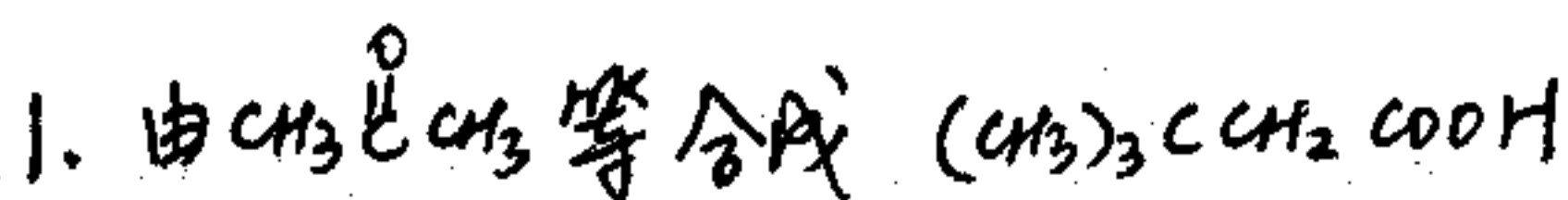
三. 完成反应, 有*号的写出构型式。(共40分, 每小题2分)



四. 反应机理。(共20分, 每小题5分)



五. 合成题。(共35分, 每小题5分)



六. 推测结构。(共15分, 每个化合物1.5分)

1. 某-液体化合物, 分子量为113, HNMR谱 δ 1.40 (t, 3H), 3.48 (s, 2H), 4.25 (q, 2H), 其IR谱: 3000cm^{-1} 以上无吸收, $2900\sim 2800\text{cm}^{-1}$ 有中强吸收, 2260cm^{-1} 有一尖峰, 1760cm^{-1} 有强吸收, $1380\sim 1460\text{cm}^{-1}$ 有中强吸收, 1200cm^{-1} , 1100cm^{-1} 均有中强吸收, 试推测其结构。
2. 化合物A, 分子式为 $\text{C}_6\text{H}_{12}\text{O}_3$, 其IR谱在 1710cm^{-1} 处有强吸收, A与NaOI溶液作用得到黄色沉淀, 与Tollens试剂无作用。A用稀酸处理得B, B能与Tollens试剂作用生成银镜。A的¹HNMR谱: δ 2.1 (s, 3H), 2.6 (d, 2H), 3.2 (s, 6H), 4.7 (t, 1H)。试推测A、B的结构式。
3. 分子式为 $\text{C}_{15}\text{H}_{15}\text{NO}$ 的化合物A, 不溶于水、稀HCl和稀NaOH。A与NaOH溶液一起回流时慢慢溶解, 同时有油状物浮在液面上。用水蒸气蒸馏法将油状物分出得B。B能溶于稀HCl, 与对甲苯磺酰氯作用, 生成不溶于碱的沉淀。把去掉B以后的碱性溶液酸化, 有C分出。C能溶于 NaHCO_3 溶液, 其波谱特征显示为对-取代苯。试推测A~C的结构。
4. 一种芳香醛和丙酮可在碱作用下生成分子式 $\text{C}_{12}\text{H}_{14}\text{O}_2$ 的化合物A, A经碘仿反应生成 $\text{C}_{11}\text{H}_{12}\text{O}_3$ 的B; B经催化加氢可生成C。B、C被氧化后都生成 $\text{C}_9\text{H}_{10}\text{O}_3$ 的化合物D, D经HBr处理后则生成邻羟基苯甲酸。试推出A~D的结构式。