

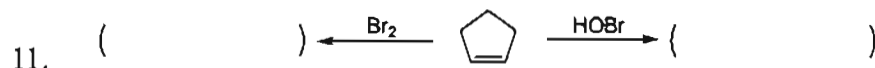
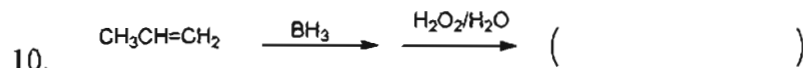
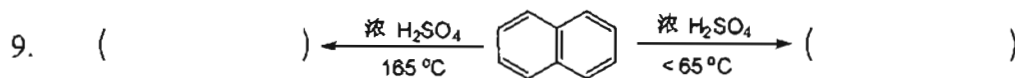
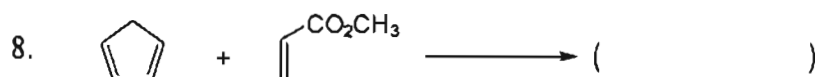
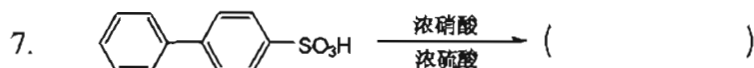
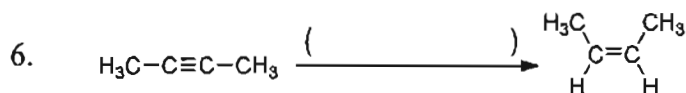
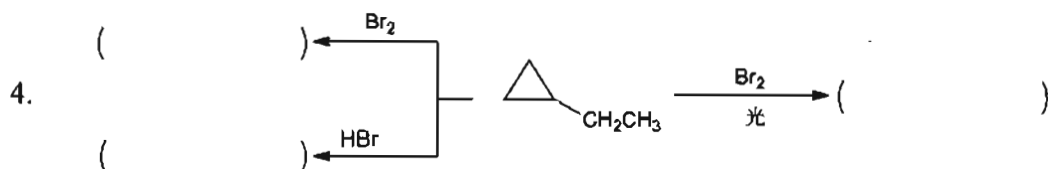
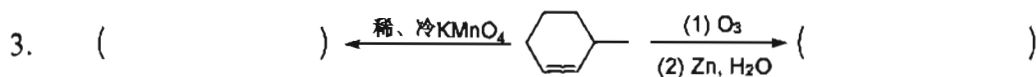
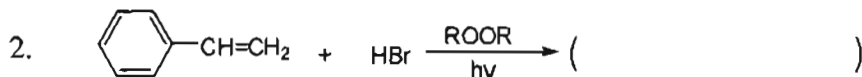
# 常州大学

## 2012 年硕士研究生入学考试初试试题 (A 卷)

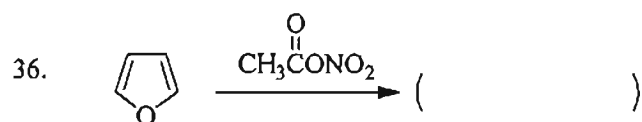
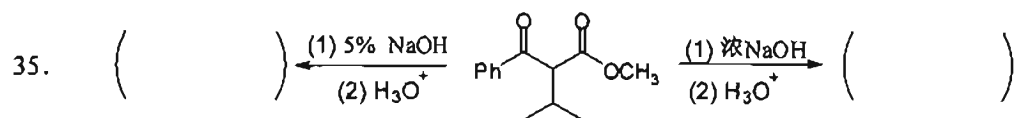
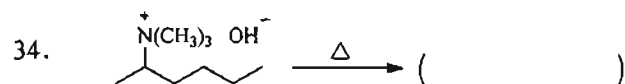
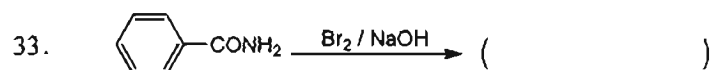
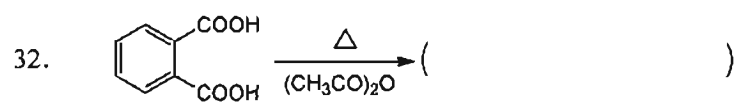
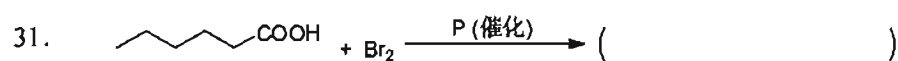
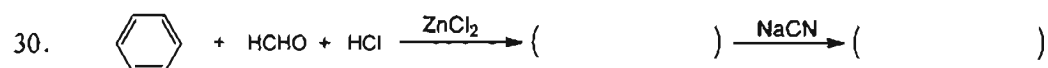
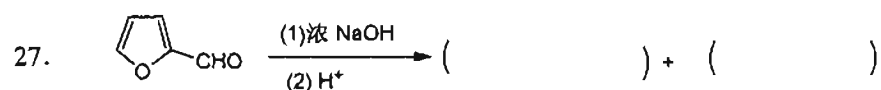
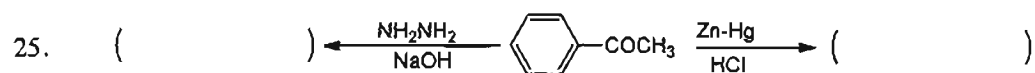
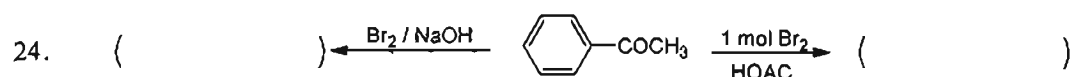
科目代码: 824 科目名称: 有机化学 满分: 150 分

注意: ①认真阅读答题纸上的注意事项; ②所有答案必须写在答题纸上, 写在本试题纸或草稿纸上均无效; ③本试题纸须随答题纸一起装入试题袋中交回!

### 一、(共 60 题, 每空 1 分, 共计 60 分)

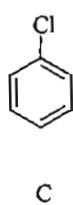
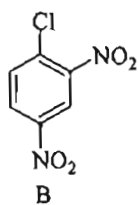
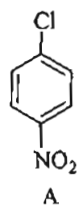


12.  $\begin{array}{c} \text{( )} \xleftarrow[\text{光照}]{\text{Cl}_2} \\ \text{( )} \xleftarrow{\text{浓 H}_2\text{SO}_4} \\ \text{( )} \xleftarrow{\text{混酸}} \end{array} \text{C}_6\text{H}_5\text{CH}_3 \begin{array}{c} \xrightarrow[\text{FeCl}_3]{\text{Cl}_2} \text{( )} \\ \xrightarrow[\text{AlCl}_3]{\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}} \text{( )} \\ \xrightarrow[\text{AlCl}_3]{\text{CH}_3\text{COCl}} \text{( )} \end{array}$
13.  $\text{Cl}-\text{C}_6\text{H}_3(\text{NO}_2)-\text{Cl} \xrightarrow{\text{NaOH} / \text{H}_2\text{O}} \text{( )}$
14.  $\text{1-methylnaphthalene} \xrightarrow[\text{H}_2\text{SO}_4]{\text{HNO}_3} \text{( )}$
15.  $\text{3-methylcyclopropylidenemethylcyclopropane} \xrightarrow{\text{KMnO}_4/\text{H}^+} \text{( )} + \text{( )}$
16.  $\text{3-methyl-2-butanol} \xrightarrow[\text{-H}_2\text{O}]{\text{浓硫酸}} \text{( )}$
17.  $2 \text{CH}_3\text{CHO} \xrightarrow{\text{稀NaOH}} \text{( )} \xrightarrow{\text{cyclopentadiene}} \text{( )}$
18.  $\text{2-(3-hydroxypropyl)phenol} \xrightarrow{\text{SOCl}_2} \text{( )} \xrightarrow{\text{NaOH}} \text{( )}$
19.  $\text{cyclopentanone} \xrightarrow[\text{对甲苯磺酸}]{\text{HOCH}_2\text{CH}_2\text{OH}} \text{( )} \xrightarrow[(2) \text{H}^+]{(1) 2\text{CH}_3\text{MgI}} \text{( )}$
20.  $\text{1,4-dimethoxy-1,4-dihydro-2H-pyran} \xrightarrow[\Delta]{\text{CH}_3\text{ONa}} \text{( )}$
21.  $\text{C}_6\text{H}_5\text{OH} + (\text{CH}_3)_2\text{SO}_4 \xrightarrow{\text{NaOH}} \text{( )}$
22.  $\text{ClCH=CHCH}_2\text{Cl} + \text{CH}_3\text{COONa} \xrightarrow{\text{CH}_3\text{COOH}} \text{( )}$
23.  $\text{CH}_3\text{CH}_2\text{CHO} + \text{饱和NaHSO}_3 \longrightarrow \text{( )}$

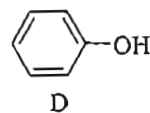
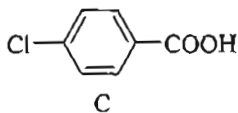
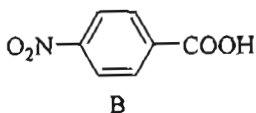
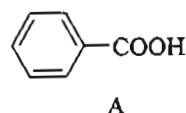


## 二、比较题 (共 5 题, 每题 2 分, 共计 10 分)

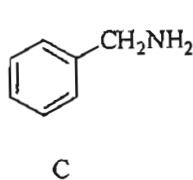
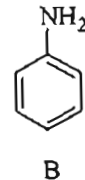
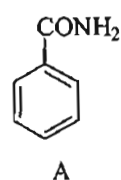
1. 比较下列化合物水解反应生成酚的难易程度。(由易到难排序) \_\_\_\_\_



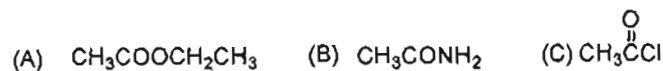
2. 比较下列化合物酸性的大小。(由强到弱排序) \_\_\_\_\_



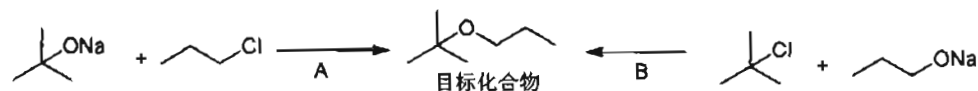
3. 比较下列化合物碱性的强弱。(由强到弱排序) \_\_\_\_\_



4. 比较下列化合物醇解反应的快慢。(由快到慢排序) \_\_\_\_\_

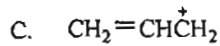
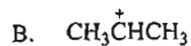
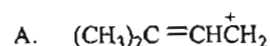


5. 如果想得到目标化合物, 应该选择哪一条合成路线? 为什么?

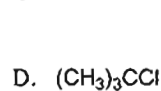
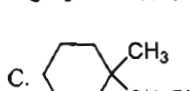
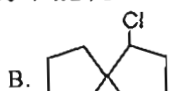
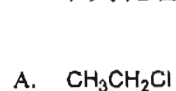


## 三、选择题 (共 5 题, 每题 2 分, 共计 10 分)

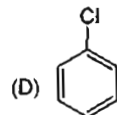
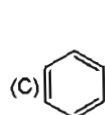
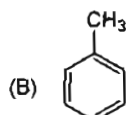
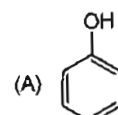
1. 下列碳正离子最稳定的是: ( )



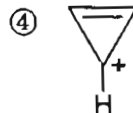
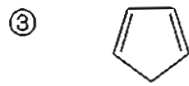
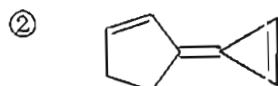
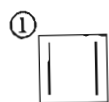
2. 下列化合物不能在  $\text{NaOH}/\text{C}_2\text{H}_5\text{OH}$  溶液中发生消去反应的是: ( )



3. 下列各化合物发生硝化反应活性最强的是: ( )



4. 下列化合物中具有芳香性的是: ( )



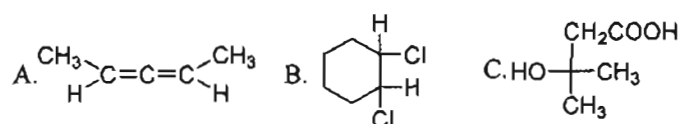
A. ①③

B. ②④

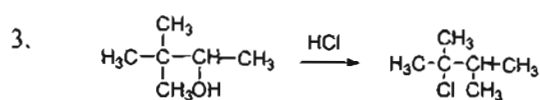
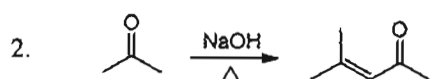
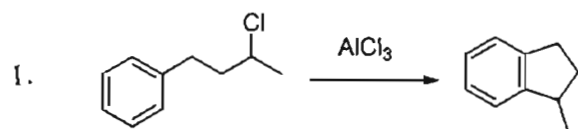
C. ②③

D. ③④

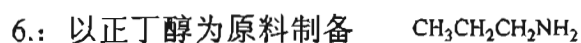
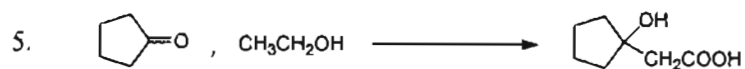
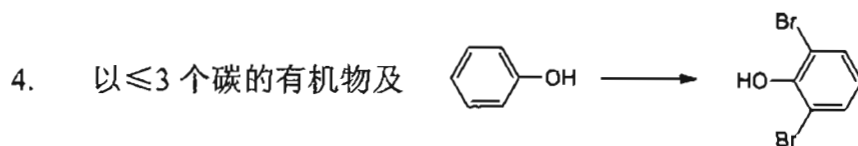
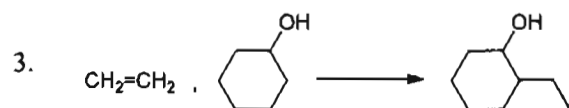
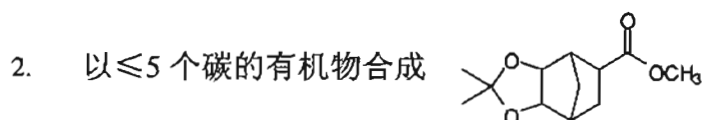
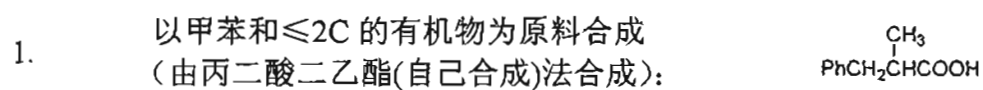
5. 下列化合物中, 具有手性的分子是: ( )



四. 写出以下反应的反应机理 (15 分, 每题 5 分)



五. 合成题: (无机物任选, 35 分, 每题 5 分)





#### 六. 波谱知识与结构推导。(20 分, 每题 10 分)

1. 某碱性化合物 A ( $C_4H_9N$ ) 经臭氧化再水解, 得到的产物有一种是甲醛。A 经催化加氢得到 B ( $C_4H_{11}N$ )。B 也可由戊酰胺和溴、氢氧化钠溶液反应得到。A 和过量的碘甲烷作用, 能生成盐 C ( $C_7H_{16}IN$ )。该盐和湿的氧化银反应并加热分解得到 D ( $C_4H_6$ )。D 和丁炔二酸二甲酯加热反应得到 E ( $C_{10}H_{12}O_4$ )。E 在钯存在下脱氢生成邻苯二甲酸二甲酯。试推测 A、B、C、D 和 E 的结构, 并写出反应式。

2. A 的分子式为  $C_9H_8O$ , B 和 A 是同分异构体并且它们在红外光谱中都在  $1725\text{cm}^{-1}$  附近有强吸收, A 和 B 强氧化后都得到邻苯二甲酸, 它们的  $^1\text{H}$ NMR 数据如下: A: 化学位移  $\delta$  7.3 (多重峰, 4H), 3.4 (单峰, 4H); B: 化学位移  $\delta$  7.2-7.6 (多重峰, 4H), 3.1 (三重峰, 2H), 2.5 (三重峰, 2H)。推测 A 和 B 的结构并指出 A 和 B 中氢分别对应的化学位移。