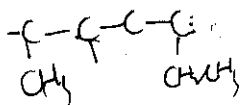
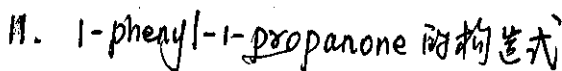
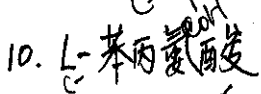
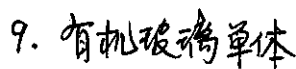
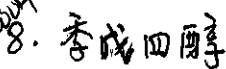
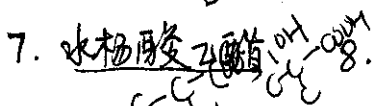
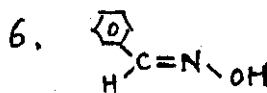
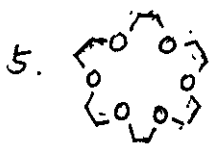
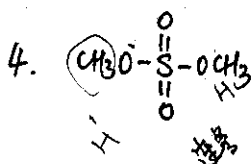
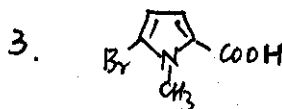
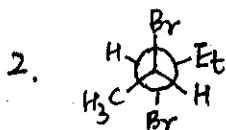


河南师范大学

二〇〇九年硕士研究生入学考试业务课试卷

科目代码: 607 名称: 有机化学 适用专业或方向: 有机化学、药物化学
 (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。(18分)



二、鉴别与分离。(12分)

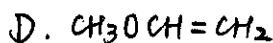
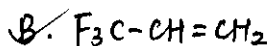
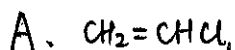
1. 用简单的化学方法鉴别:

3-戊酮、正戊醛、3-戊醇、2-戊酮

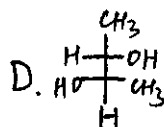
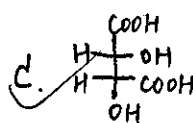
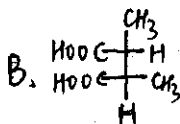
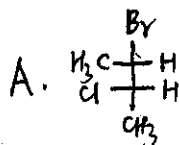
2. 分离含有苯、对甲苯酚、苯甲酸和对甲苯胺的混合物。

三. 选择题。(20分)

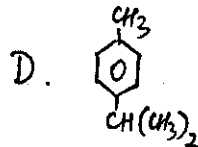
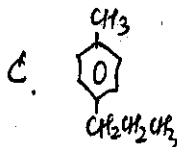
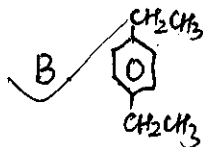
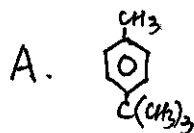
1. 下列化合物与HBr加成反应, 不遵循马氏规则的是 ()



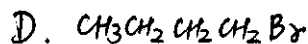
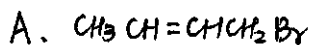
2. 下列化合物中有内消旋体的是 ()



3. 下列化合物用 KMnO_4 氧化生成一元芳香酸的是 ()

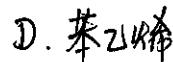
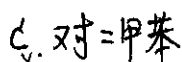
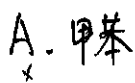


4. 下列化合物与 AgNO_3 的醇溶液反应活性最大的是 ()



5. 分子式为 C_8H_{10} 的化合物, 其 $^1\text{H NMR}$ 谱只有两个吸收单峰,

δ 为7.2和2.3, 其可能的结构为 ()



6. 下列化合物能发生碘仿反应,但不能和饱和 NaHSO_3 溶液反应的是()






- A. $\text{C}_6\text{H}_5\text{CH}(\text{OH})\text{Et}$ B. $\text{C}_6\text{H}_5\text{C}(=\text{O})\text{CH}_2\text{I}$
~~C. $\text{CH}_3\text{C}(=\text{O})\text{CH}_2\text{I}$~~ D. $\text{CH}_3\text{CH}_2\text{CHO}$

7. 下列化合物酯化速度由大到小排列正确的是()

- a. CH_3COCl b. CH_3COOEt c. CH_3CONH_2 d. $(\text{CH}_3\text{CO})_2\text{O}$

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

8. 下列化合物碱性最强的是()

- A.  B.  C.  D.  ~~E. ~~

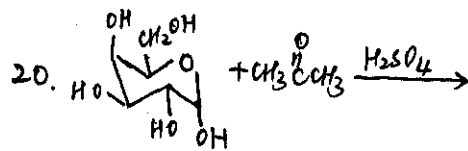
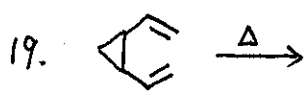
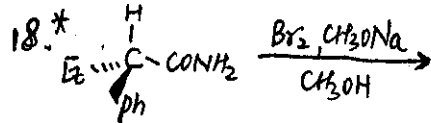
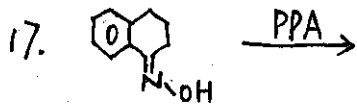
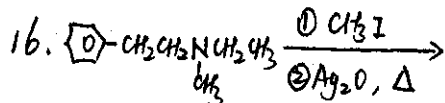
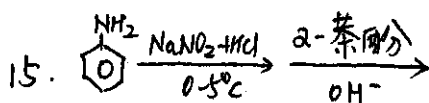
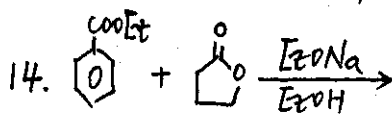
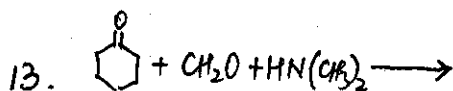
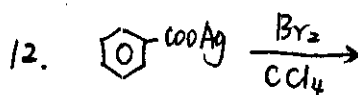
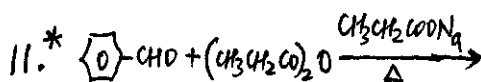
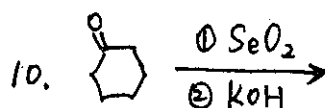
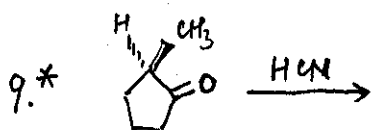
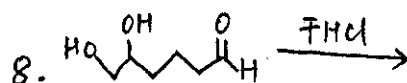
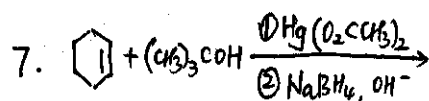
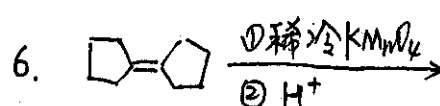
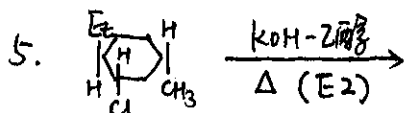
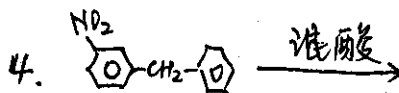
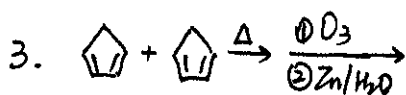
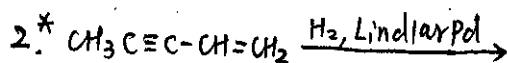
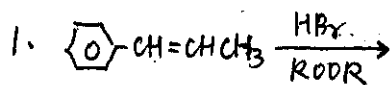
9. $\text{R}-\text{C}(=\text{O})\text{NH}_2 \xrightarrow{\text{NaOBr}} \text{R}-\text{NH}_2$ 该反应发生的重排是()

- ~~A. Beckmann 重排~~ B. Wagner-Meerwein 重排
 C. Hoffmann 重排 D. Baeyer-Villiger 重排

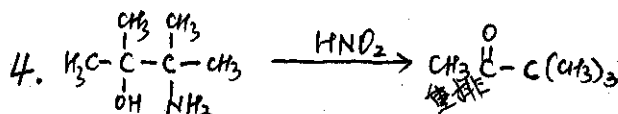
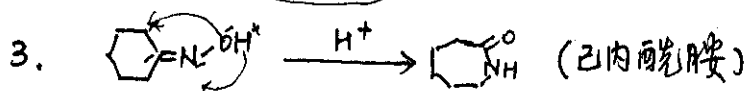
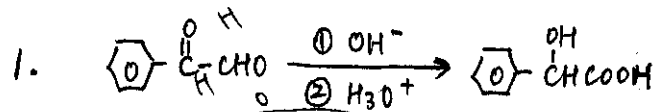
10. 下列化合物最易形成水合物的是()

- A. CF_3CHO B. $\text{CH}_3\text{CH}_2\text{CHO}$
 C. $\text{CH}_3\text{CH}_2\text{COCH}_3$ ~~D. $(\text{CH}_3)_2\text{CHCOCH}_3$~~

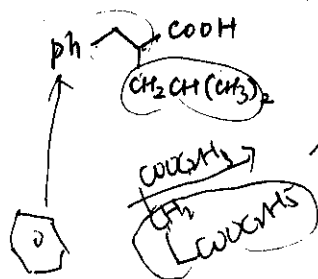
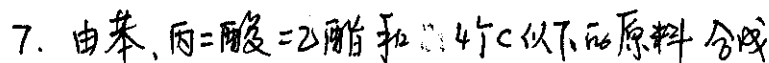
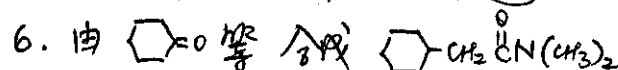
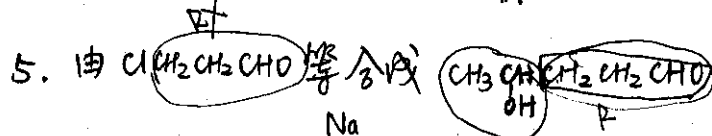
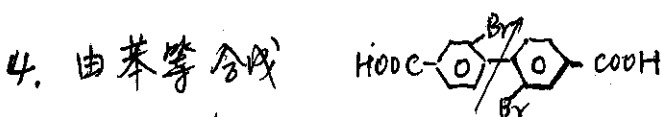
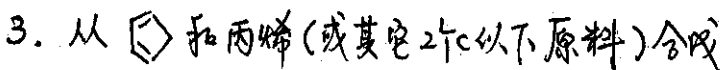
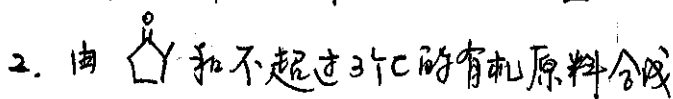
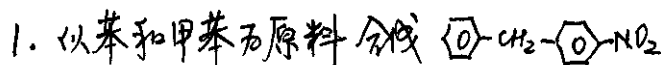
四. 完成反应, 有*号的写出构型式。(30分)



五. 反应机理。(20分)



六. 合成。(25分)



七. 推测结构。(15分)

1. 化合物 A, 分子式为 $C_7H_{15}N$, 与 CH_3I 反应得到 B, 分子式为 $C_8H_{18}NI$, 能溶于水, 与 $AgOH \cdot H_2O$ 悬溶液共热得 C, 分子式为 $C_8H_{17}N$, C 再与 CH_3I 作用, 然后与 $AgOH \cdot H_2O$ 悬溶液共热得分子式为 C_6H_{10} 的 D 和三甲胺, D 能吸收 $2mol H_2$ 得 E, 分子式为 C_6H_{14} , E 的 $^1H NMR$ 谱表明只有二组峰, 分别为七重峰和双重峰, 两者的强度比为 1:6。试推测 A ~ E 的结构。

2. 某化合物 (A) 分子式为 $C_5H_{12}O$, 经 $K_2Cr_2O_7-H_2SO_4$ 氧化后生成分子式为 $C_5H_{10}O$ 的化合物 (B)。(B) 不能起碘仿反应, 亦不起银镜反应; (B) 与 $Mg(Hg)$ 作用生成 $C_{10}H_{22}O_2$ 的化合物 (C), (C) 与高碘酸作用又可生成 (B); (C) 与浓 H_2SO_4 作用生成分子式为 $C_{10}H_{20}O$ 的化合物 (D); (D) 能与 $H_2NNH-\overset{O}{\parallel}-NH_2$ 作用生成结晶化合物, (D) 却不能起银镜反应。试写出 (A) ~ (D) 的结构式。

3. $C_xH_yO_z$, $\delta_{max}: 1725 cm^{-1}$; $\delta_H: 1.3(t, 3H), 4.3(q, 2H), 8.1(s, 1H)$; $m/z: 74(M^+)$ 。 $y=6$ $C_xH_6O_z$
 C_6H_6O