

# 复 旦 大 学

2002 年招收攻读硕士学位研究生入学考试试题

无机化学; 分析化学

报考专业: 有机化学; 物理化学 考试科目: 有机化学

高分子化学与物理

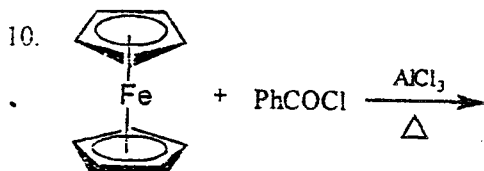
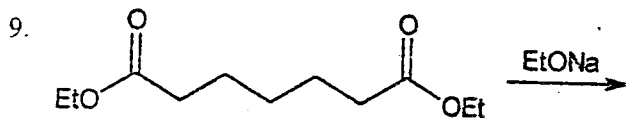
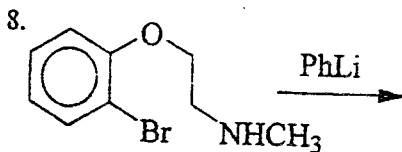
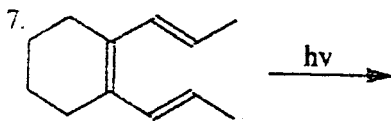
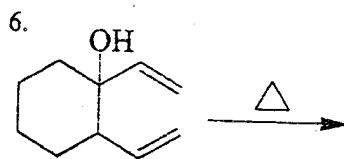
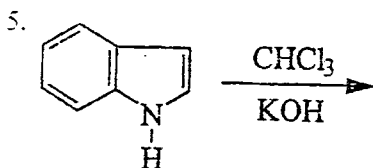
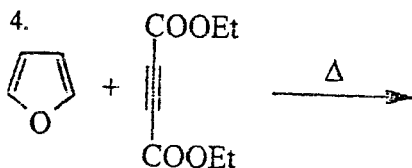
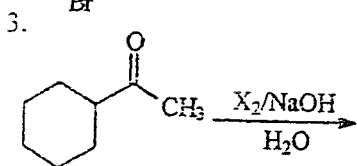
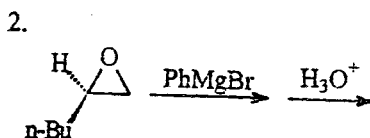
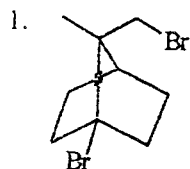
材料物理与化学

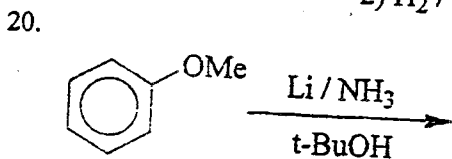
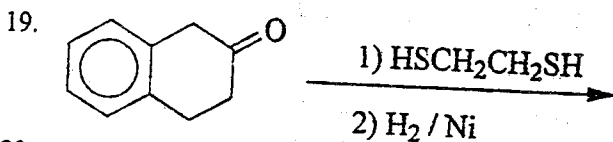
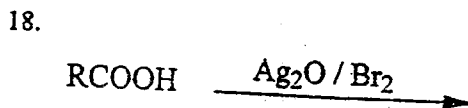
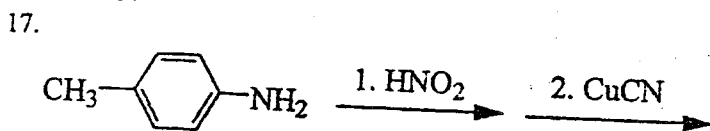
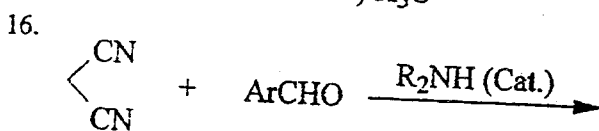
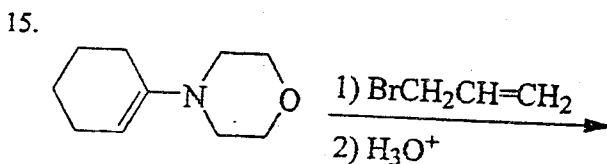
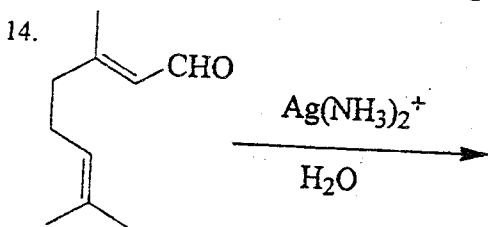
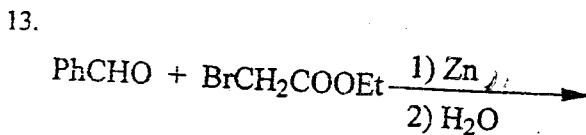
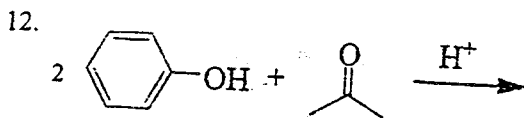
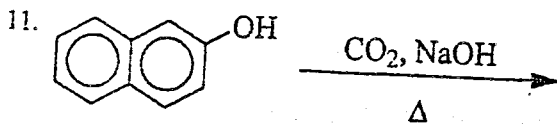
材料科学

注意: 答案请做在答卷纸上, 做试题上一律无效!

(共 4 页)

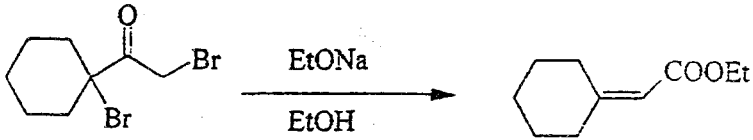
一、写出下列反应的主要产物 (40%)



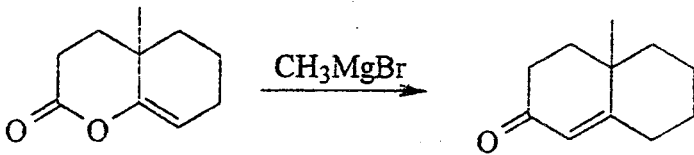


二、写出下列反应的反应机理 (20%)

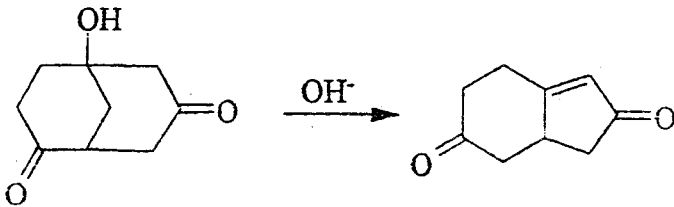
1.



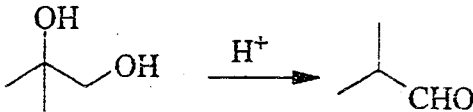
2.



3.

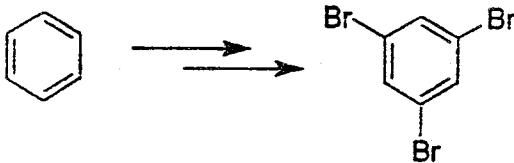


4.

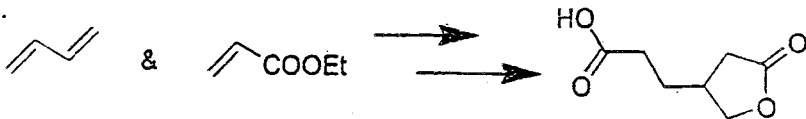


三、完成下列化合物的合成 (可用其它必需试剂, 25%)

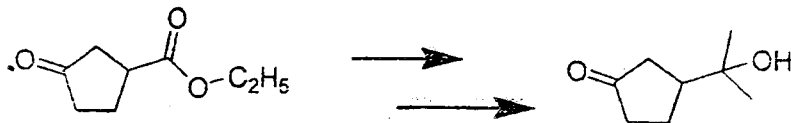
1.

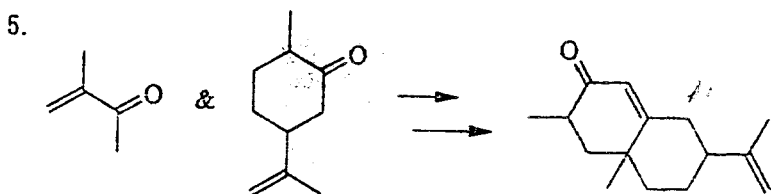
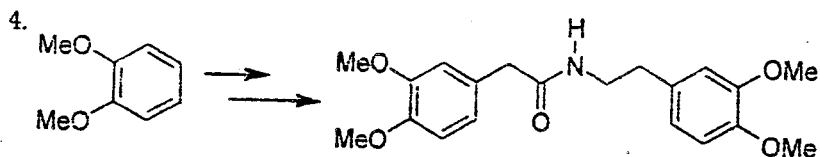


2.

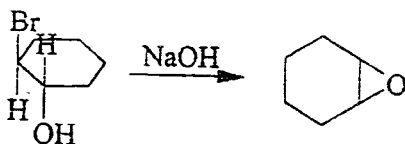
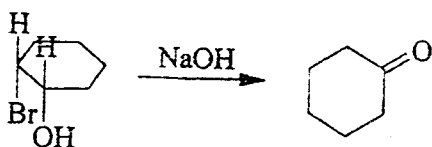


3.





四、请解释下列两个立体异构体在相同的反应条件下会得到不同的产物。(6%)



五、某化合物 A 为无色液体，是由化合物 B 与二甲胺反应而得。

将该反应产物进行减压蒸馏纯化，收集 bp 43-45 °C/11 mmHg 的化合物 A 样品进行分析。

质谱分析得到其分子离子峰为  $m/z$  131  $m/e$ ;

元素分析结果如下：C (54.98%); H (9.99%); N (10.68%); O (24.35%);

A 的 IR 在  $1730\text{cm}^{-1}$  处有一强吸收峰;

A 的  $^1\text{H}$  NMR 的数据如下： $\delta_{\text{H}}$  ( $\text{CDCl}_3/\text{TMS}$ ): 1.3 (t, 3H,  $J = 7.2$  Hz), 2.4 (s, 6H), 3.2 (s, 2H), 4.2 (q, 2H,  $J = 7.2$  Hz) ppm.

请根据以上数据推导出化合物 A、B 的结构，并对 A 的  $^1\text{H}$  NMR

进行归属。(9%)