淡江大學九十一學年度碩士班招生考試試題 87-1

系別：化學工程學系　　科目：有 機 化 學

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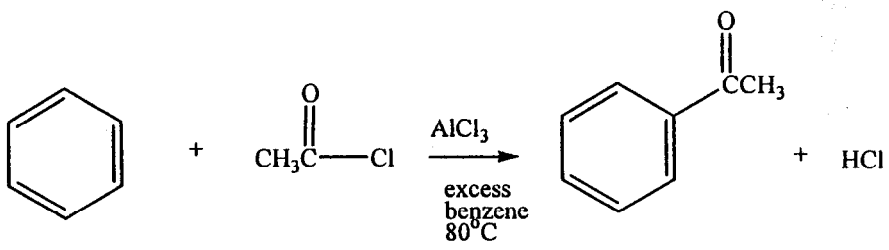
本試題雙面印製

1. Although acetic acid and carboxylic acids containing fewer than five carbon atoms are soluble in water, many other carboxylic acids of higher molecular weight are not appreciably soluble in water. Because of their acidity, however, water-insoluble acids dissolve in aqueous sodium hydroxide; they do so by reacting to form water-soluble sodium salts. Explain the meaning of the previous description and give an example with a stoichiometric equation of reaction. (10%)

2. Explain the term "Stereoisomer" and give two examples with molecular structure. Stereoisomers can be subdivided into two general categories: enantiomers and diastereomers. Give one example of each category with molecular structure. (10%)

3. Describe the epoxide ring opening mechanisms by acid-catalyzed reaction and base-catalyzed one. (10%)

4. The following reaction is called Friedel-Crafts Acylation. Give the reaction mechanism for it. (10%)



5. Given NMR spectrum of ethyl chloroacetate as follows, try to elucidate your explanation of assignment of peaks for the molecular structure. (10%)

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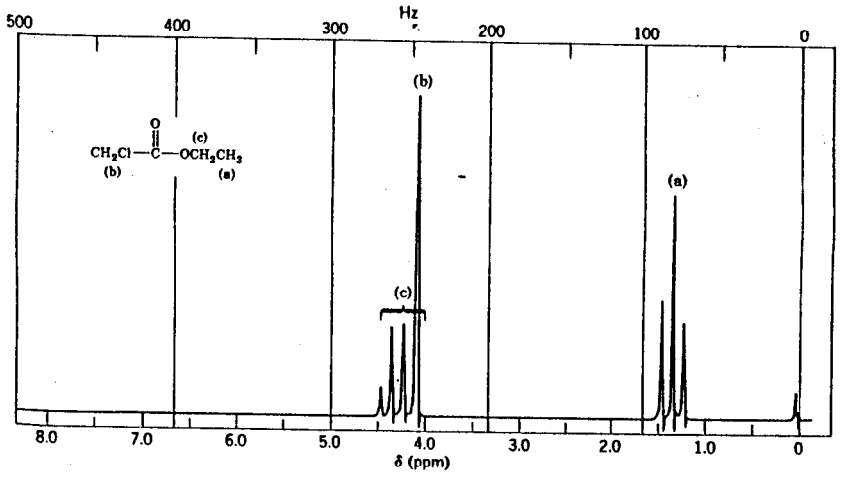

6. Describe the reaction mechanism of free radical chain polymerization. (20%)

7. Draw the structure formula for each of the following compounds. (30%)
   For example: isohexane,

$$CH_3\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2CH_2CH_3$$

   (a) Poly(methyl methacrylate)
   (b) Vinyl chloride
   (c) Acetone
   (d) Ethylene glycol
   (e) 4-aminophenol
   (f) Poly(aniline)
   (g) 2-Butanol
   (h) Methyl iodide
   (i) Poly(isoprene)
   (j) Sodium ethoxide