

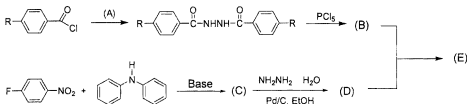
系所組別 化學工程學系乙組

考試科目 有機化學

考試日期 0307 節次 1

※ 考生請注意：本試題  可  不可 使用計算機

- Explain the following terms (20%)
  - Friedel-Crafts alkylation and acylation, b) Phase-transfer catalyst; c) Wittig reaction, d) Hofmann rearrangement, e) Reimer-Tiemann reaction
- Ethylene ( $C_2H_4$ ), *n*-hexane ( $C_6H_{14}$ ), and *n*-triacontane ( $C_{30}H_{62}$ ) are gas, liquid, and waxy solid (melting point.  $65.8^\circ C$ ), respectively. However, polyethylene is a crystalline plastic (melting point.  $115\sim 135^\circ C$ ) possessing good structural strength. Explain why they show such a difference in physical property (6%)
- Explain the reason why a) the acidity of phenol is higher than that of alcohol and b) the basicity of aniline is much lower than that of ammonia. (8%)
- Describe exactly how you would go about separating a mixture of the three water-insoluble liquids, aniline (b.p.  $184^\circ C$ ), *n*-butylbenzene (b.p.  $183^\circ C$ ), and *n*-valeric acid (b.p.  $187^\circ C$ ), recovering each compound pure and in essentially quantitative yield. (10%)
- Outline the synthetic routes of the following compounds (14%)
  - 4-amino-3-bromotoluene from toluene.
  - 3-methyl-2-pentanone from acetoacetic ester, benzene, and alcohols of four carbons or fewer
- Finish the following reactions by writing down the chemical structure of the main products. (15%)



(背面仍有題目,請繼續作答)

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7) Finish the following reactions by writing down the chemical structure of the main products (27%)

