

淡江大學八十七學年度碩士班入學考試試題

P.1

系別：化學系

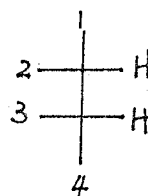
科目：有機化學

本試題共 貳 頁

一. 選擇題 (共 30 分, 每小題 5 分)

1. If the Fischer projection below is to represent (2S,3S)-2,3-dichloropentane, the identities of group 1-4 must be as follows:

- (a) 1 = Cl, 2 = Et, 3 = Cl, 4 = CH₃
- (b) 1 = Et, 2 = Cl, 3 = Cl, 4 = CH₃
- (c) 1 = Et, 2 = Cl, 3 = CH₃, 4 = Cl
- (d) 1 = Cl, 2 = Et, 3 = CH₃, 4 = Cl
- (e) 1 = Cl, 2 = CH₃, 3 = Cl, 4 = CH₃



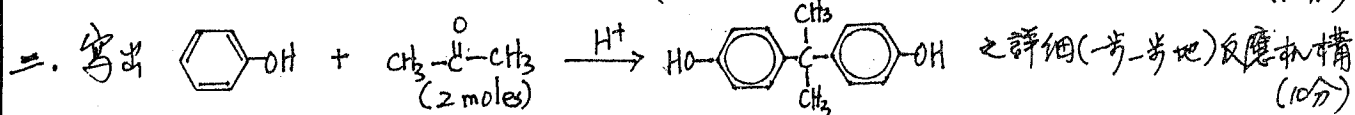
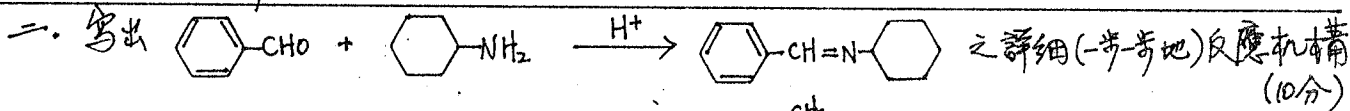
2. A mixture of 2-decanone and 3-decanone is produced by the reaction of compound A (C₁₀H₁₈) with water in the presence of HgSO₄ and H₂SO₄. A is most probably (a) 1-decyne (b) 2-decyne (c) 3-decyne (d) 3-methylcycloonyne (e) 3,8-dimethylcyclooctyne

3. A compound C₉H₈O can be made to undergo Friedel-Crafts acylation to yield a substance A (C₁₀H₁₂O₂). The nmr spectrum of A consists of a pair of doublets at 7.0 ppm and 8.0 ppm (total of 4 H), a singlet at 3.9 ppm (3H), a quartet at 2.9 ppm (2H), and a triplet at 1.2 ppm (3H). A is: (a) Benzyl propionate (b) p-ethoxyacetophenone (c) p-methoxypropiofenone (d) 1-p-hydroxyphenylbutanone (e) 4-(n-propyl)benzoic acid

4. meso-2,3-epoxybutane + KOH(aq) → (a) no reaction (b) butanedione (c) 1,3-butadiene (d) racemic-2,3-hydroxybutane (e) meso-2,3-dihydroxybutane

5. Benzene → p-nitrobromobenzene (a) 1. Br₂, FeBr₃ 2. NaNO₂, H₂SO₄ (b) Br₂, HNO₃ (c) 1. Br₂, FeBr₃ 2. H₂SO₄, HNO₃ (d) 1. H₂SO₄, HNO₃ 2. Br₂, FeBr₃ (e) 1. Br₂ 2. HNO₃, acetic acid

6. methylenetriphenylphosphine + 2-butanone → (a) tri-2-butylphosphine (b) formaldehyde (c) no reaction (d) 2-methyl-1-butene (e) 2-butanol



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P. 2

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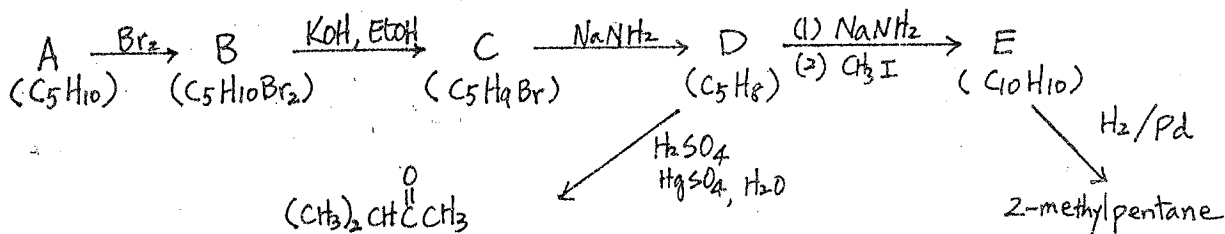
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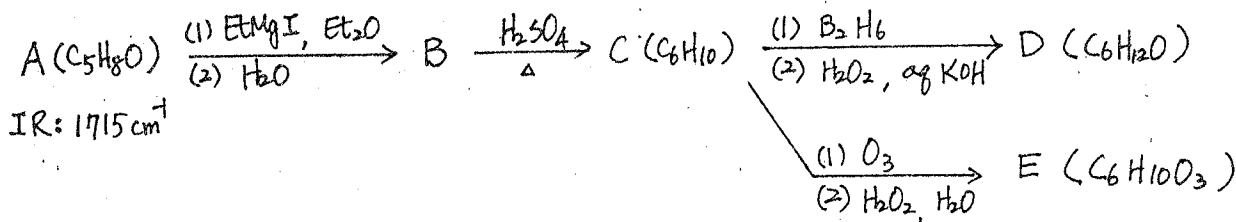
四. 提出最佳的合成方法 (20分)



五. 寫出下列化合物 A 至 E 之結構 (10分)



六. 依據下列之 NMR 等光譜資料及化學性質，寫出化合物 A 至 E 之結構 (20分)



E 之 1H -NMR:

- δ 1.5, 2H, triplet of triplets
- δ 1.9, 2H, triplet
- δ 2.1, 3H, singlet
- δ 2.4, 2H, triplet
- δ 12.0, 1H, singlet