

大同大學 九十 學年度 轉學考試 試題

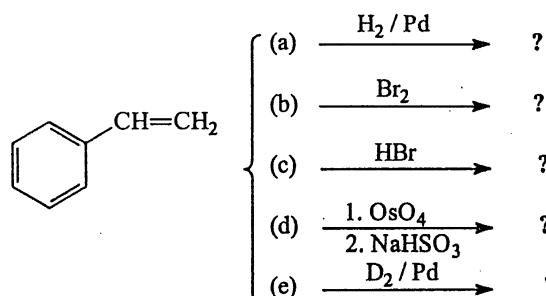
考試科目：有機化學 系別：化學工程學系 級別：三年級 第 1 頁，共 3 頁

註：本次考試不可以參考自己的書籍及筆記；不可以使用字典；不可以使用計算器。

1. Draw structures for the following: (15%)

- | | |
|------------------------------------|---------------------------------|
| (a) 2-Methylheptane | (b) 4-Methyl-2,2-dimethylhexane |
| (c) 4-Ethyl-3,4-dimethyloctane | (d) 2,4,4-Trimethylheptane |
| (e) 3,3-Diethyl-2,5-dimethylnonane | (e) 4-Isopropyl-3-methylheptane |

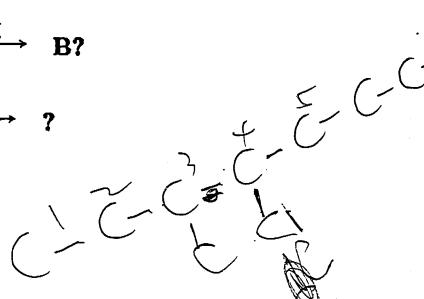
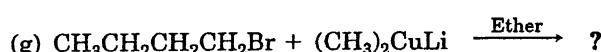
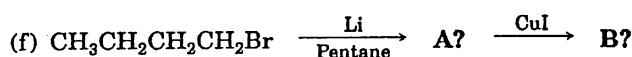
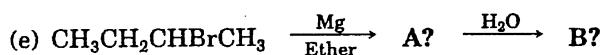
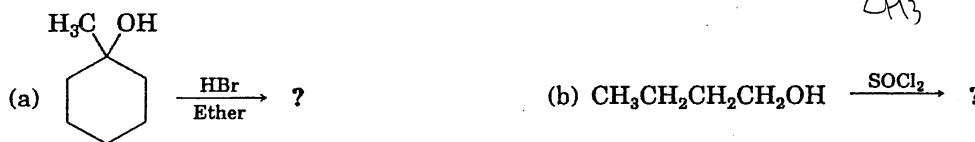
2. Predict the products of the following reactions (the aromatic ring is ~~unreactive~~^{不反應} in all cases). Indicate regiochemistry when relevant. (12.5%)



3. Which of the following pairs of Fischer projections represent the same enantiomer, and which represent different enantiomers? (10%)

- | | | | | | |
|-----|--|--|-----|--|--|
| (a) | | | (b) | | |
| (c) | | | (d) | | |

4. Predict the product(s) of the following reactions: (22.5%)



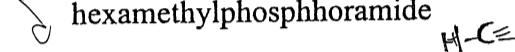
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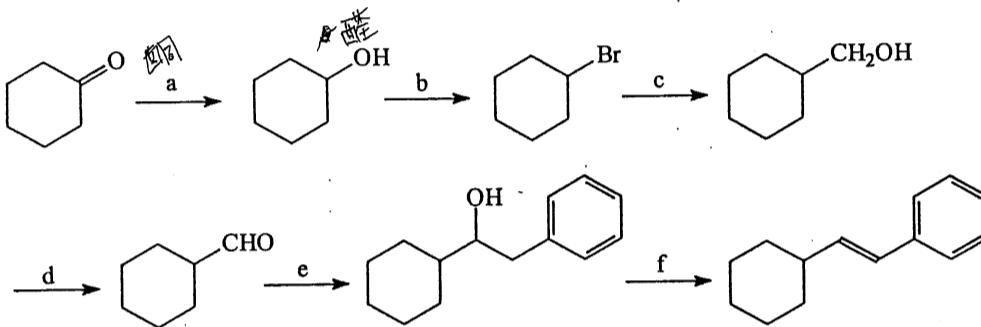
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5. Which reaction in each of the following pairs would you expect to be faster? (10%)

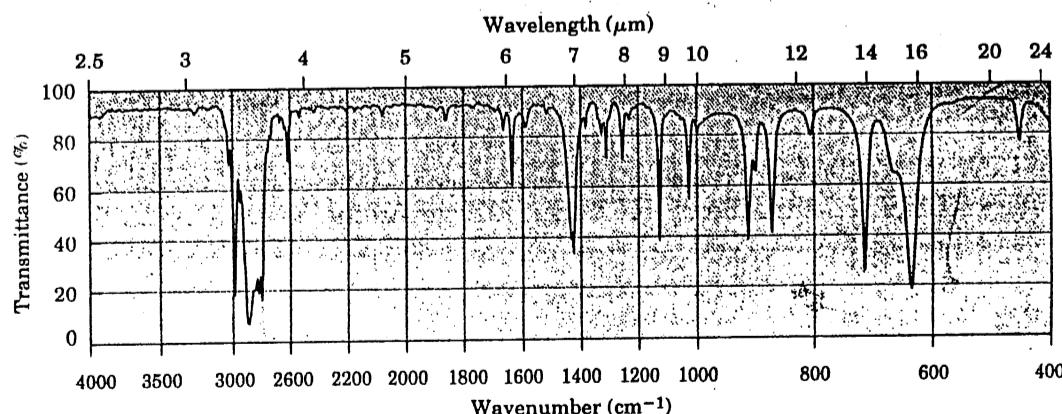
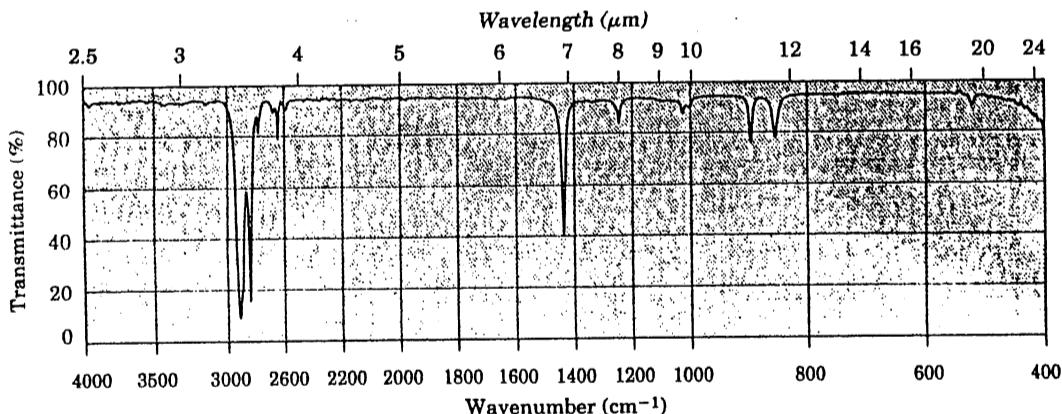
- (a) The S_N2 displacement by I⁻ on CH₃Cl or on CH₃OTos
- (b) The S_N2 displacement by CH₃CO₂⁻ on bromoethane or on bromocyclohexane
- (c) The S_N2 displacement on 2-bromopropane by CH₃CH₂O⁻ or by CN⁻
- (d) The S_N2 displacement by HC≡C⁻ on bromomethane in benzene or in
hexamethylphosphoramide



6. Identify the reagents a-f in the following scheme: (15%)



7. The infrared spectra are shown. One is the spectrum of cyclohexane, and the other is the spectrum of cyclohexene. Identify them, and explain your answer. (7.5%)



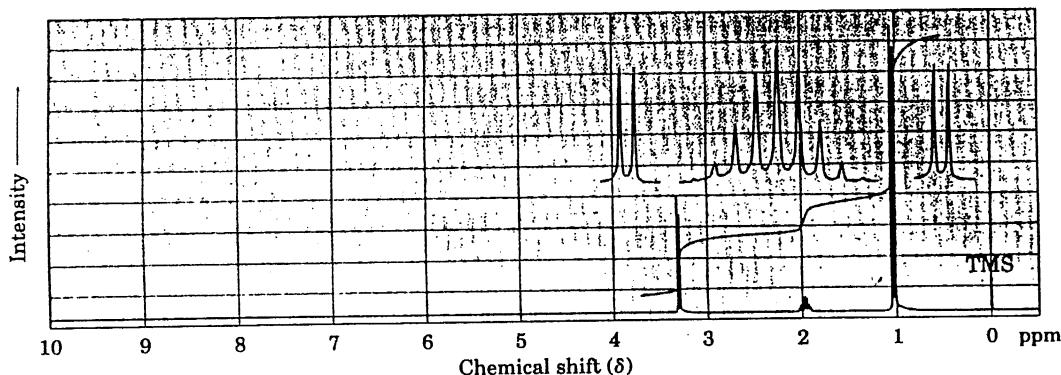
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8. Propose structures for the two compounds whose $^1\text{H-NMR}$ spectra are shown. (7.5%)

(a) $\text{C}_4\text{H}_9\text{Br}$



(b) $\text{C}_4\text{H}_8\text{Cl}_2$

