

國立彰化師範大學 100 學年度碩士班招生考試試題

系所： 化學系

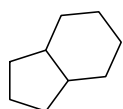
科目： 有機化學

☆☆請在答案紙上作答☆☆

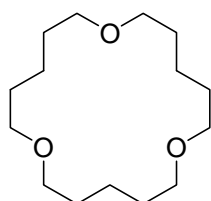
共 3 頁，第 1 頁

I. Give the nomenclature of the following structures. (9%)

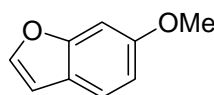
1.



2.



3.

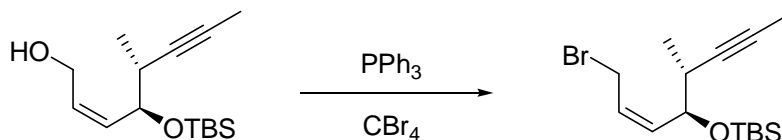


II. What the desired product I would be obtained from the reaction of the following procedure and data? (11%)

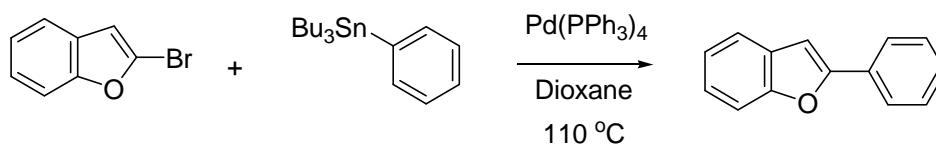
The mixture of 3,5-dimethoxyphenol (1.00 g, 6.5 mmol) and Et_3N (10.0 mL) was dissolved in CH_2Cl_2 (20.0 mL) for 5 mins at room temperature, and followed by addition of $(\text{CF}_3\text{CO})_2\text{O}$ (1.1 mL, 6.5 mmol) with dropwise at -78°C . The solution was stirred at -78°C for 10 mins, and then the solution was warmed to room temperature. After stirring for 20 mins the reaction is quenched with water (10.0 mL), the solution was poured into ice water (50.0 mL) and extracted with CH_2Cl_2 (3x50.0 mL), and then washed with saturated aqueous NaHCO_3 (5.0 mL). The combined organic layers were dried over Na_2SO_4 , and the filtered was reduced *in vacuo*. After the removal of solvent, the residue was purified by column chromatography (SiO_2 , hexane/ EtOAc 17/1) to yield the desired product I (1.73 g, 93%) as a colorless liquid. ^1H NMR (300 MHz, CDCl_3): δ 3.78 (s, 6H), 6.41 (s, 2H), 6.44 (s, 1H); ^{13}C NMR (75 MHz, CDCl_3): δ 55.6, 99.9, 100.2, 118.7 (q, $J=318.8$ Hz, CF_3), 150.6, 161.4.

III. Propose mechanisms for the following reactions. (20%)

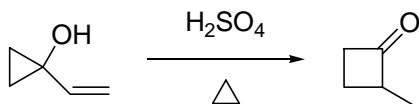
1.



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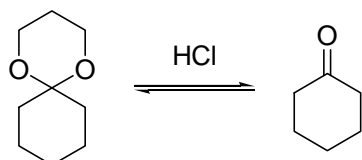
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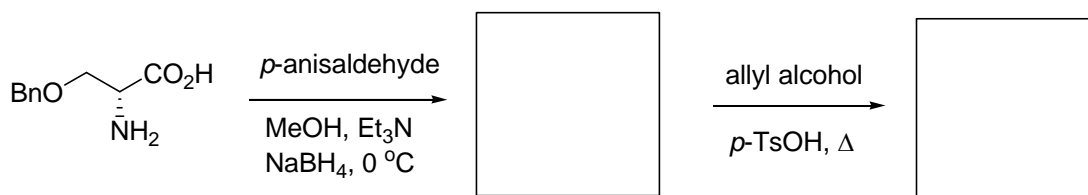
4.



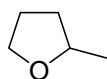
IV. Illustrate the statement of the following terms using an example. (16%)

1. Aldol reaction
2. Diels-Alder reaction
3. Amino acid
4. COSY spectrum
5. Heck reaction
6. Terpenoid
7. Synthone
8. Disaccharide

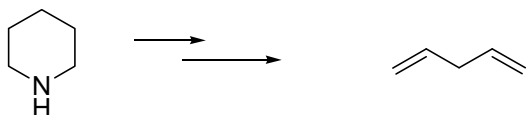
V. What are the intermediate and the final product of the following transformations? (4%)



VI. How would you prepare the following compound from any reagents with no more than two carbon atoms or inorganic reagents? (5%)



VII. How would you prepare the following compound from piperidine? (5%)



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VIII. Please predict the major product for the following reactions. (30%)

