

科目：有機化學(1002)

校系所組：中央大學化學學系

交通大學應用化學系 (甲組)

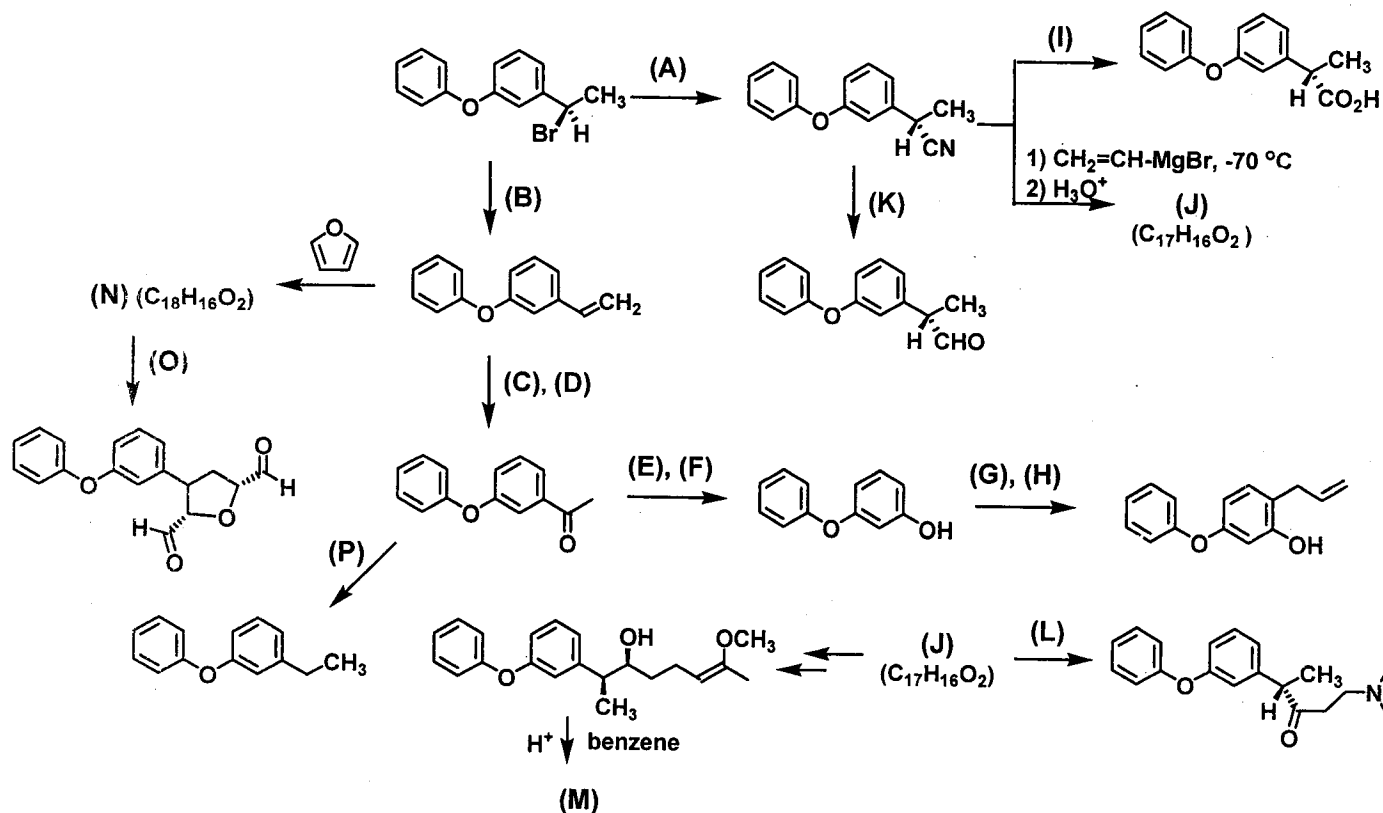
清華大學化學系

清華大學材料科學工程學系 (丙組)

參考用

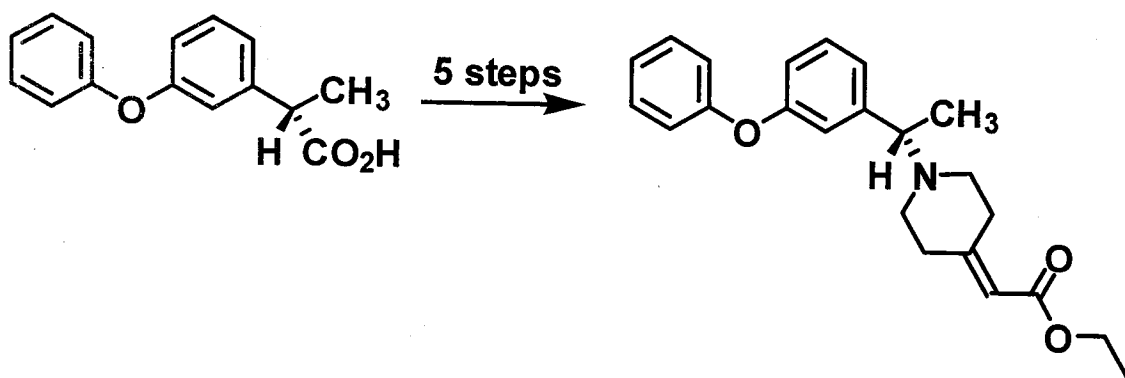
一、Provide suitable reagents or products (A)-(P) to complete the following sequences of reactions (16 problems, 2%/each)

(32%)



二、Multiple step synthesis:

(10%)



注意：背面有試題

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三、Multiple choice (4 problems, 2%/each, total 8%)

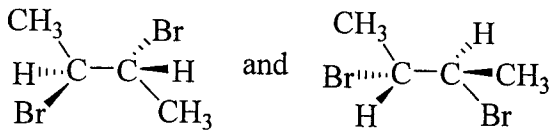
(一) Rank the following compounds in order of increasing acidity (2%)

a:  $\text{HCCl}_2\text{CO}_2\text{H}$ ; b:  $\text{CH}_3\text{CO}_2\text{H}$ ; c:  $\text{CF}_3\text{CO}_2\text{H}$ ; d:  $\text{ClCH}_2\text{CH}_2\text{CO}_2\text{H}$

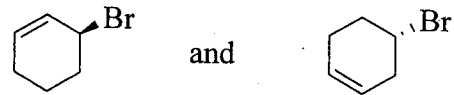
- (1)  $d < b < c < a$       (2)  $b < d < a < c$       (3)  $b < a < d < c$   
 (4)  $b < d < c < a$       (5)  $d < b < a < c$

(二) For each pair, give the correct relationship between the two compounds. (enantiomer, diastereomers, constitutional isomers or same compounds) (2%)

a:

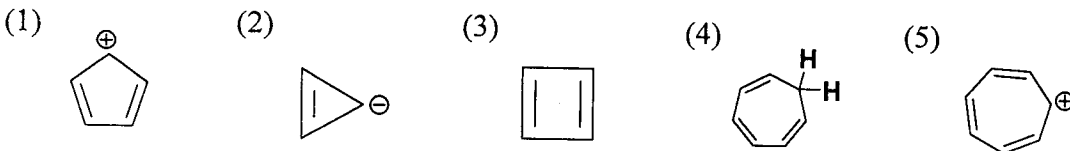


b:



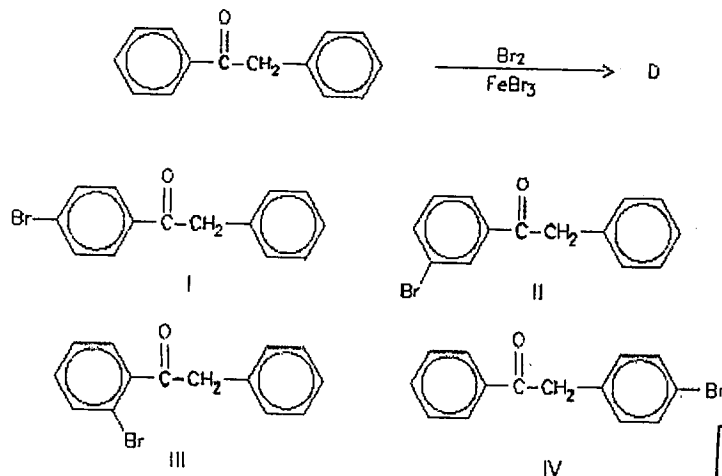
- (1) a: diastereomers    b: constitutional isomers.    (2) a: enantiomers    b: identical.  
 (3) a: diastereomers    b: enantiomers.    (4) a: enantiomers    b: constitutional isomers.  
 (5) a: identical    b: constitutional isomers.

(三) Which of the following would you expect to be aromatic? (2%)



(四) The major product(s), D, of the following reaction, would be: (2%)

- (1) I      (2) II      (3) III      (4) IV      (5) Equal amounts of I and II



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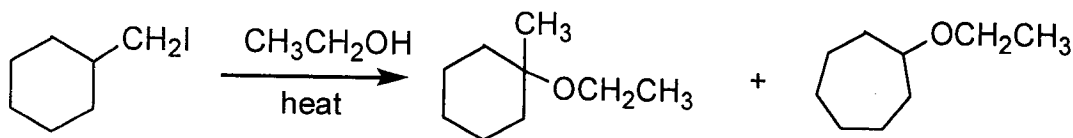
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參考用

四、Propose a reaction mechanism for the following reaction.

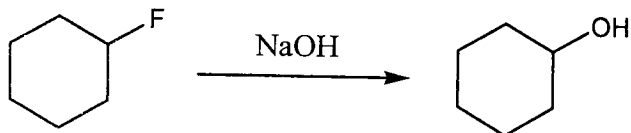
(10%)



五、The reactions shown below are unlikely to occur as written.

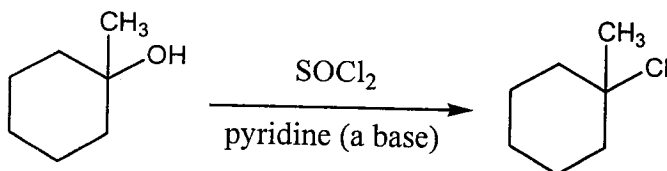
(一) What is wrong with this reaction? What would be the most likely product for this reaction?

(10%)



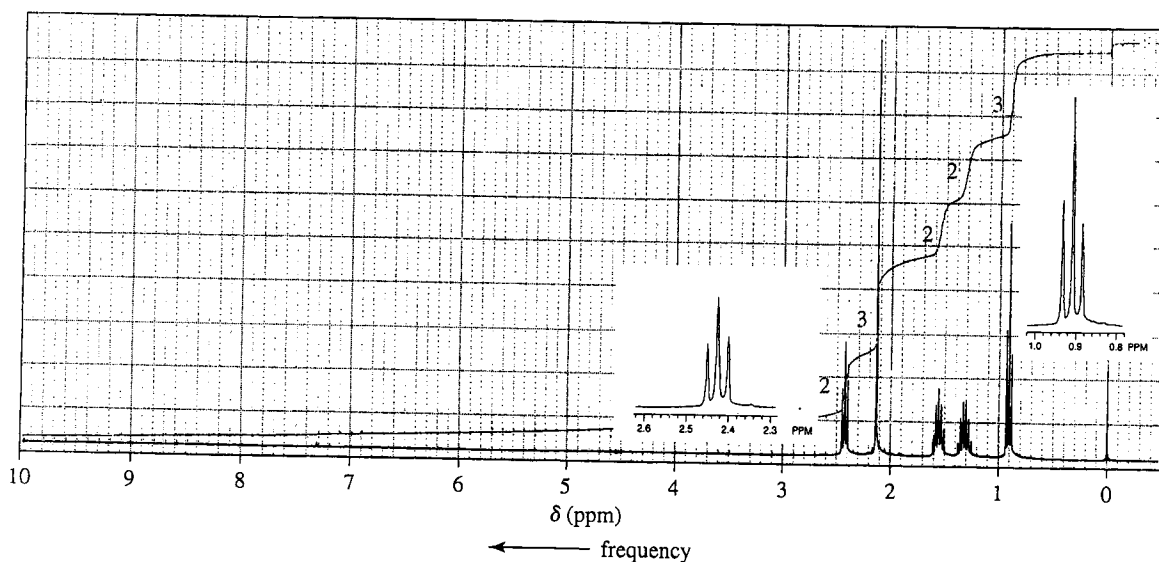
(二) What is wrong with this reaction? What would be the most likely product for this reaction?

(10%)



六、(一) A compound with molecular formula  $\text{C}_6\text{H}_{12}\text{O}_2$  has the following  $^1\text{H}$  NMR spectrum. Identify its molecular structure.

(5%)



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(二) Deduce molecular structure for the compound that matches with the following spectral data. (15%)

