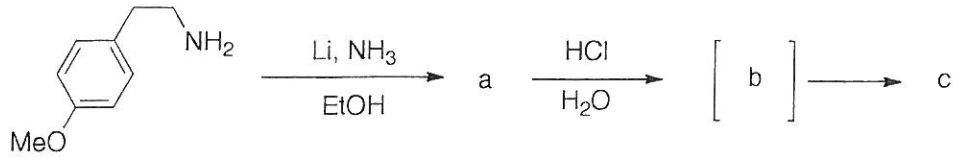
國立臺灣師範大學 104 學年度碩士班招生考試試題

科目：**有機化學**　　適用系所：**化學系**

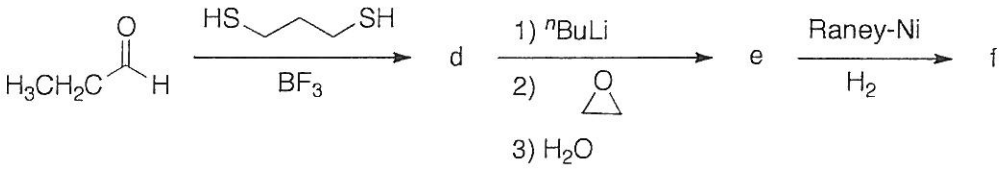
注意：1.本試題共 5 頁，請依序在答案卷上作答，並標明題號，不必抄題。2.答案必須寫在指定作答區內，否則不予計分。

1. Please provide the structure of major product of each reaction (每個 2 分，共 40 分)

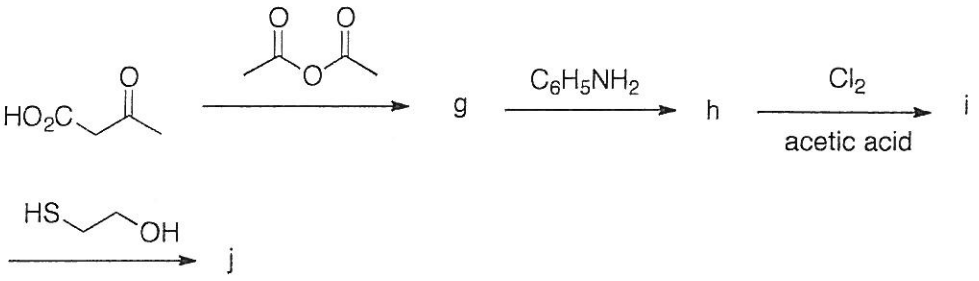
1.



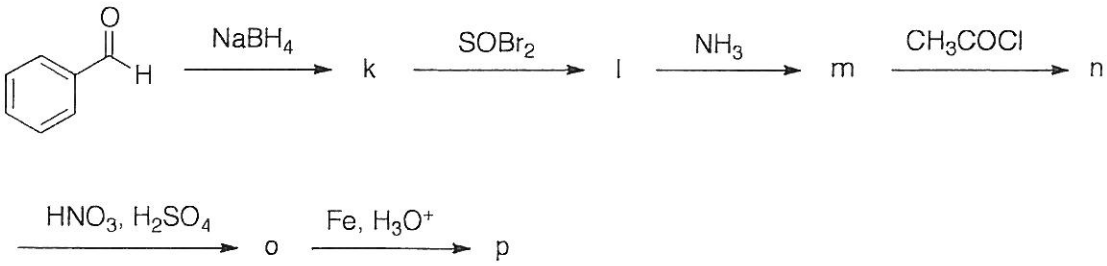
2.



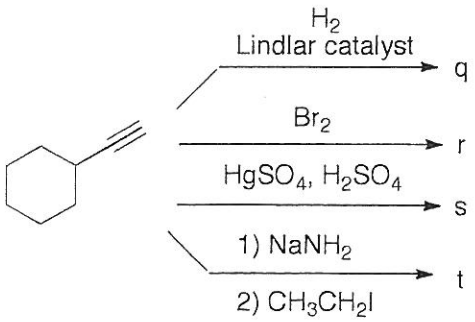
3.



4.

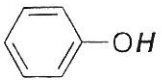
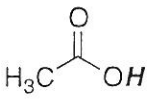
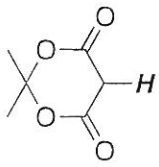


5.



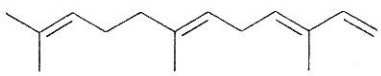
II. 單選題 (每題 2 分，共 20 分)

6. Rank the following compounds in order of decreasing acidity:

(i)  (ii)  (iii)  (iv) 

(A) i < ii < iv < iii (B) iii < i < ii < iv (C) ii < i < iv < iii (D) iv < iii < ii < i

7. α-Farnesene is a constituent of the natural waxy coating found on apples. What is its IUPAC name?



α-Farnesene

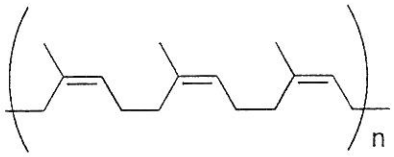
(A) (3*E*, 6*E*)-3,7,11-trimethyl-1,3,6,10-dodecatetraene

(B) (3*Z*, 6*Z*)-3,7,11-trimethyl-1,3,6,10-dodecatetraene

(C) (6*E*, 8*E*)-2,6,10-trimethyl-2,6,9,11-dodecatetraene

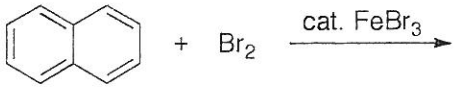
(D) (6*E*, 8*Z*)-2,6,10-trimethyl-2,6,9,11-dodecatetraene

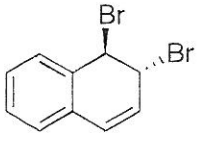
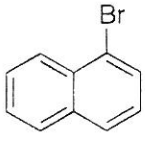
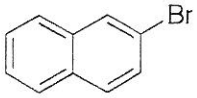
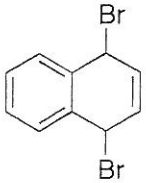
8. Which is the monomer structure of the polymer shown below?



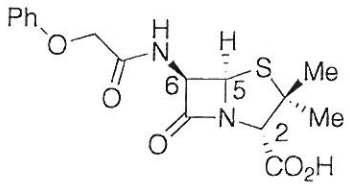
(A)  (B)  (C)  (D) 

9. Which is the major product of the reaction listed below?



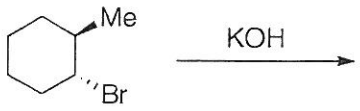
(A)  (B)  (C)  (D) 

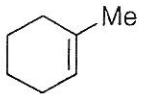
10. The structure of Penicillin V is listed below; please assign the *R* or *S* configuration according to the numbering of the chiral centers.

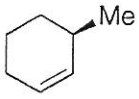


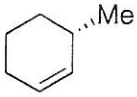
(A) 2*S*, 5*R*, 6*R* (B) 2*R*, 5*R*, 6*R* (C) 2*S*, 5*S*, 6*S* (D) 2*R*, 5*S*, 6*S*

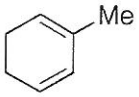
11. Which is the major product of the reaction listed below?



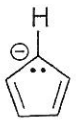
(A) 

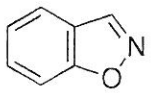
(B) 

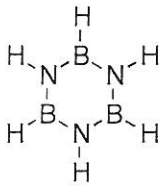
(C) 

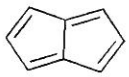
(D) 

12. Which of the following compound is not aromatic?

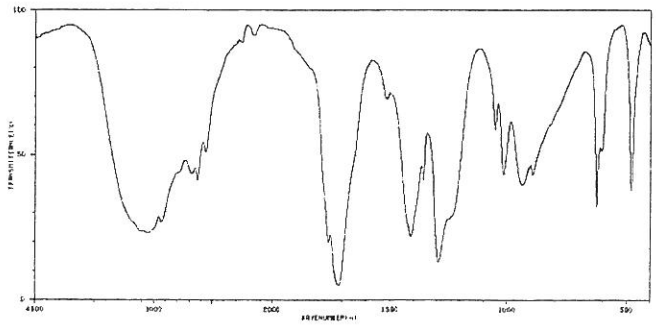
(A) 

(B) 

(C) 

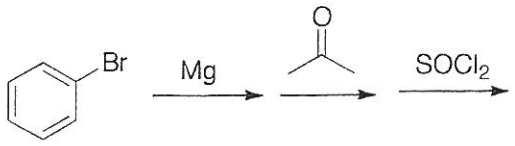
(D) 

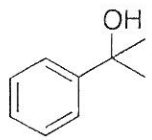
13. Please identify which compound has the IR spectrum listed below.

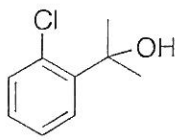


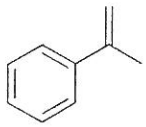
(A) Ethyl acetate (B) Acetone (C) Acetaldehyde (D) Acetic acid

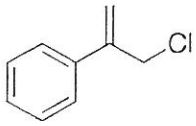
14. Please identify the structure of the final product in the reaction sequence listed below.



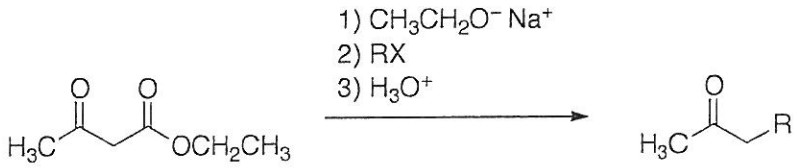
(A) 

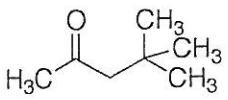
(B) 

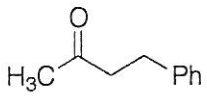
(C) 

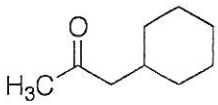
(D) 

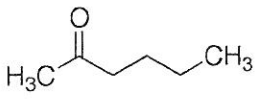
15. The general reaction scheme of acetoacetic ester synthesis is listed below. Which compound can't be synthesized by this method?



(A) 

(B) 

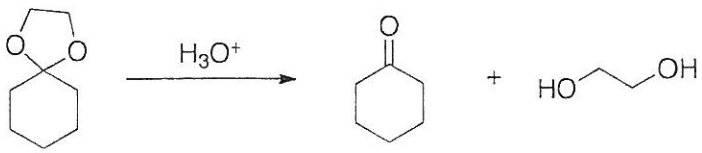
(C) 

(D) 

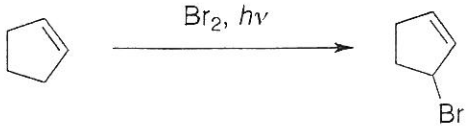
III. (每題 10 分，共 40 分)

16.Please write down the mechanism of the following reactions.

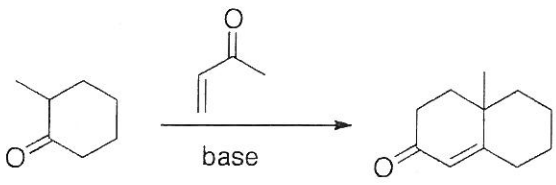
(a)



(b)



(c)



(d)