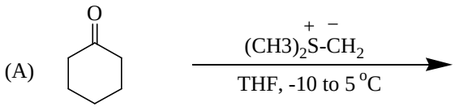
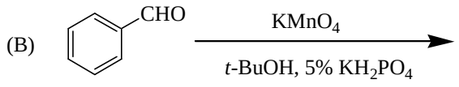
# 國立嘉義大學 99 學年度

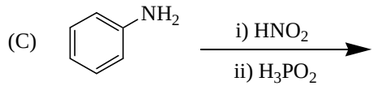
# 微生物免疫與生物藥學系碩士班(甲組)招生考試試題

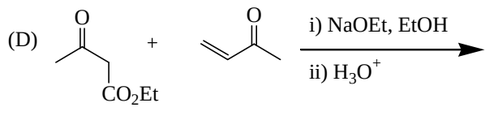
## 科目：有機化學

1. Predict the major organic products: (每小題 5 分，計 20 分)

(A) 

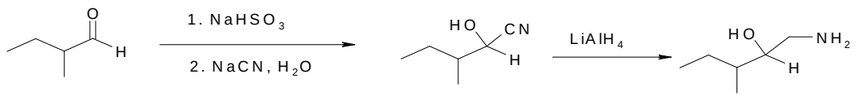

(B) 


(C) 

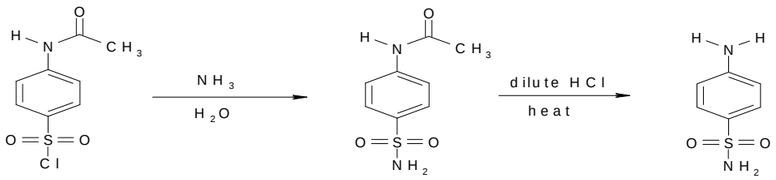

(D) 


2. Draw the mechanism for the following reactions. (每小題 10 分，計 20 分)

(1)

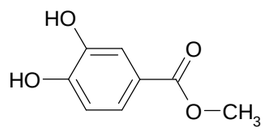



(2)

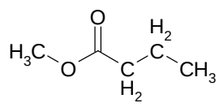



3. Please predict the chemical shifts and coupling constants in the $^{1}$H-NMR of the following compounds. (每小題 10 分，計 20 分)

(1)



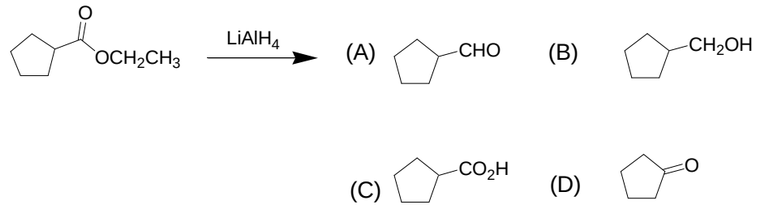

(2)



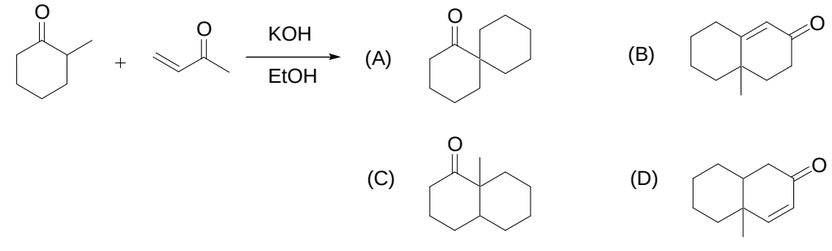

4. Design a flowchart to separate a mixture of a primary aliphatic amine ($RNH_2$, p*K*a 10.8), a carboxylic acid (RCOOH, p*K*a 5), and a phenol (ArOH, p*K*a 10). Assume that each is insoluble in water but soluble in diethyl ether. Only separation funnel, water, HCl, NaOH, $NaHCO_3$ (p*K*a 6.36), and diethyl ether can be used to design the separation flowchart. (10 分)

5. Select the best answer for the following questions. (每小題 5 分，計 30 分)

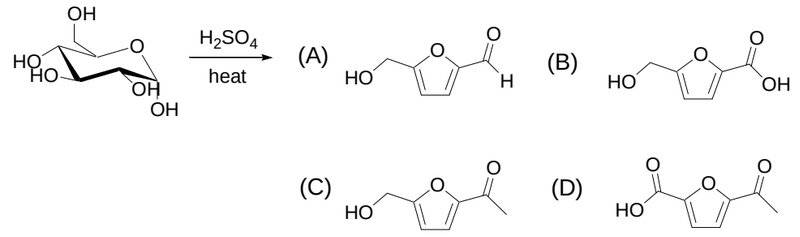
(1) What is the major product of the following reduction of ester?



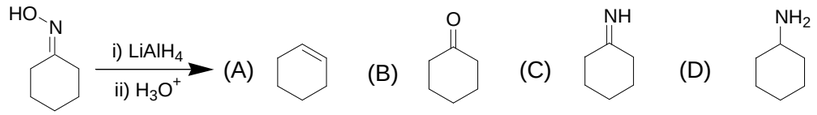

(2) What is the major organic product from this sequence of reaction?



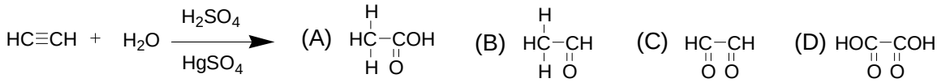

(3) Which would be the structure of the product for the following reaction?




(4) Which would be the structure of the product for the following reaction?




(5) What is the major organic product from the following reaction?




(6) What is the major organic product from the following reaction?