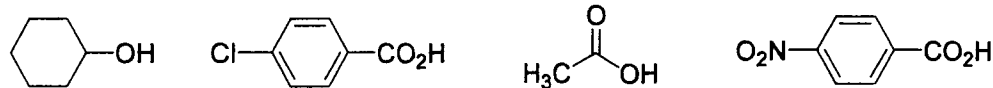


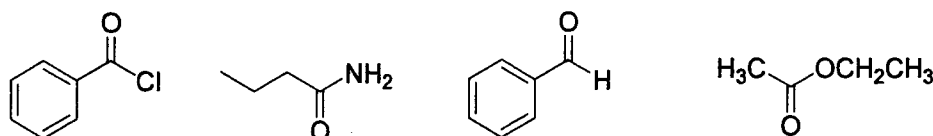
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(1) Arrange the following compounds in the order of increasing acidity. (3%)



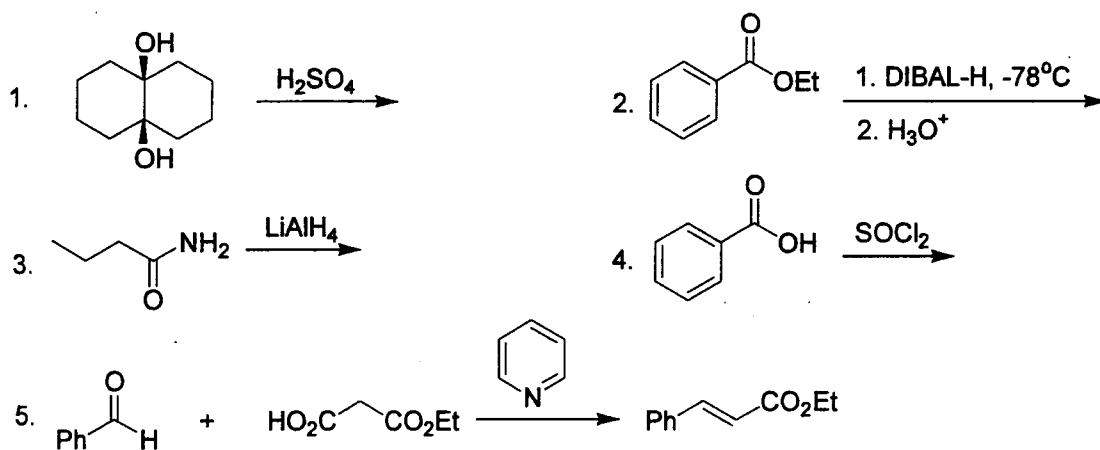
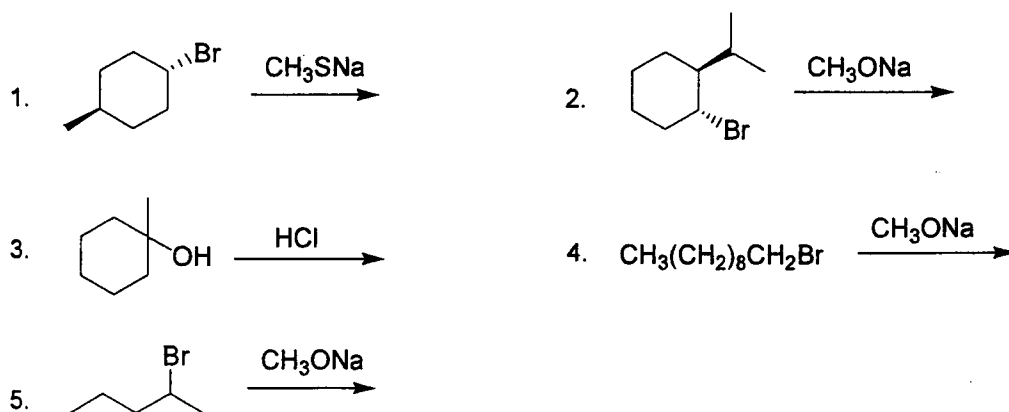
(2) In a nucleophilic addition reaction, arrange the following compounds in the order of increasing reactivity. (3%)

(3) In a S_N2 reaction, arrange the following halides in the order of increasing reactivity. (3%)
2-Bromohexane 2-Chlorohexane 1-Bromopentane 1-Methylcyclohexyl chloride

(4) Write the structural formulas for the following compounds. (9%)

1. $C_5H_8Br_4$ δ 3.6 (s, 8H) 2. C_3H_7Br δ 1.71 (d, 6H), 4.32 (septet, 1H)
 3. C_8H_9Br δ 2.0 (d, 3H), 5.15 (q, 1H), 7.35 (m, 5H)

(5) Write a stepwise mechanism for the following reactions. (15%)

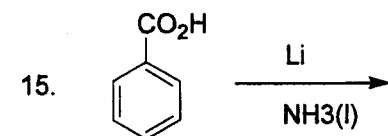
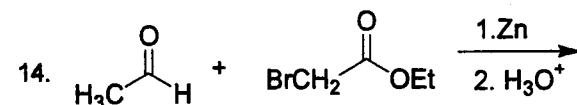
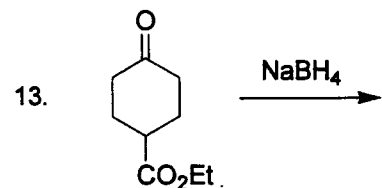
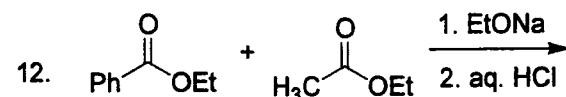
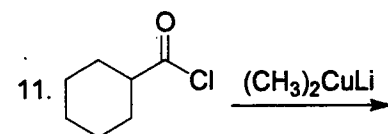
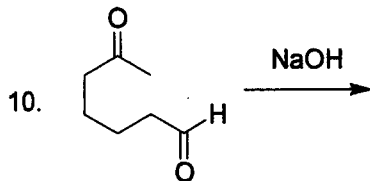
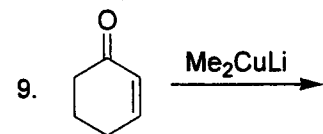
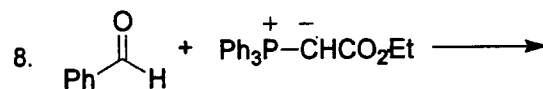
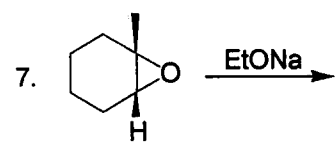
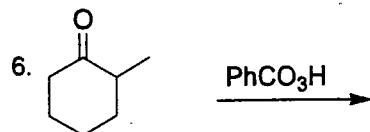
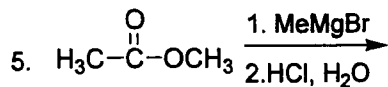
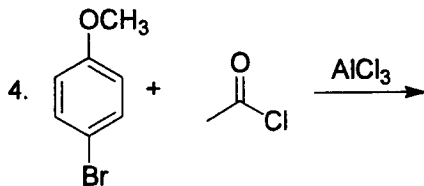
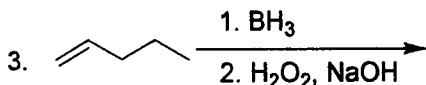
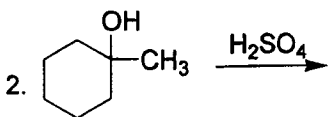
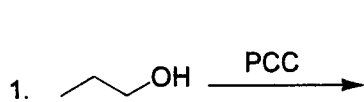
(6) Predict whether each reaction proceeds predominantly by S_N1 , S_N2 , E1 or E2. Write structural formulas for the major product. (15%)

(背面仍有題目,請繼續作答)

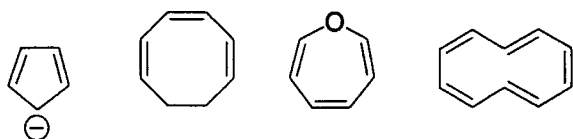
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(7) Draw the structural formulas for the product of the following reactions. (30%)



(8) Which of the following compounds are aromatic? (2%)



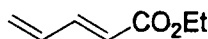
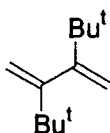
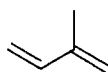
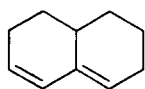
(9) Arrange the following alcohols in the order of increasing reactivity toward acid-catalyzed dehydration. (2%)

1-Hexanol 2-Methyl-2-pentanol 3-Methyl-2-pentanol

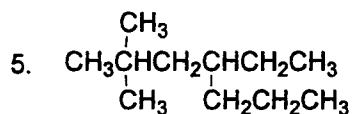
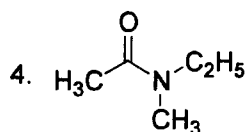
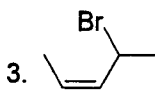
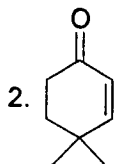
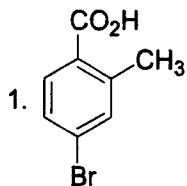
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(10) Which of the following compounds can undergo Diels-Alder reaction with maleic anhydride? (2%)



(11) Write IUPAC names for the following compounds. (10%)



(12) Draw the most stable conformation of the following compounds. (6%)

