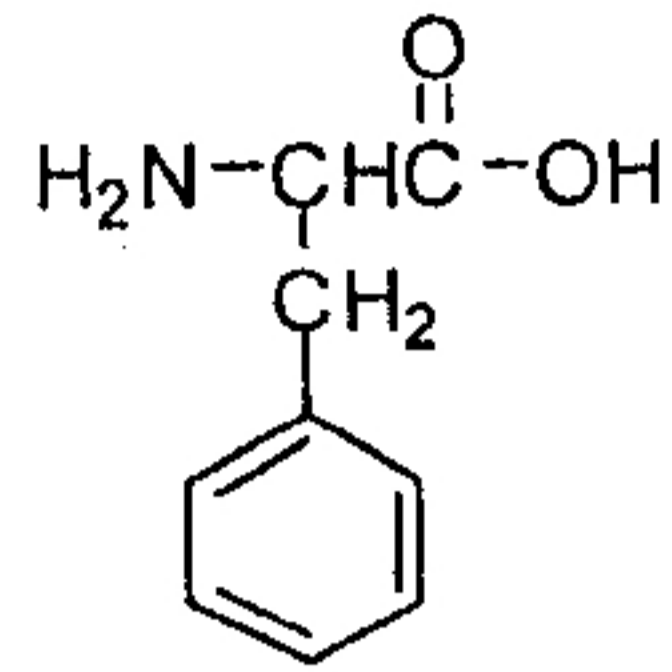


系別：生命科學研究所

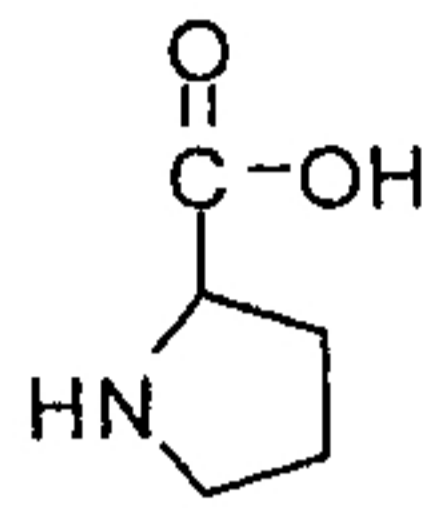
科目：有機化學

本試題共 2 頁，7 大題

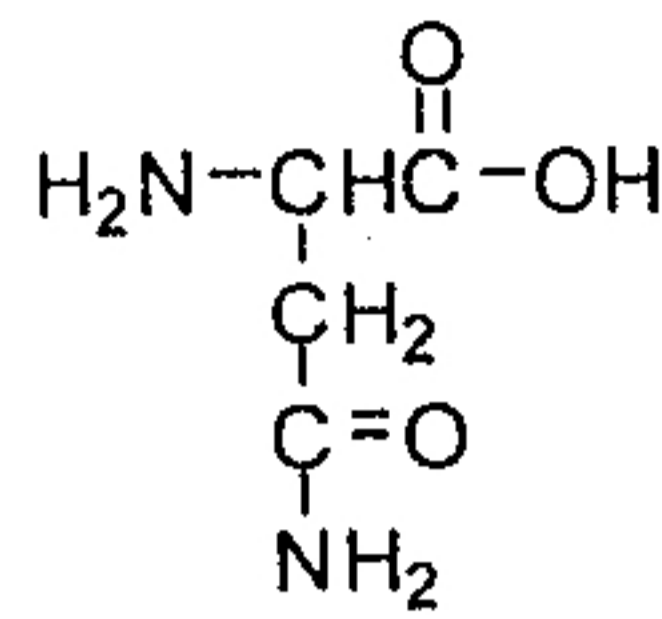
1. Some L-amino acids are given as followings, please draw a peptide sequence PheProAsn (from N- to C-terminal) and indicate their absolute configurations. (10%)



Phenylalanine (Phe)

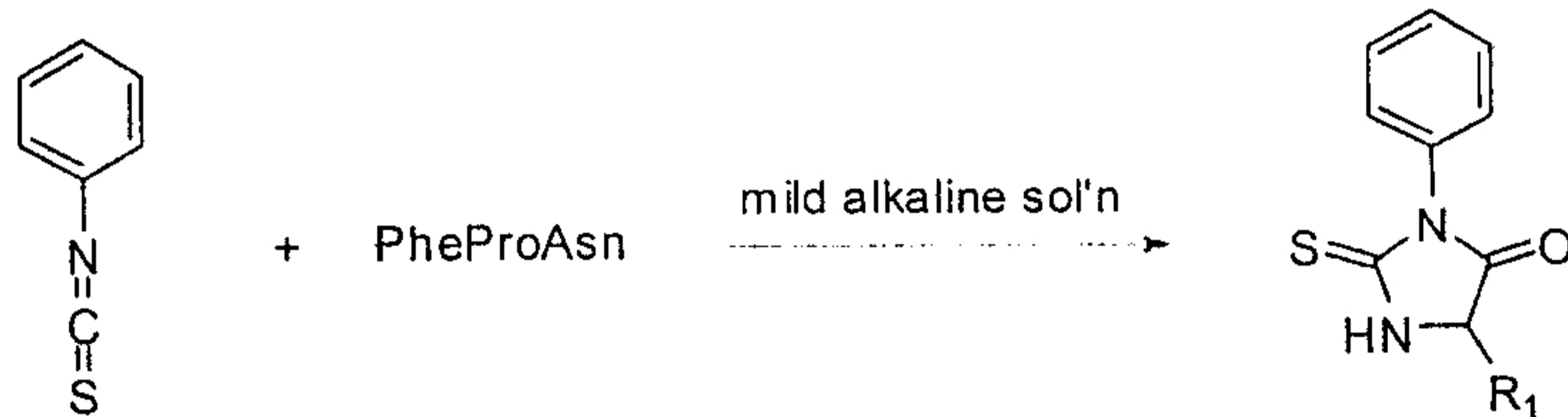


Proline (Pro)

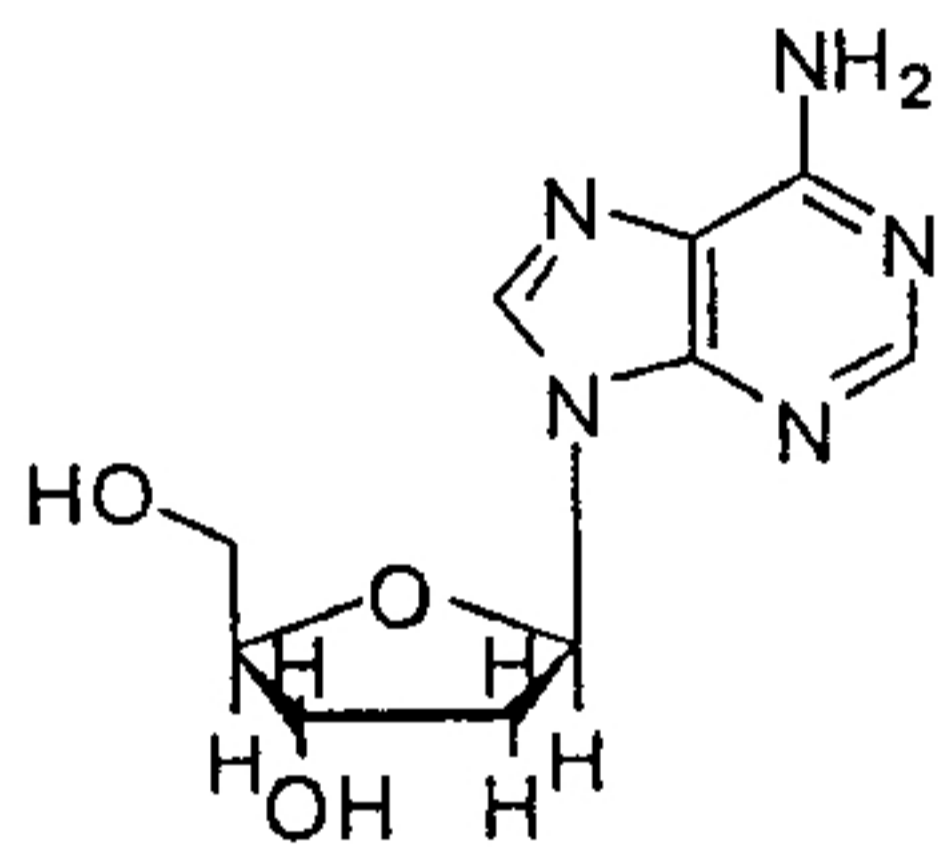


Asparagine (Asn)

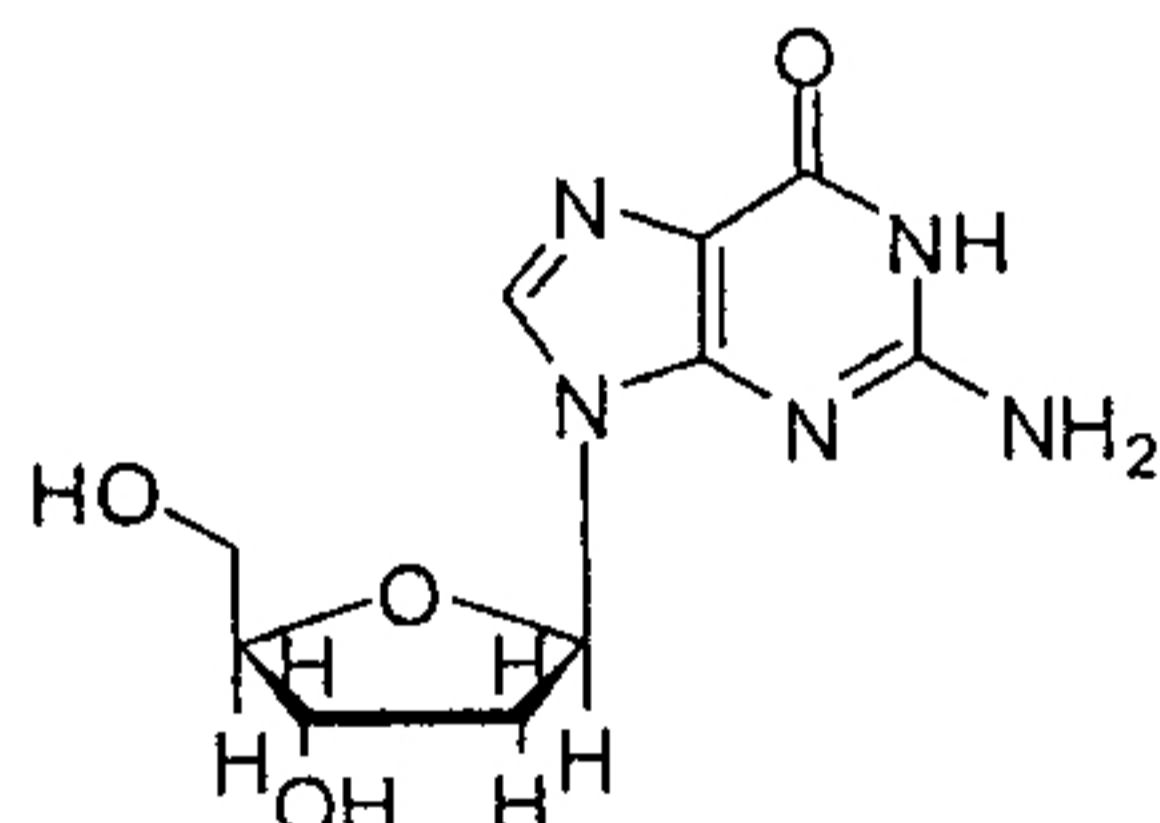
2. To sequence an entire polypeptide, a chemical method devised by Pehr Edman call Edman degradation could be demonstrated. Give the above PheProAsn sequence, please draw the mechanism for this reaction and indicate the moiety of R1 group. (10%)



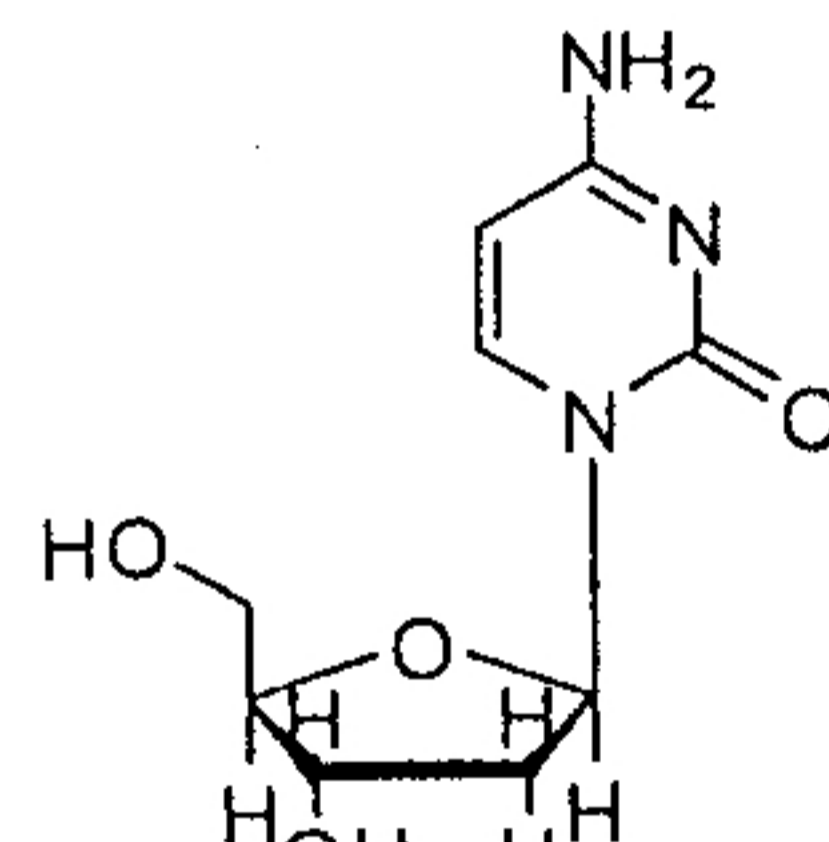
3. A part of double helix DNA is shown as GA (from 5' to 3'), please draw the structure of this double helix DNA with hydrogen bonds between base pairs (**Reminder**: riboses are linked by a phosphodiester bond). (20%).



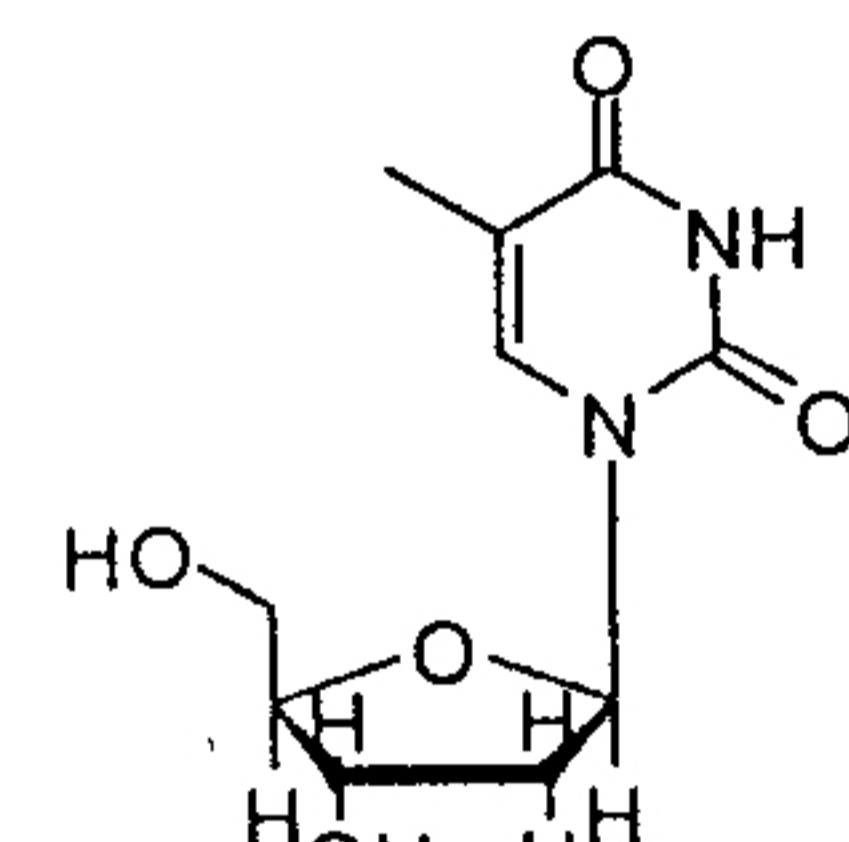
Adenosine (A)



Guanosine (G)

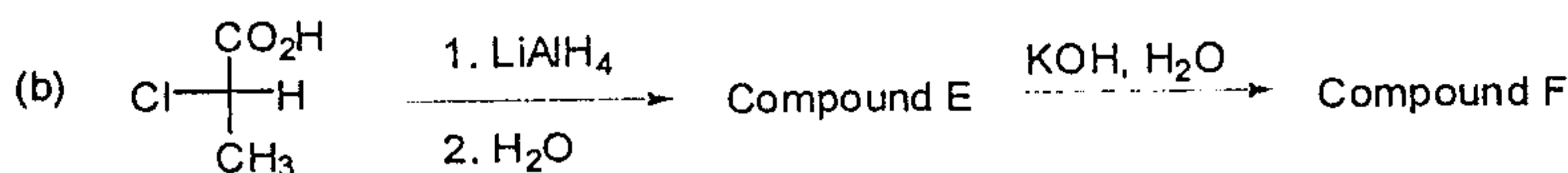
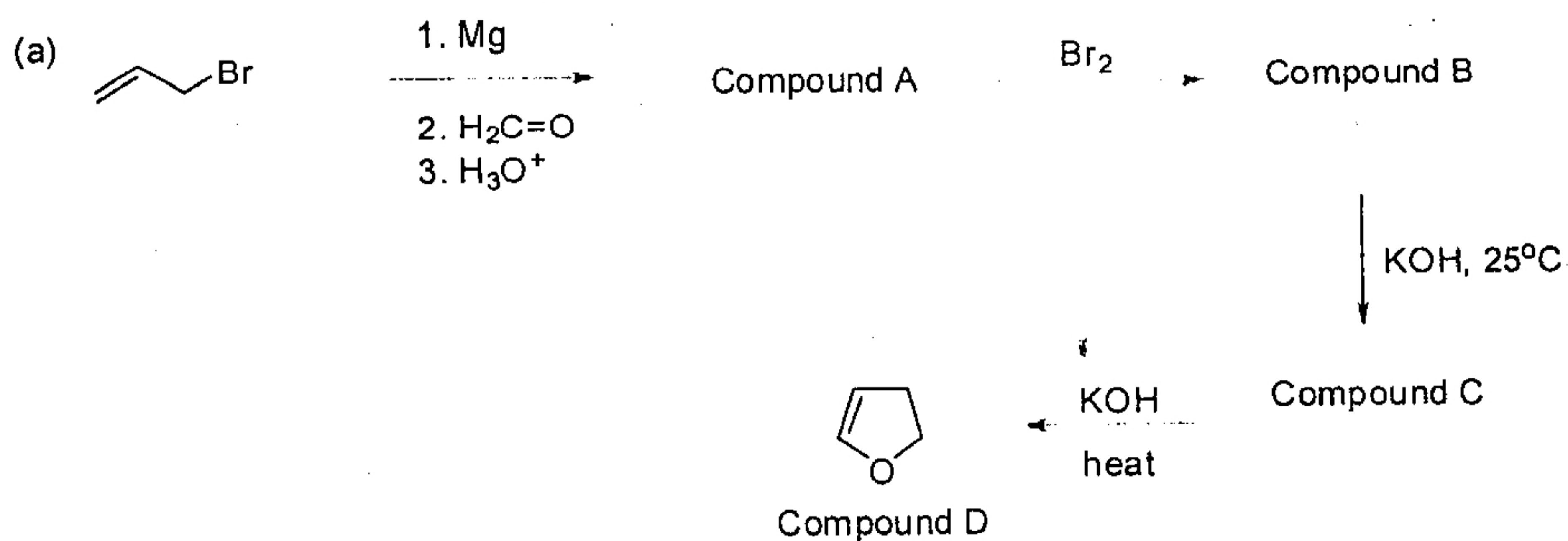


Cytidine (C)



Thymidine (T)

4. Deduce the identity of the missing compounds in the following reaction sequences. Show stereochemistry on part (b). (10%)

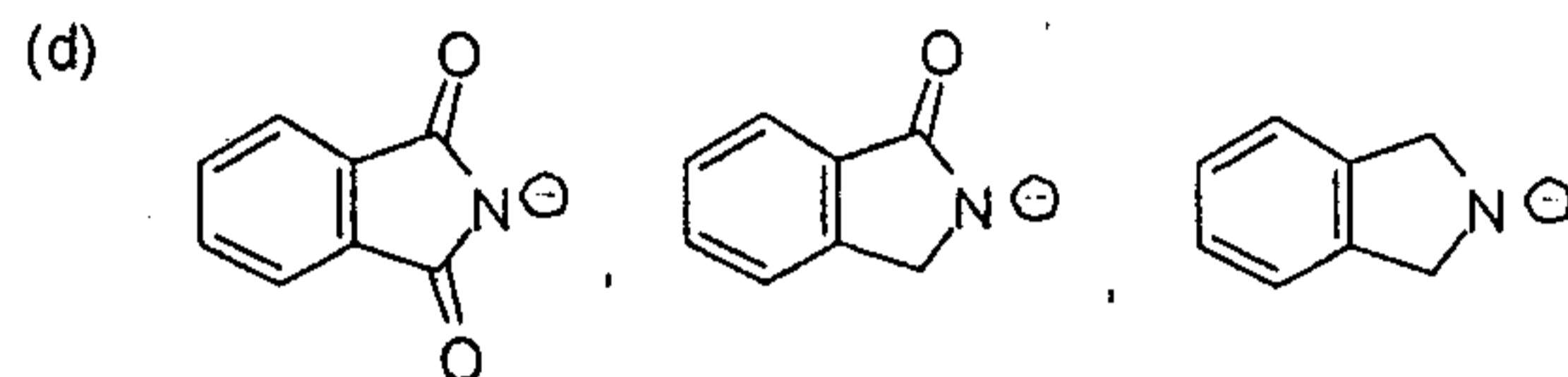
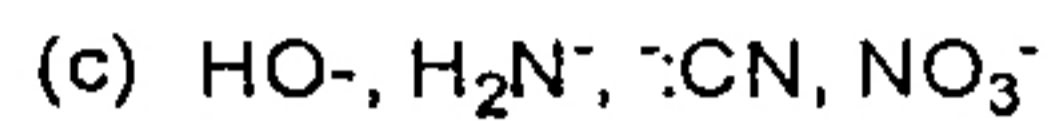
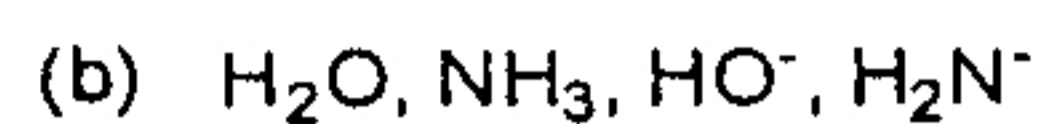
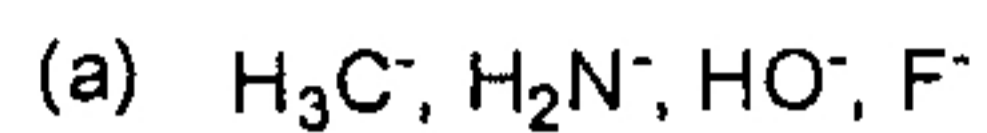


系別：生命科學研究所

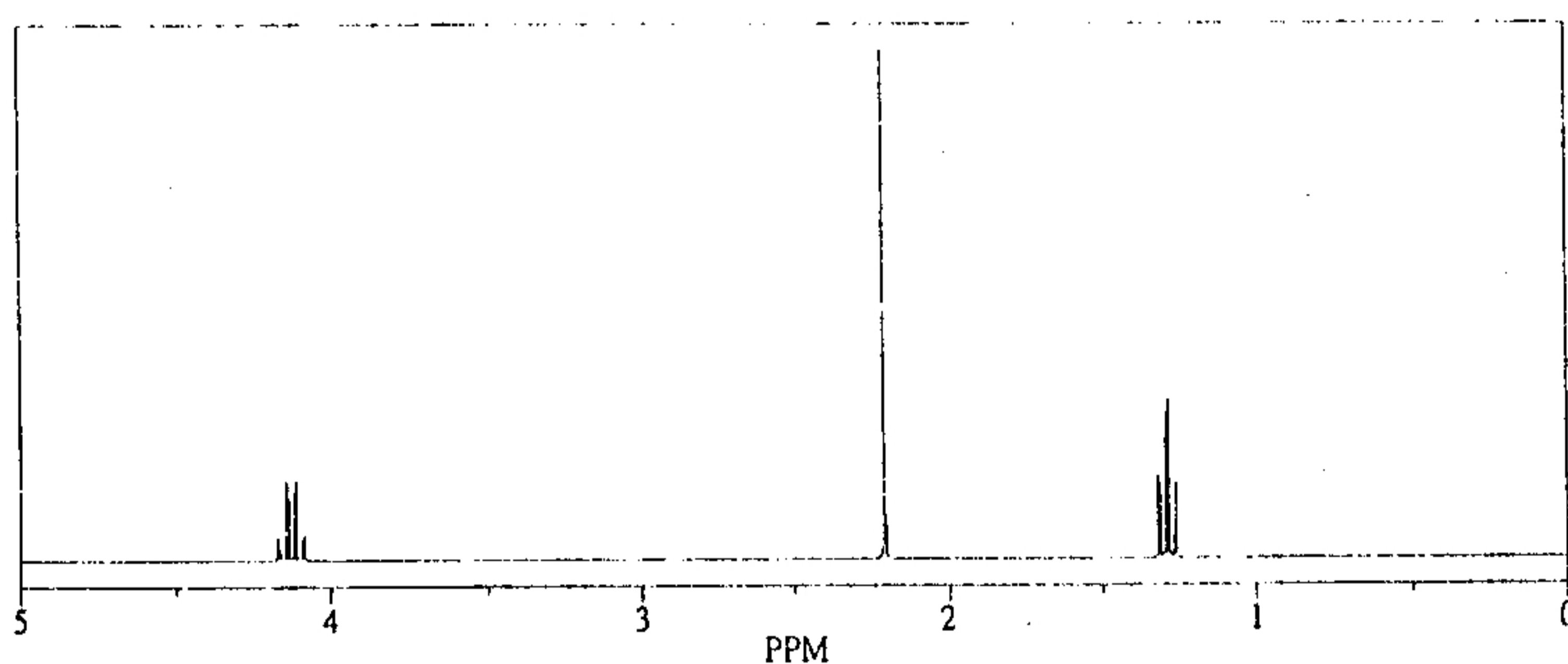
科目：有機化學

本試題共 2 頁，7 大題

5. Arrange the following compounds or anions in each group in order of decreasing basicity: (20%)



6. The ^1H NMR spectrum of an organic compound ($\text{C}_4\text{H}_8\text{O}_2$) is shown below, please identify and explain the most likely structure of this compound. (10%)



7. Suggest the reasonable mechanisms with arrows to indicate the electron flow for the following reactions. (20%)

