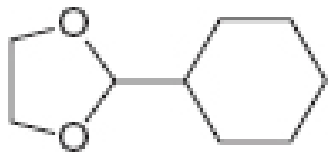
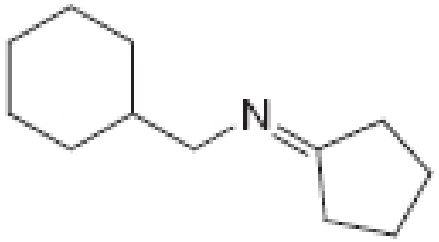
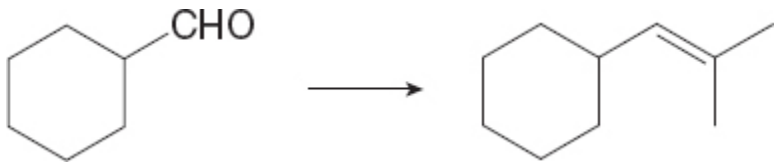
INDICA CHE COMPOSTI CARBONILICI E ALCOLI O AMMINE SONO NECESSARI PER OTTENERE I SEGUENTI COMPOSTI

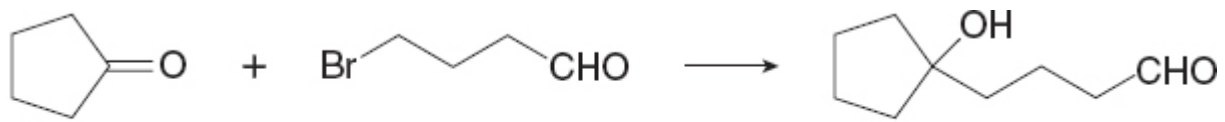




Proponi due diverse sintesi per ottenere i seguenti composti

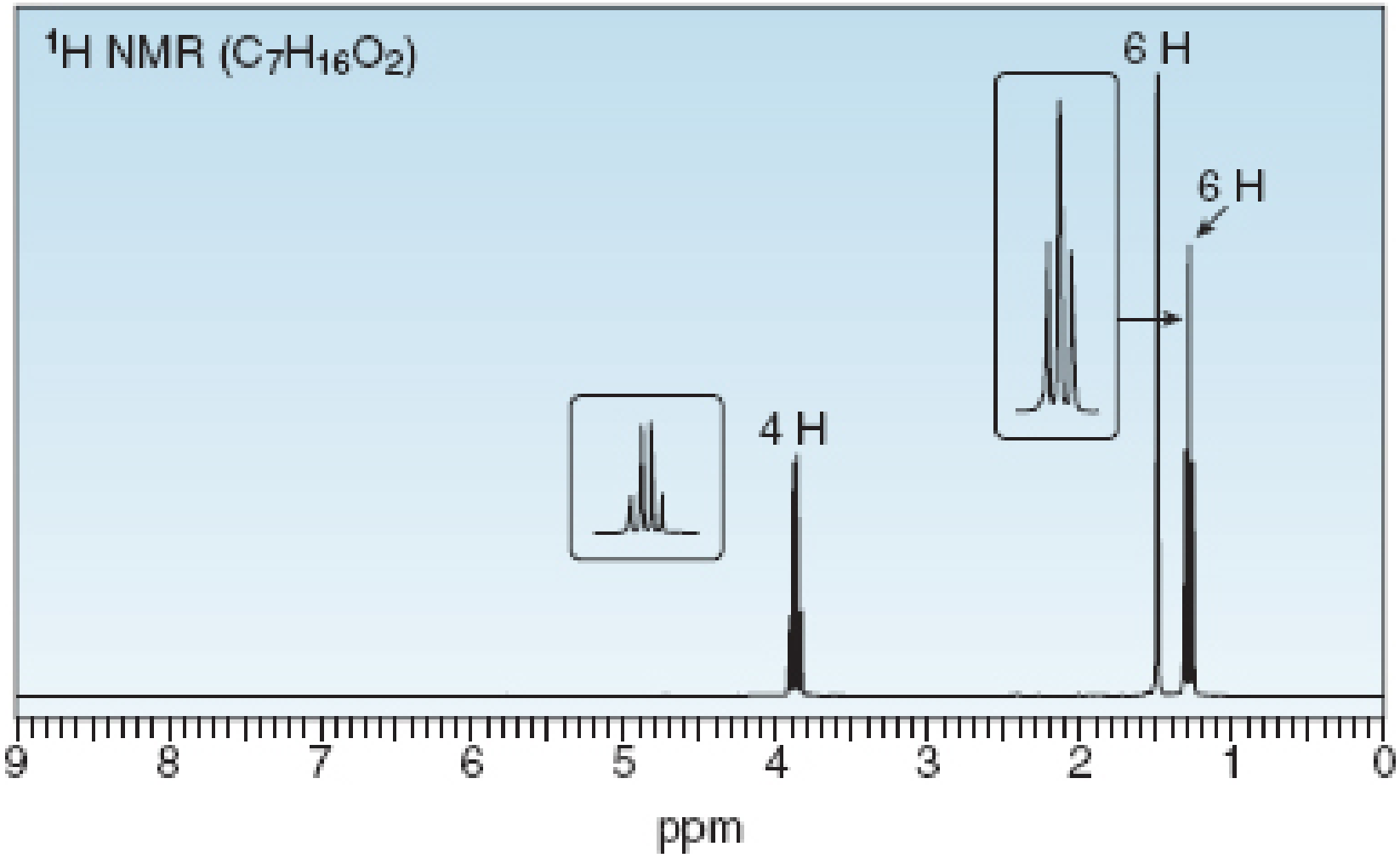


Proponi una sintesi del seguente composto

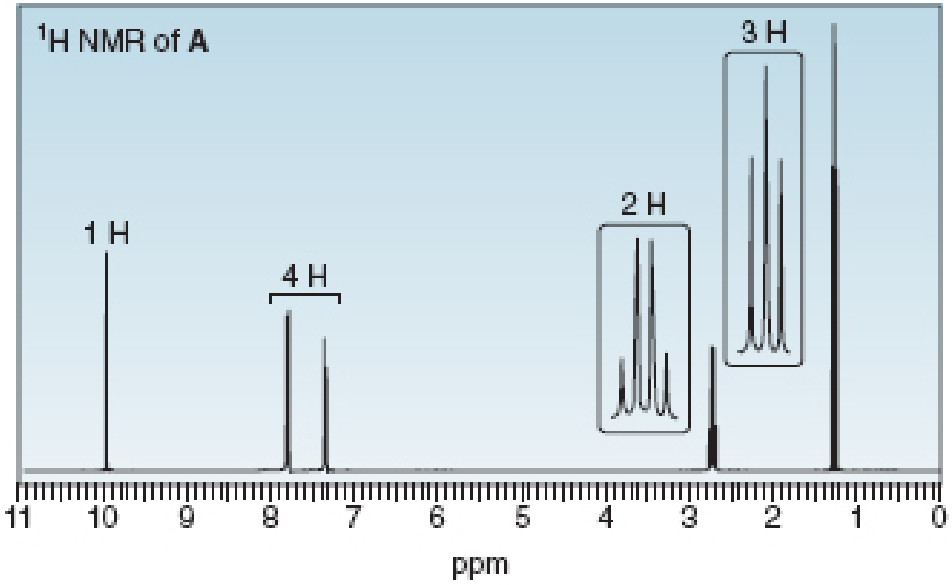


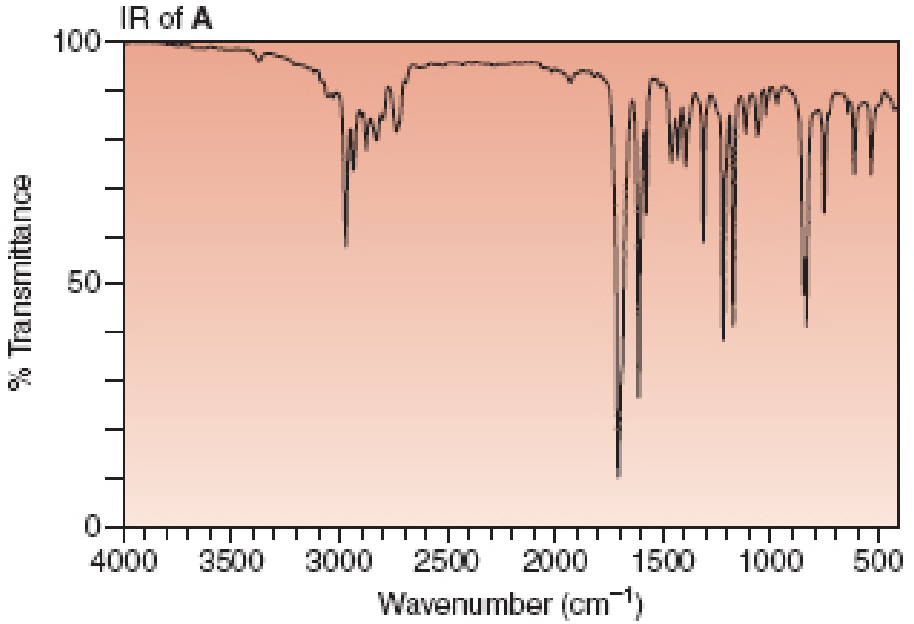
cyclopentanone 4-bromobutanal **A**

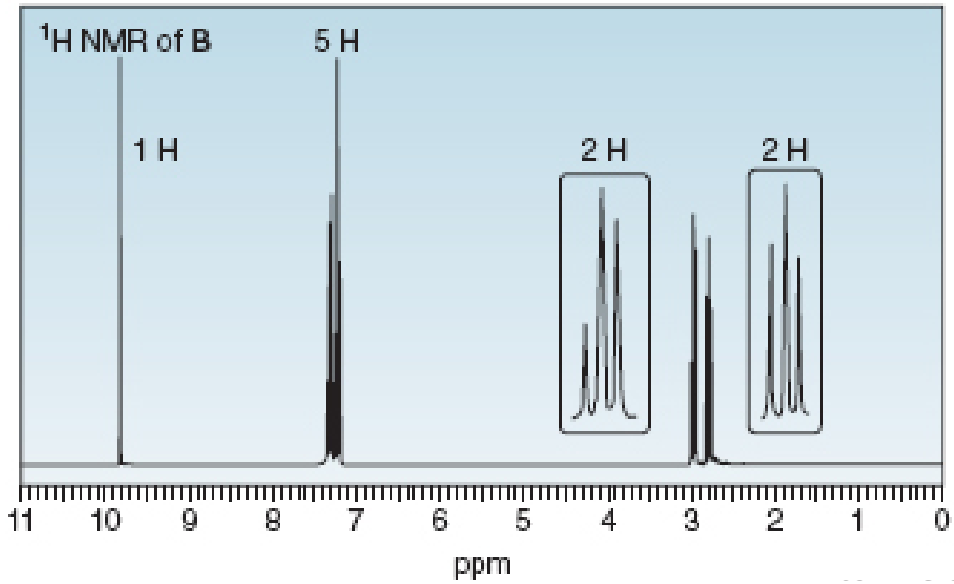
Una soluzione di acetone [$(CH_3)_2CO$] in etanolo (CH_3CH_2OH) in presenza di una traccia di acido è stata lasciata riposare per diversi giorni e si è formato un nuovo composto di formula molecolare $C_7H_{16}O_2$.
Lo spettro IR ha mostrato solo un picco principale nella regione del gruppo funzionale intorno a 3000 cm-1, e questo è lo spettro ^1H NMR. Qual è la struttura del prodotto?

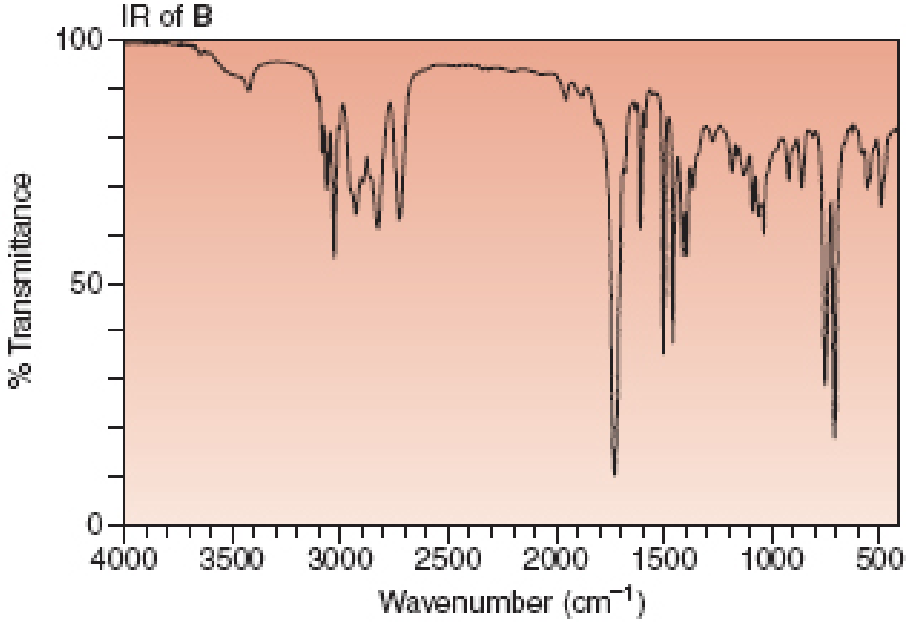


$C_9H_{10}O$

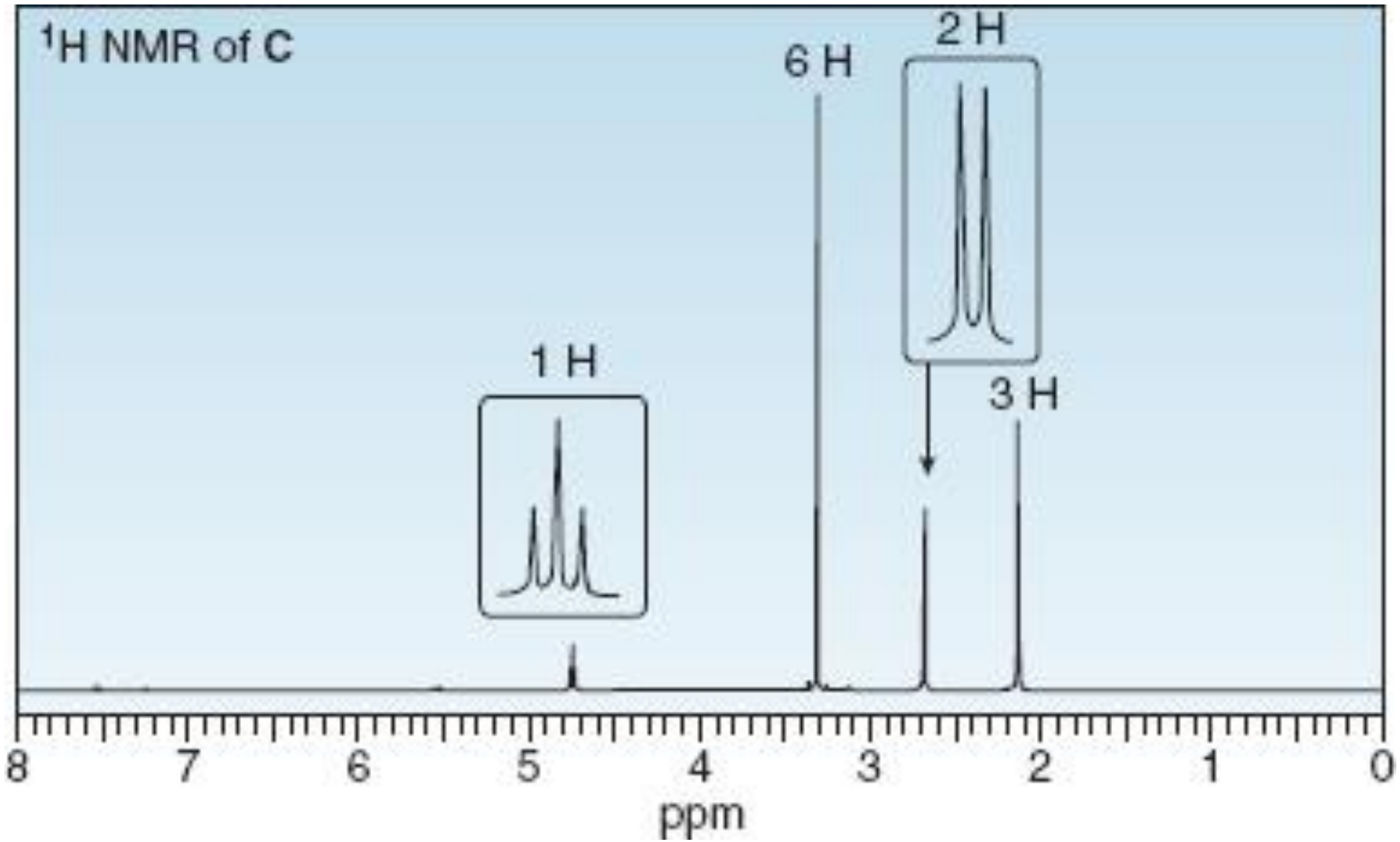

^{1}H NMR of **A**
1 H
4 H
2 H
3 H
11 10 9 8 7 6 5 4 3 2 1 0
ppm


IR of **A**
100
50
0
% Transmittance
4000 3500 3000 2500 2000 1500 1000 500
Wavenumber (cm^{-1})

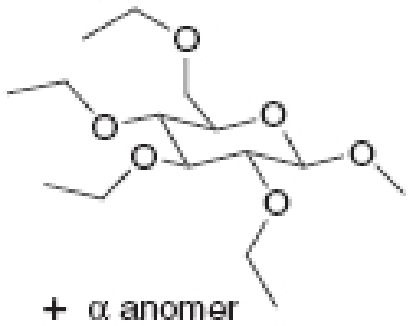

^{1}H NMR of **B**
1 H
5 H
2 H
2 H
11 10 9 8 7 6 5 4 3 2 1 0
ppm

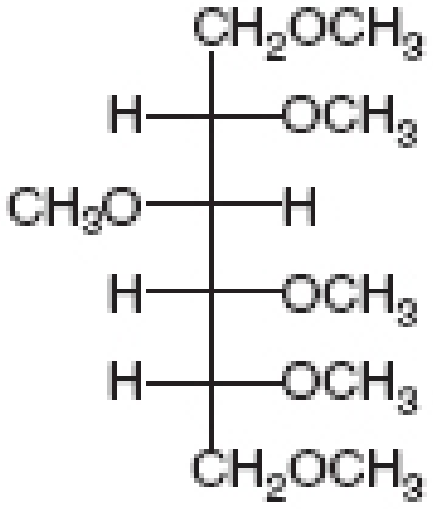

IR of **B**
100
50
0
% Transmittance
4000 3500 3000 2500 2000 1500 1000 500
Wavenumber (cm^{-1})

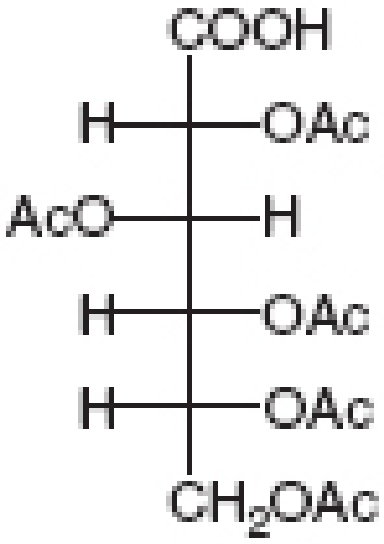
Un composto incognito di formula molecolare $C_6H_{12}O_3$ mostra un forte assorbimento nel suo spettro IR a 1718 cm-1 e il seguente spettro ^1H NMR. Qual è la sua struttura?



Come convertiresti il D-glucosio in ciascun dei seguenti composti? È necessario più di un passaggio.

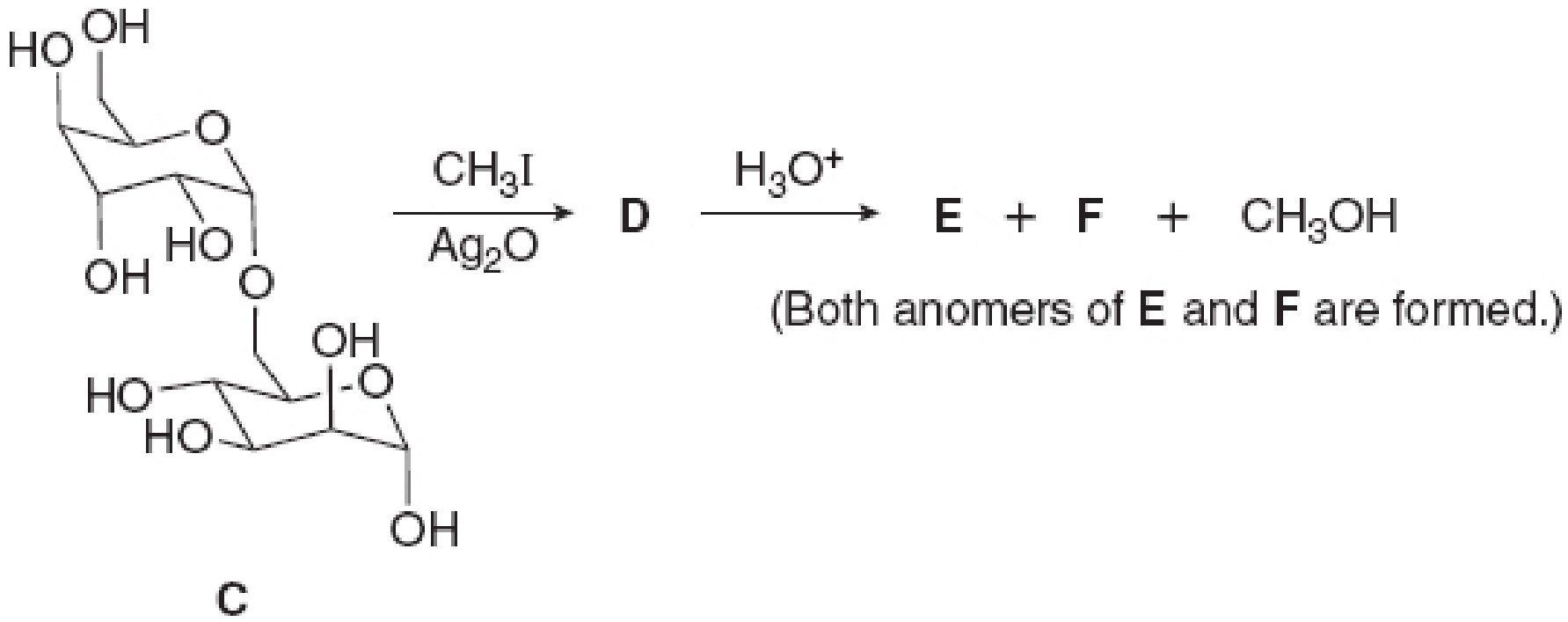




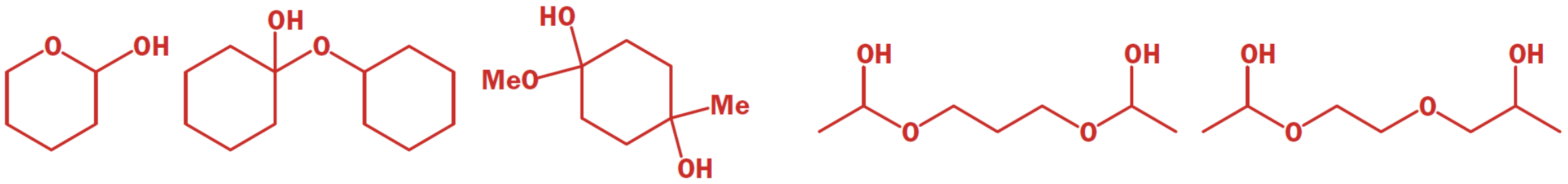


A. Identifica il legame glicosidico nel disaccaride C, classificare il legame glicosidico come α o β e utilizzare i numeri per designarne la posizione.

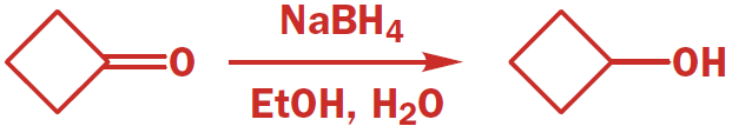
B. Identifica i composti con lettere nella seguente reazione.



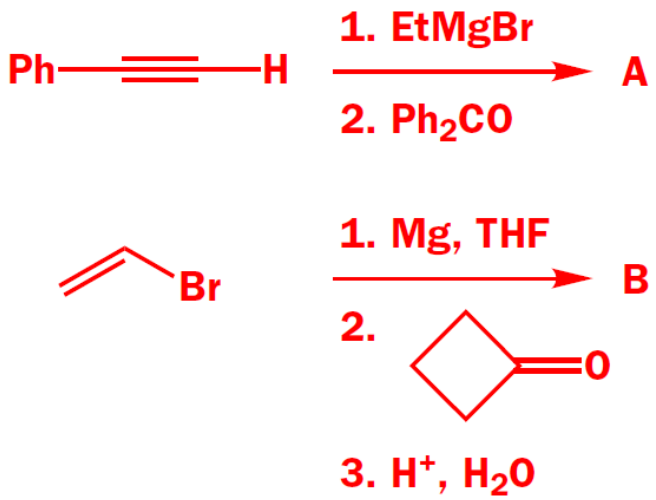
Identifica i composti di partenza dei seguenti composti:



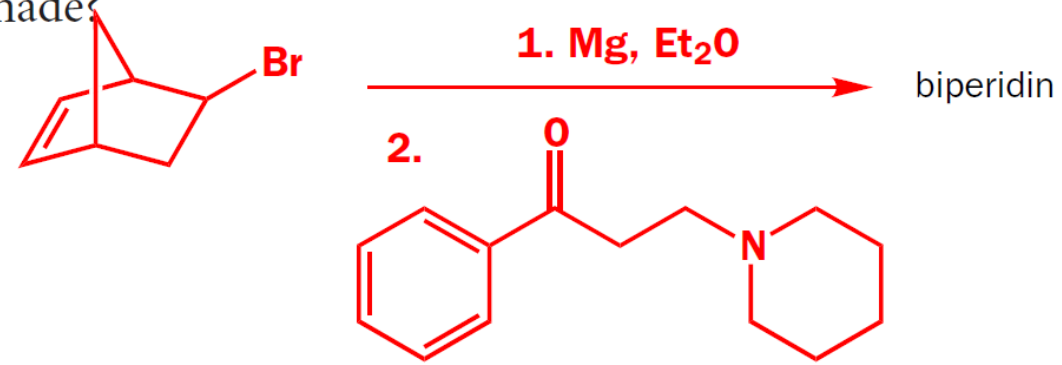
1. Draw mechanisms for these reactions.

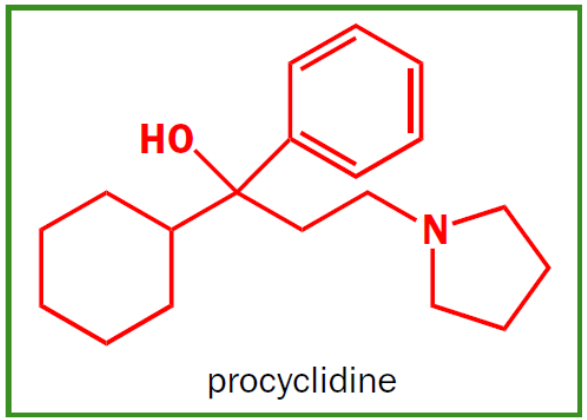


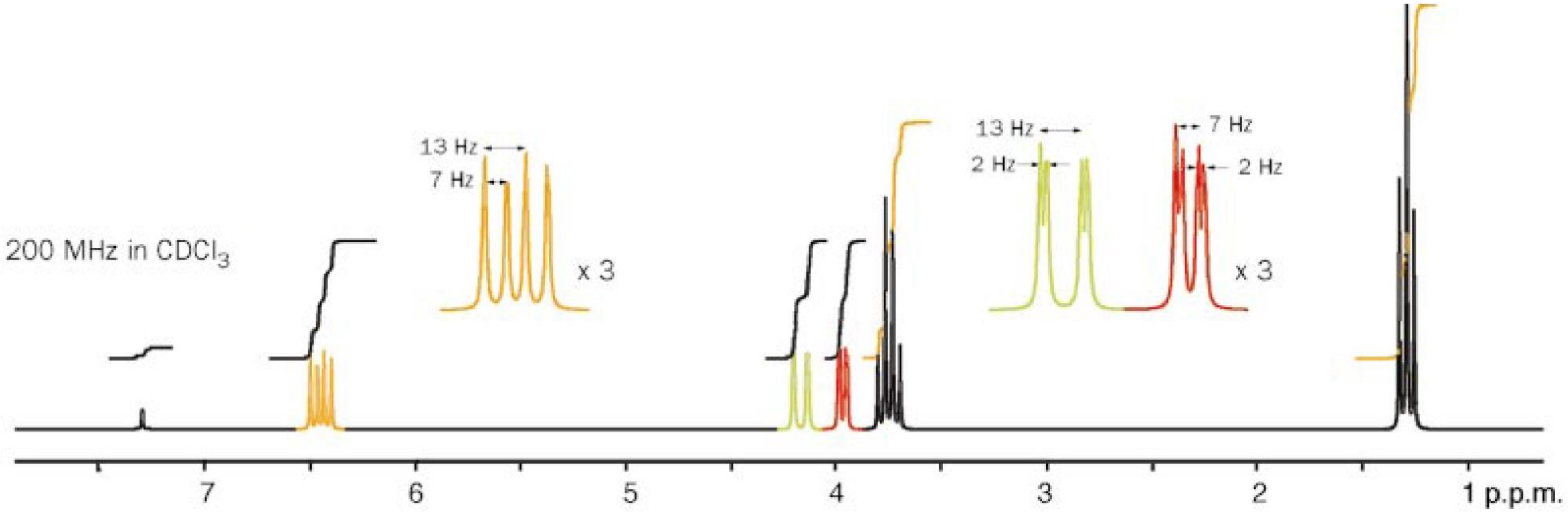
3. What products would be formed in these reactions?



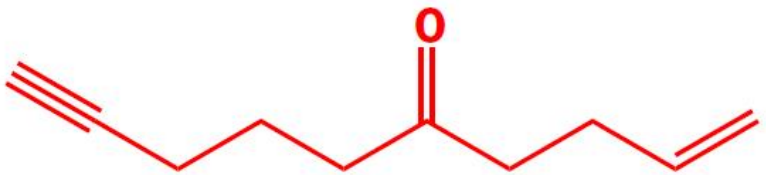
10. The antispasmodic drug biperidin is made by the Grignard addition reaction shown here. What is the structure of the drug? Do not be put off by the apparent complexity of the compounds—the chemistry is the same as that you have seen in this chapter. How would you suggest that the drug procyclidine should be made?

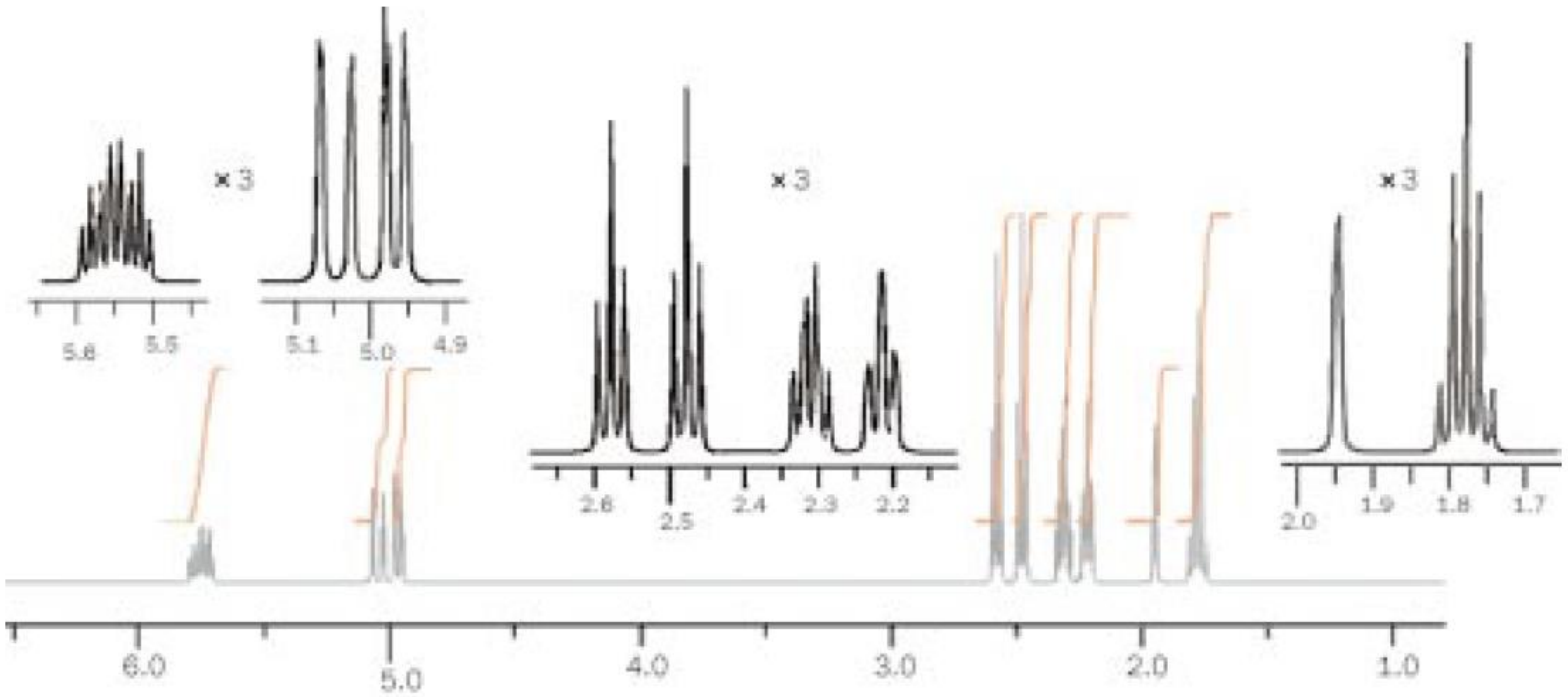




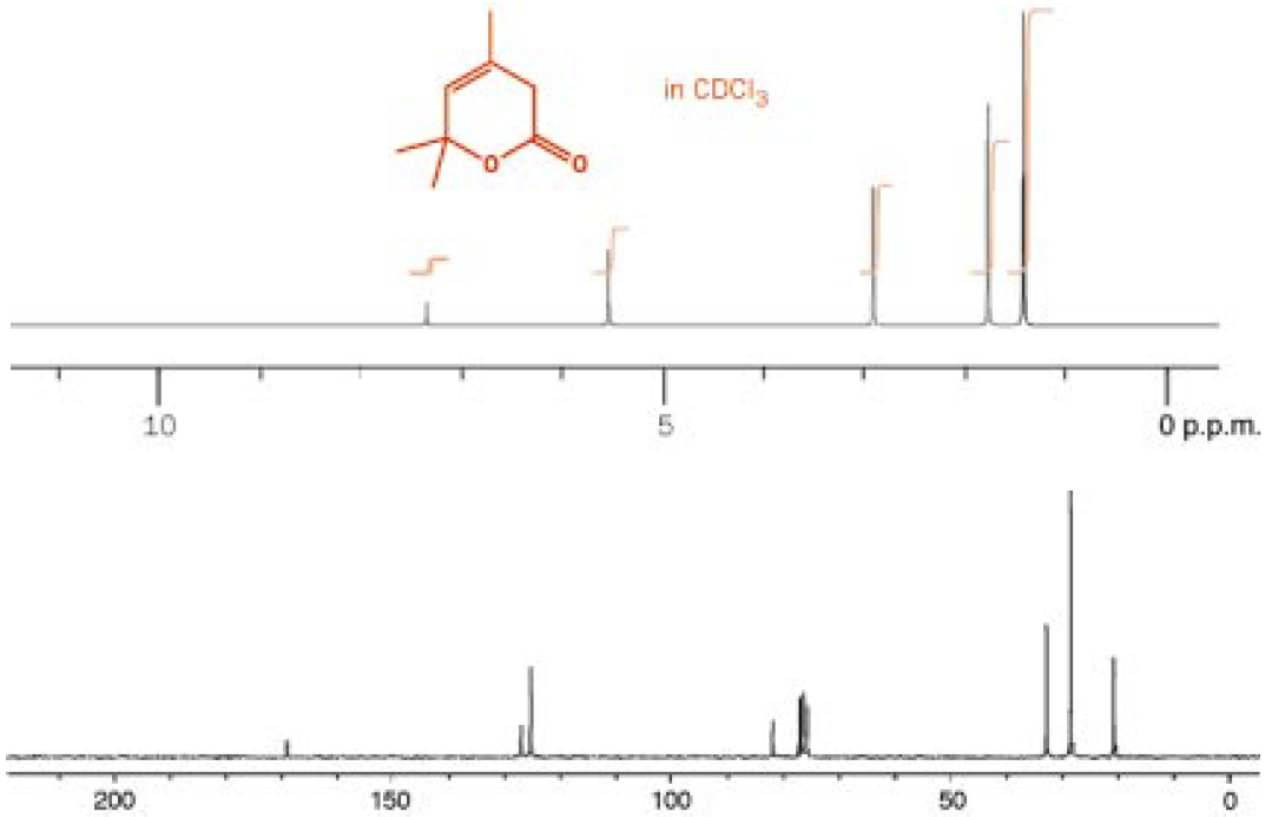


7. Assign the 400 MHz ^{1}H NMR spectrum of this enynone as far as possible, justifying both chemical shifts and coupling patterns.

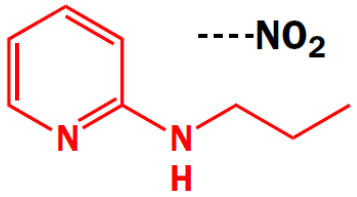




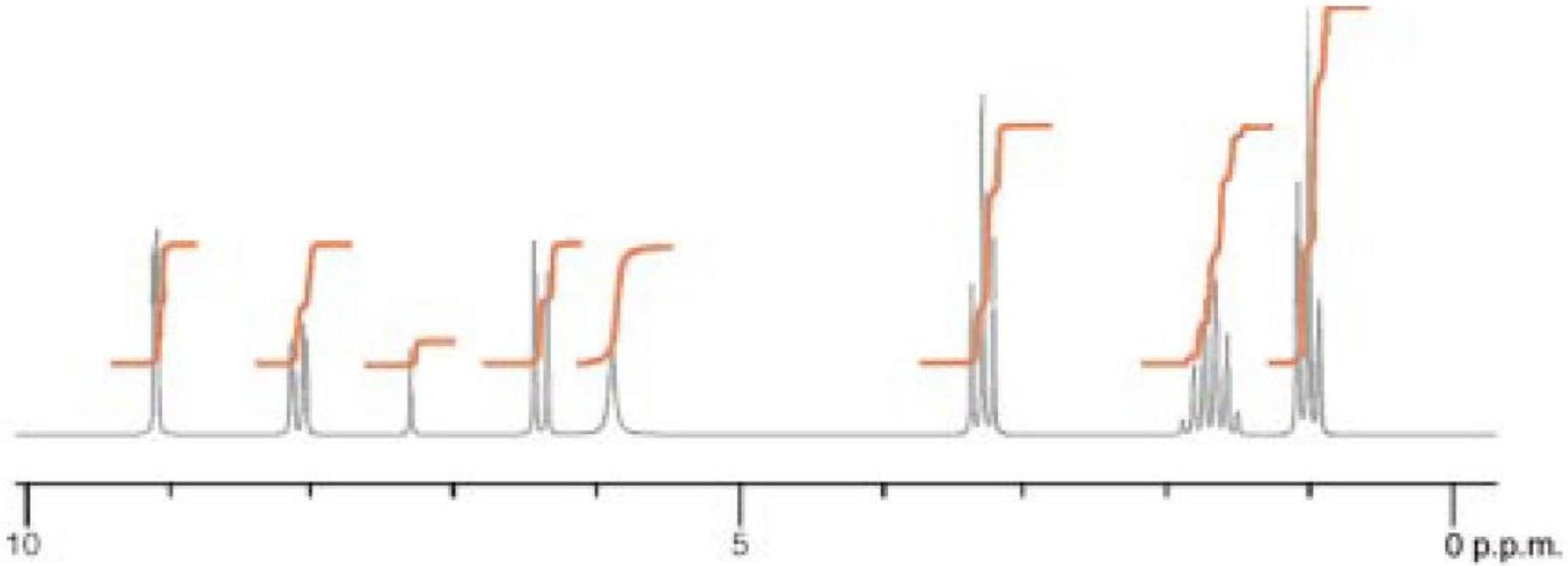
4. Assign the NMR spectra of this compound (assign means say which signal belongs to which atom) and justify your assignments.



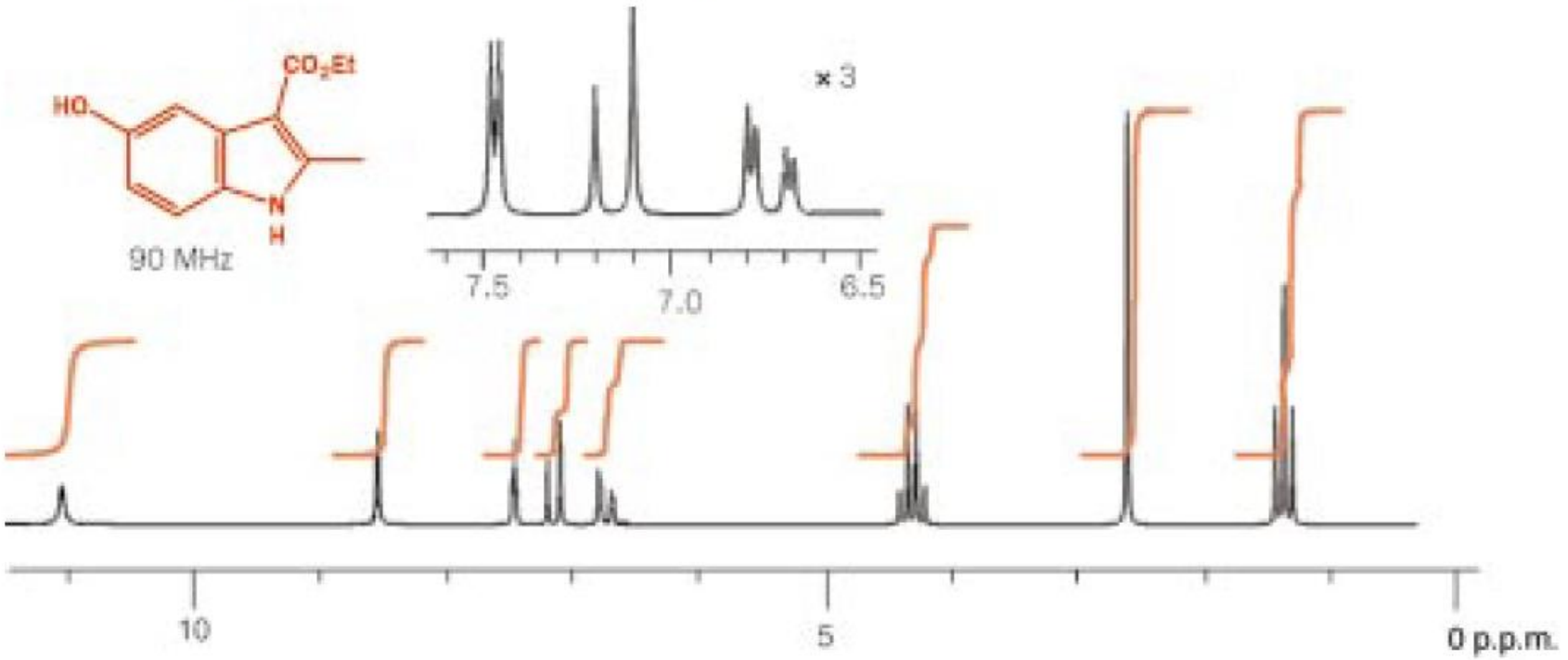
8. A nitration product ($C_8H_{11}N_3O_2$) of this pyridine has been isolated which has a nitro (NO_2) group somewhere on the molecule. From the 90 MHz ^1H NMR spectrum, deduce whether the nitro group is (a) on the ring, (b) on the NH nitrogen atom, or (c) on the aliphatic side chain and then exactly where it is. Give a full analysis of the spectrum.



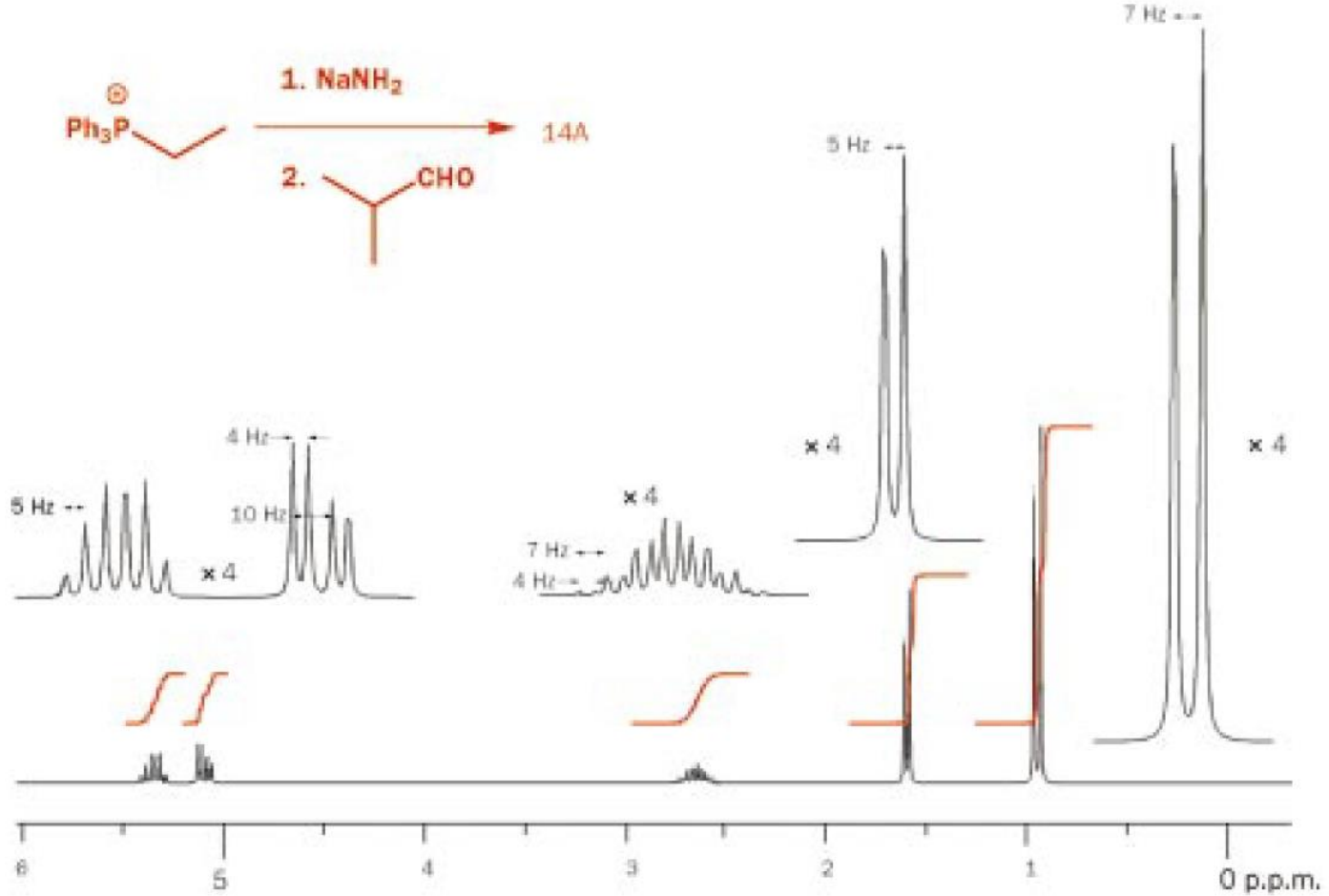
[NO_2 somewhere in the molecule]



10. Interpret this ^{1}H NMR spectrum.



14. The following reaction between a phosphonium salt, base, and an aldehyde gives a hydrocarbon C_6H_{12} with the 200 MHz ^1H NMR spectrum shown. Give a structure for the product and comment on its stereochemistry. You are not expected to discuss the chemistry!



Come convertiresti il D-glucosio in ciascun dei seguenti composti? È necessario più di un passaggio.