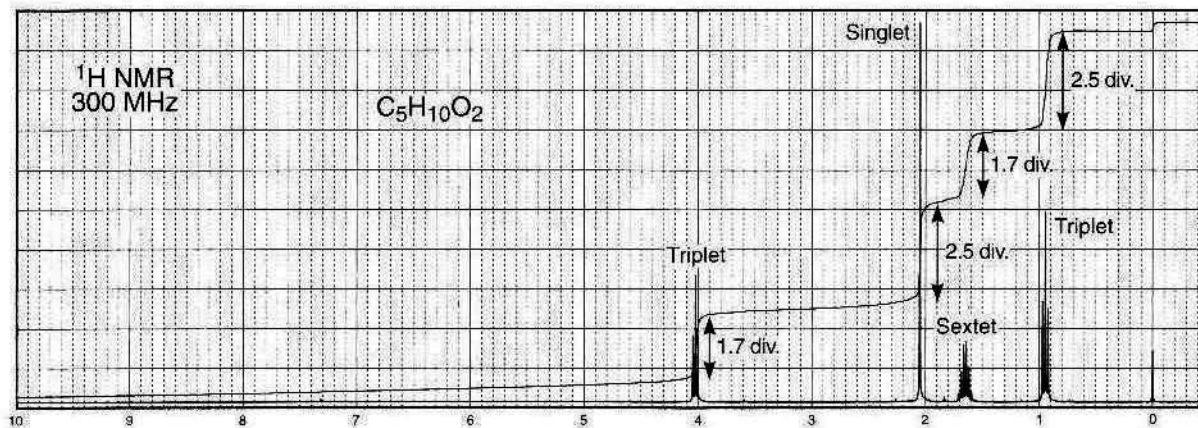


Problema 1

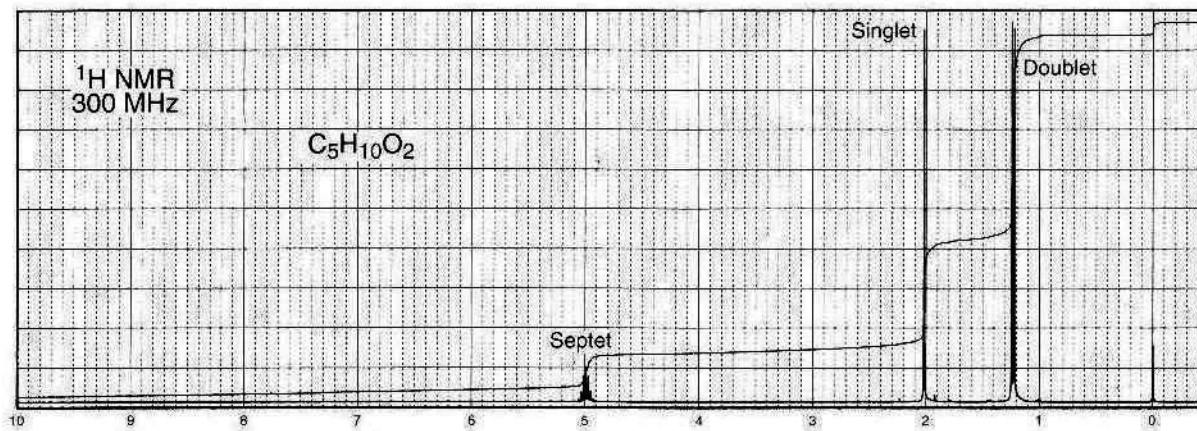
Pavia 17 ($C_5H_{10}O_2$)

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(a)



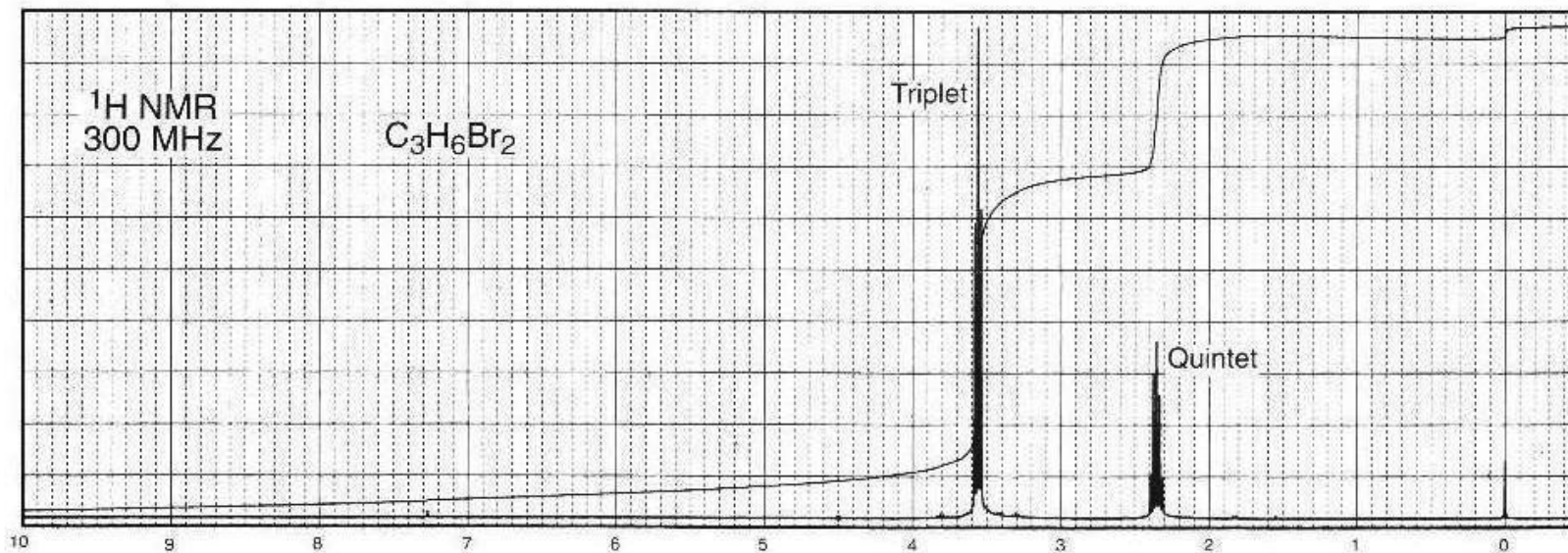
(b)



Lista 02 RMN

Problema 2

18. The compound which gives the following NMR spectrum has the formula $C_3H_6Br_2$. Draw the structure.

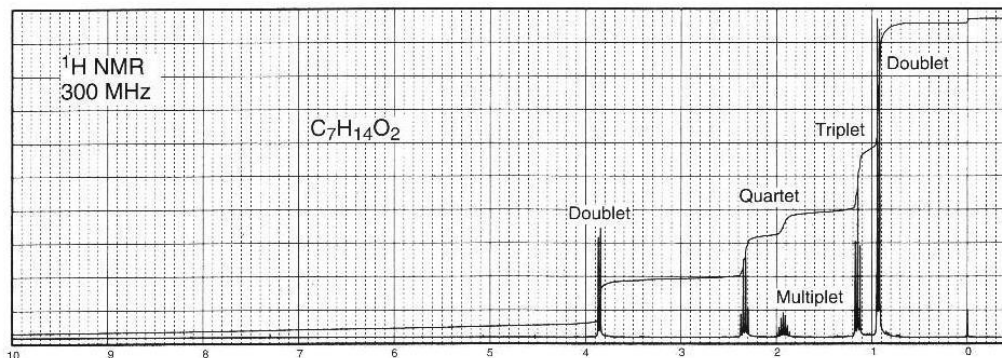


Lista 02 RMN

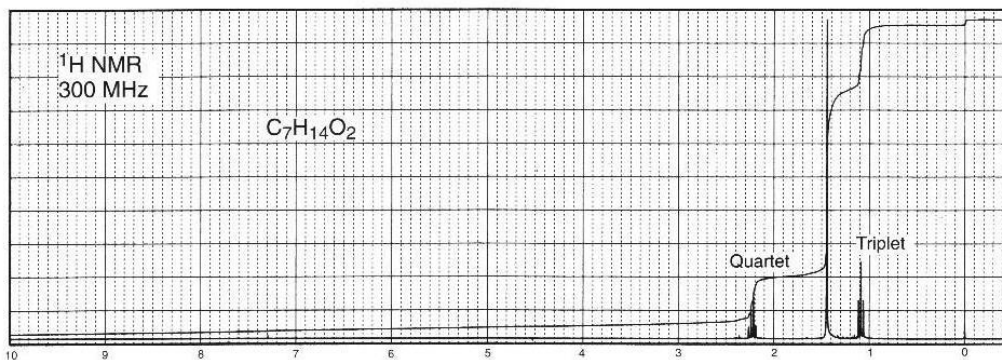
Problema 3

20. Following are the NMR spectra of three isomeric esters with the formula $C_7H_{14}O_2$, all derived from propanoic acid. Provide a structure for each.

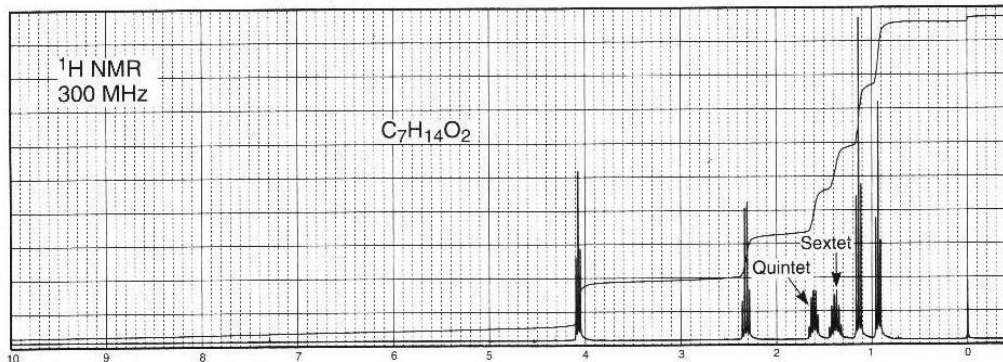
(a)



(b)



(c)

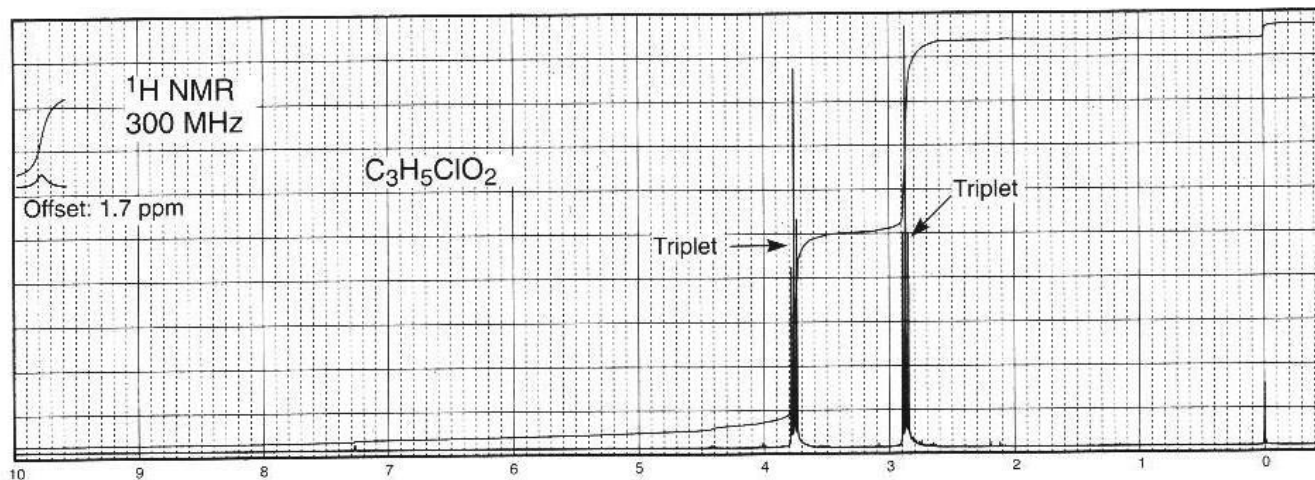


Lista 02 RMN

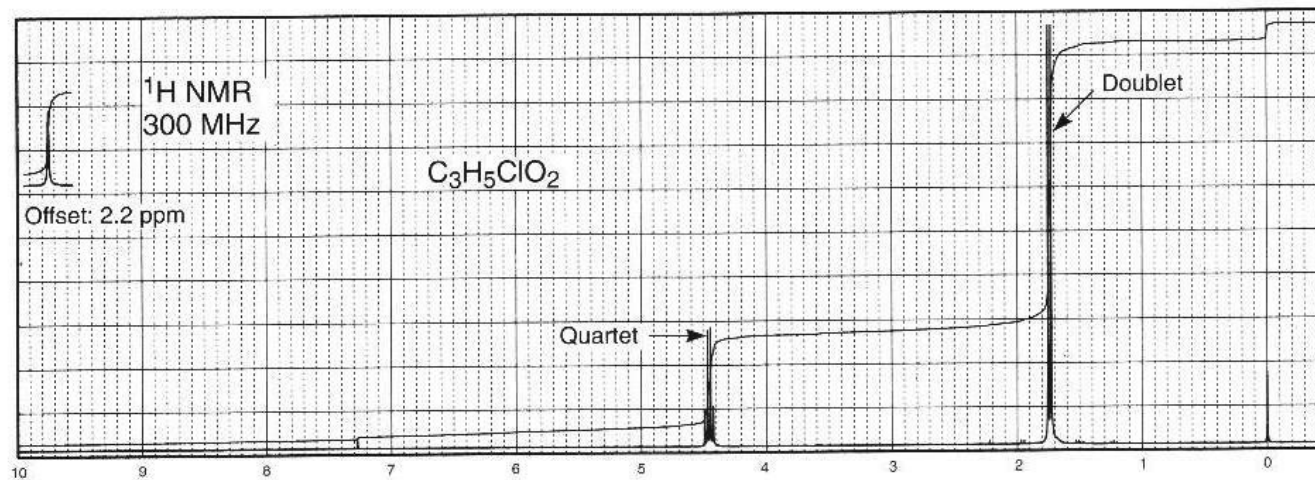
Problema 4

21. The two isomeric carboxylic acids which give the following NMR spectra both have the formula $C_3H_5ClO_2$. Draw their structures.

(a)

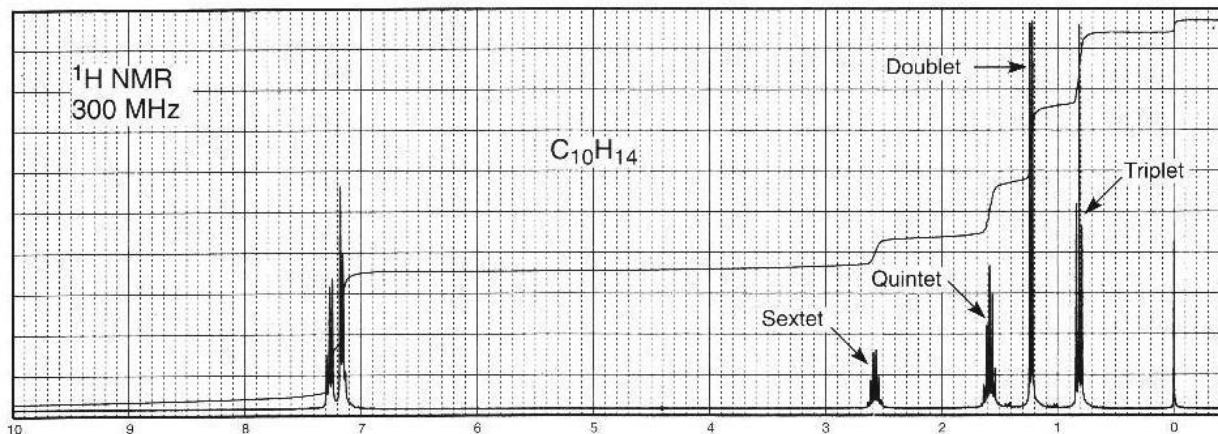


(b)

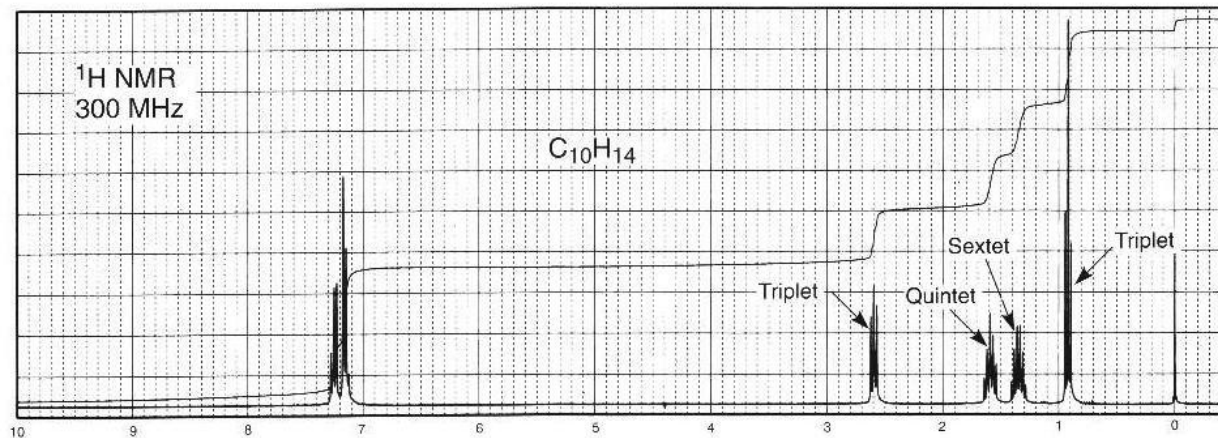


22. The following NMR spectra are of monosubstituted aromatic hydrocarbon compounds with the formula $C_{10}H_{14}$. Make no attempt to interpret the aromatic proton area between 7.1 and 7.3 ppm except to determine the relative number of hydrogen atoms. Draw structures for these compounds.

(a)

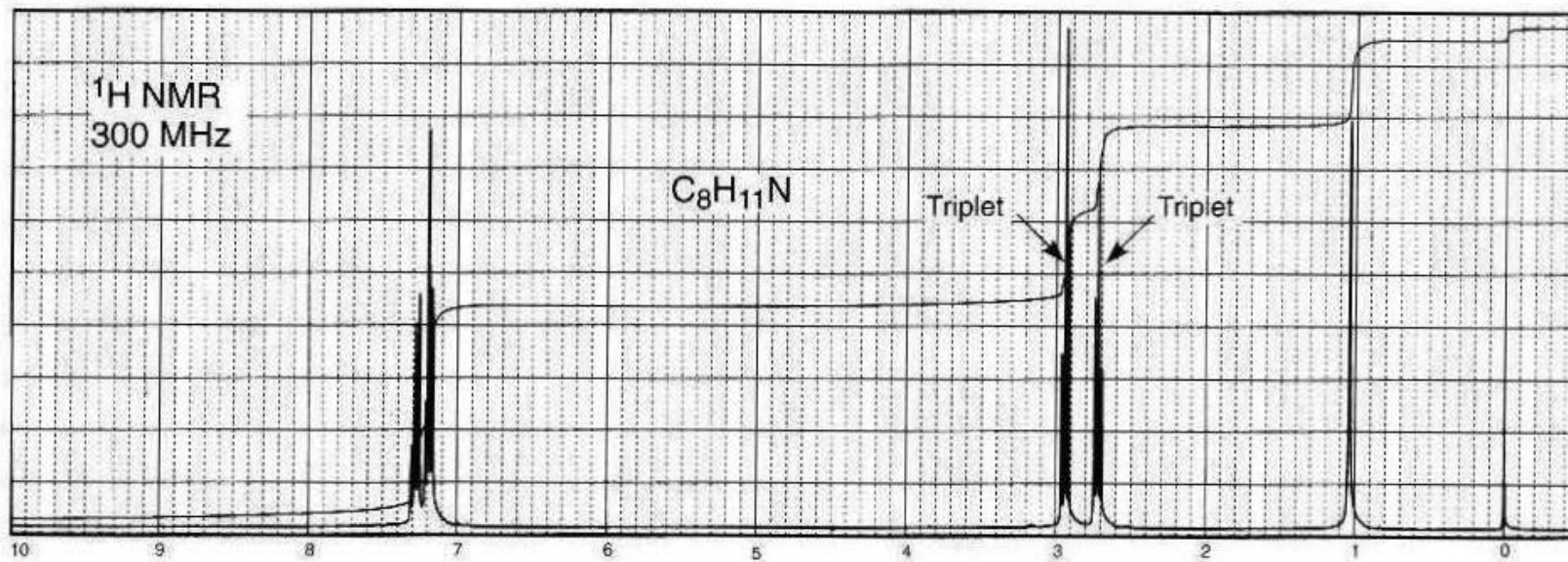


(b)



Problema 6

23. The following compound, with formula $C_8H_{11}N$, shows a doublet at about 3350 cm^{-1} and bands in the range from 1600 to 1450 cm^{-1} in the infrared spectrum. Draw its structure.

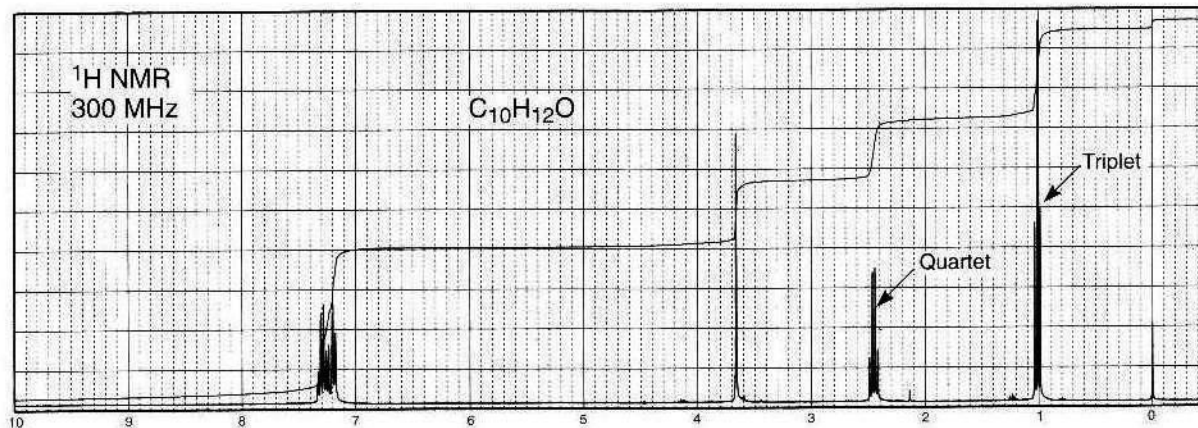


Lista 02 RMN

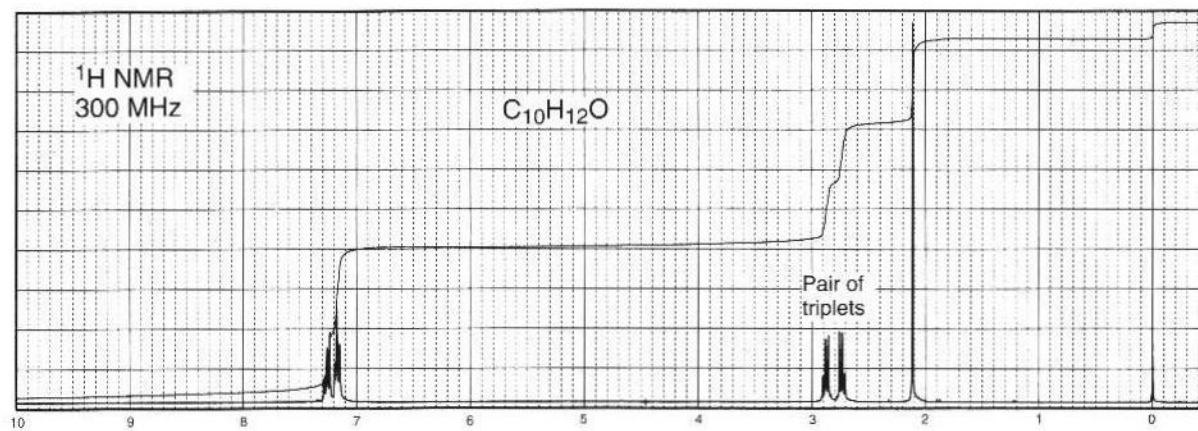
Problema 7

24. The following compounds are isomers with formula $C_{10}H_{12}O$. Their infrared spectra show strong bands near 1715 cm^{-1} and in the range from 1600 to 1450 cm^{-1} . Draw their structures.

(a)



(b)

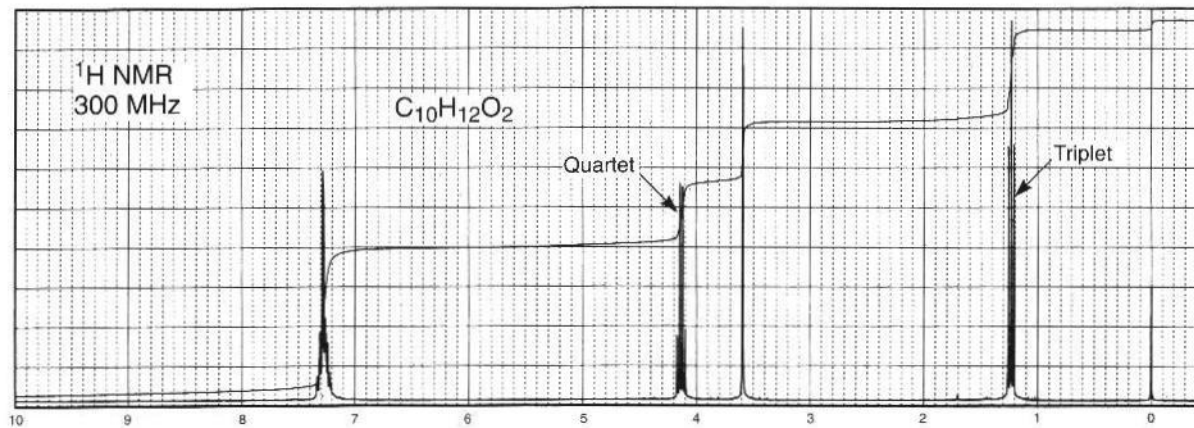


Lista 02 RMN

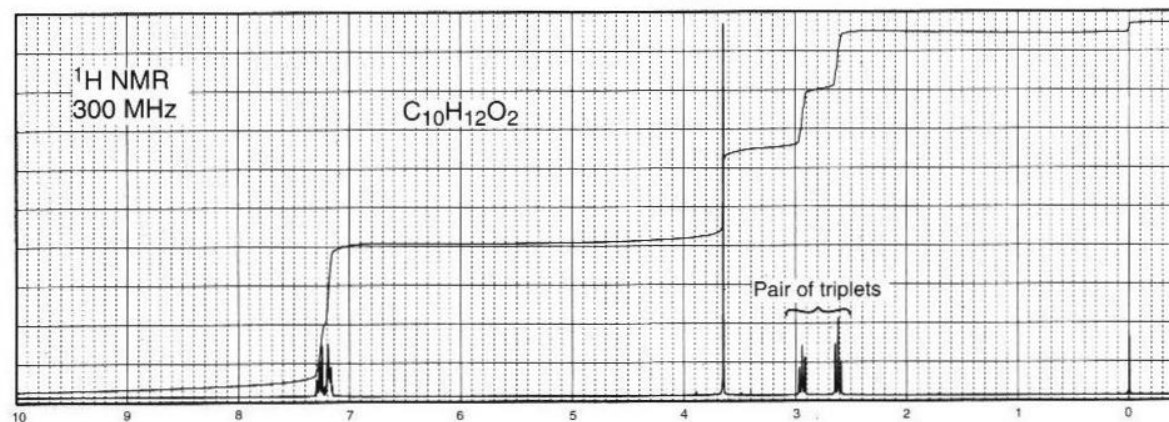
Problema 8

25. The following four NMR spectra are of isomeric monosubstituted aromatic esters with formula $C_{10}H_{12}O_2$. Make no attempt to interpret the aromatic proton areas between 7.1 and 7.4 ppm. Draw the structures of the compounds.

(a)

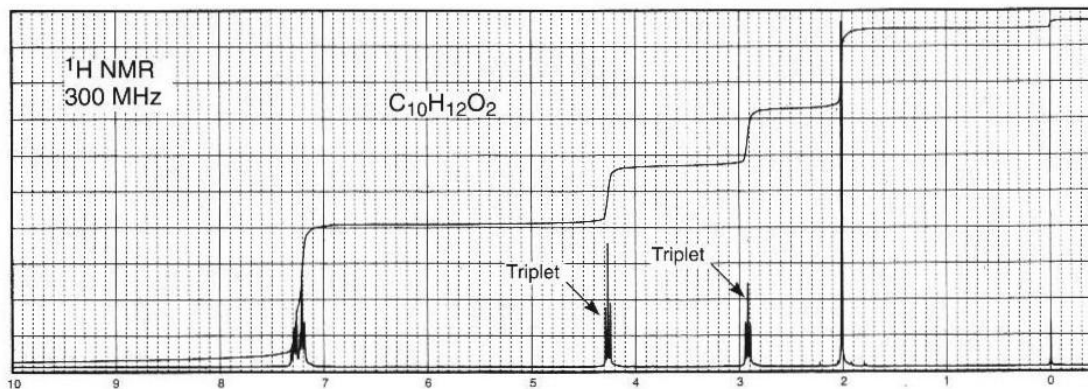


(b)

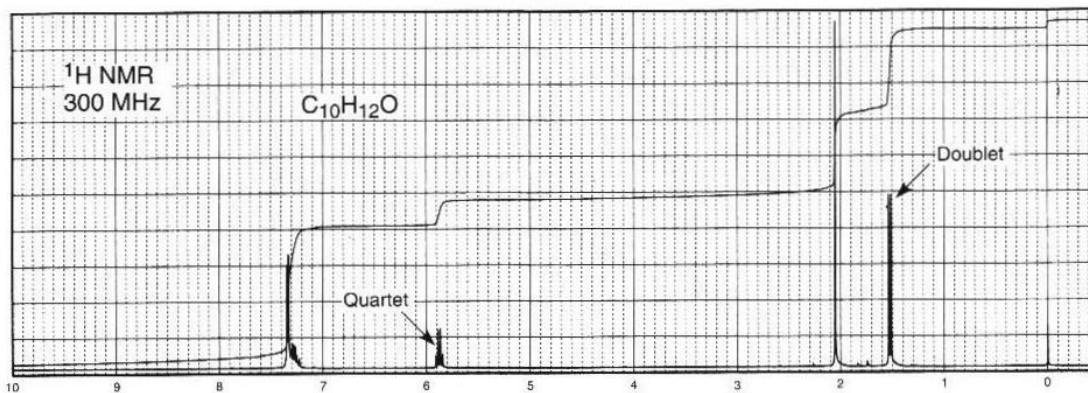


Problema 8 (cont)

(c)



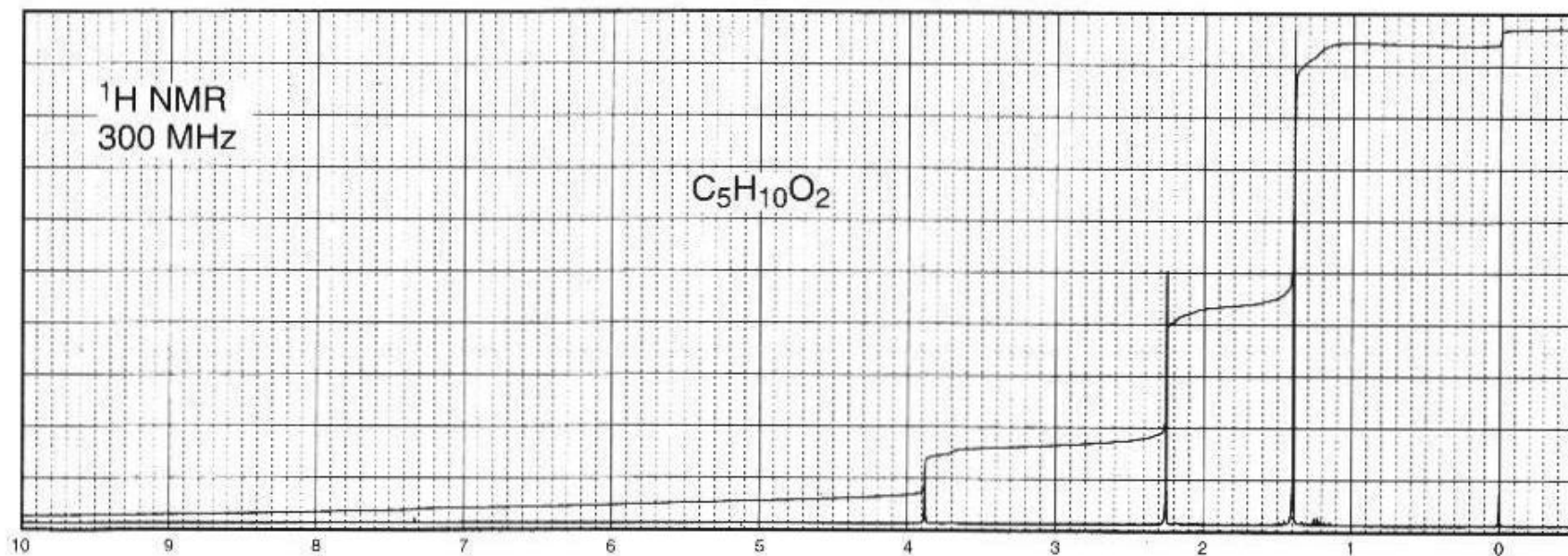
(d)



Lista 02 RMN

Problema 9

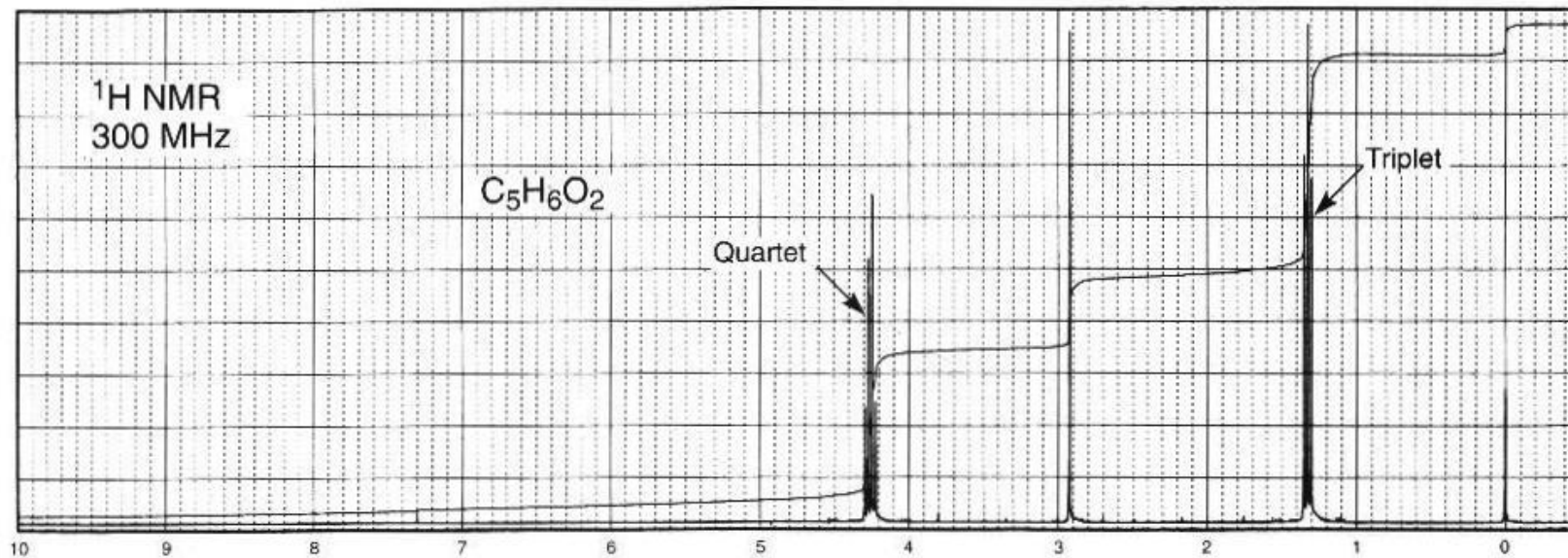
26. Along with the following NMR spectrum, this compound, with formula $C_5H_{10}O_2$, shows bands at 3450 cm^{-1} (broad) and 1713 cm^{-1} (strong) in the infrared spectrum. Draw its structure.



Lista 02 RMN

Problema 10

27. The following ester, with formula $C_5H_6O_2$, shows medium bands in the infrared spectrum at 3270 and 2118 cm^{-1} . Draw the structure of the compound.



Lista 02 RMN

Problema 11

28. The following compound, with formula $C_7H_{12}O_4$, shows strong absorption at 1734 cm^{-1} and has several strong bands centering at about 1200 cm^{-1} in the infrared spectrum. Draw its structure.

