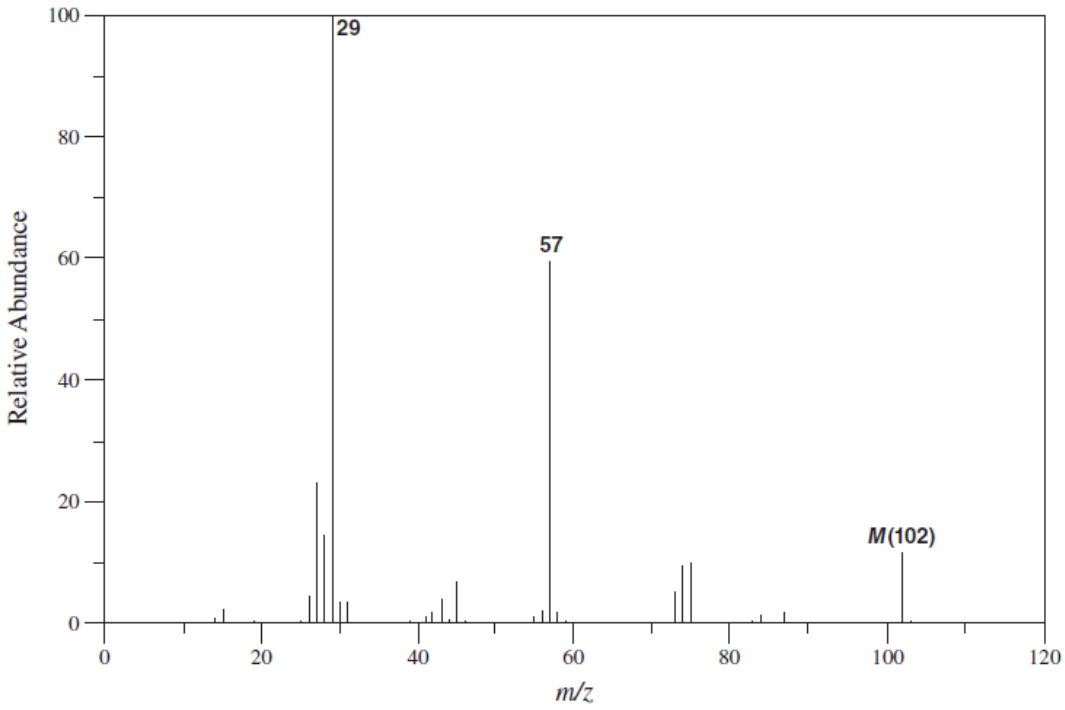
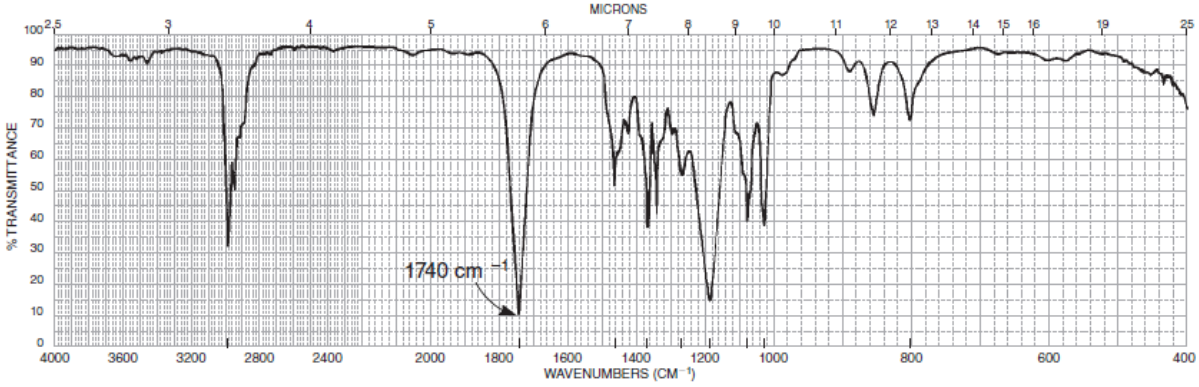
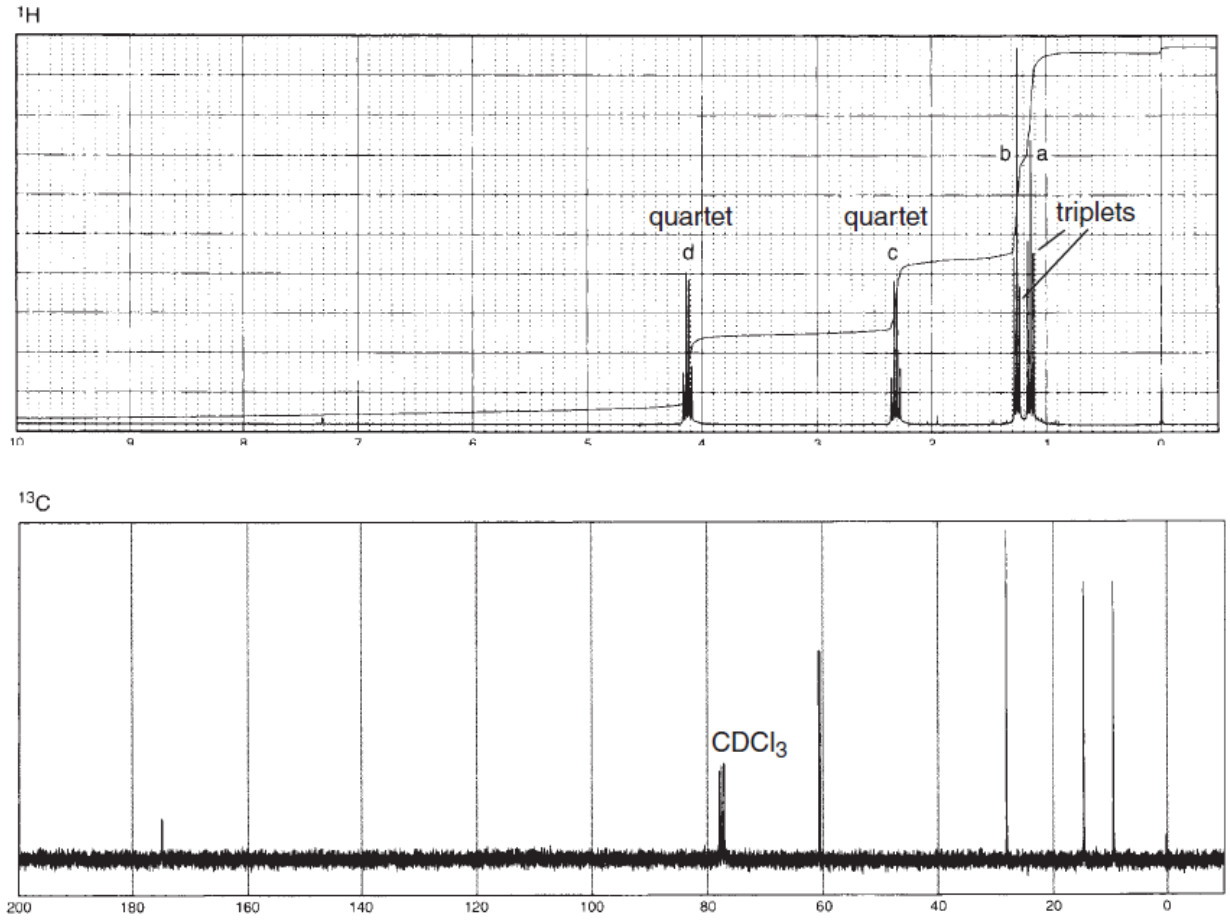
Problems 16

Problem

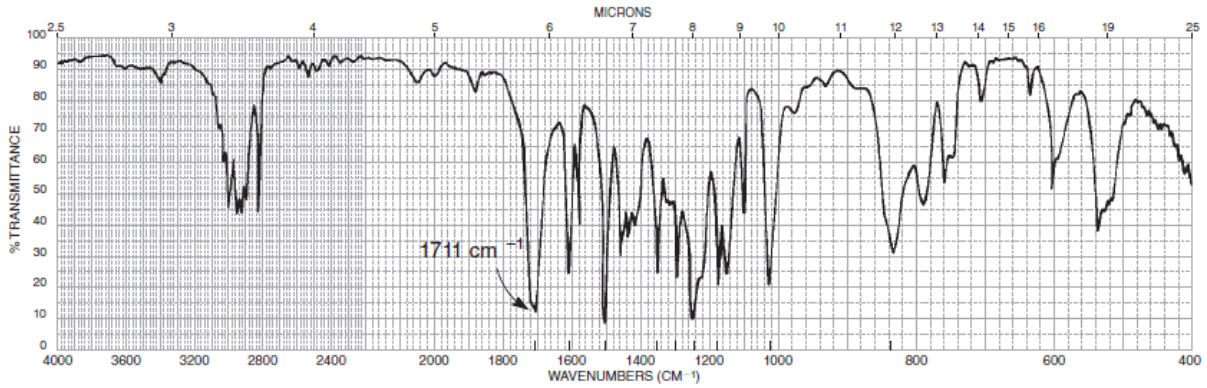
The UV spectrum of this compound shows only end absorption. Determine the structure of the compound.

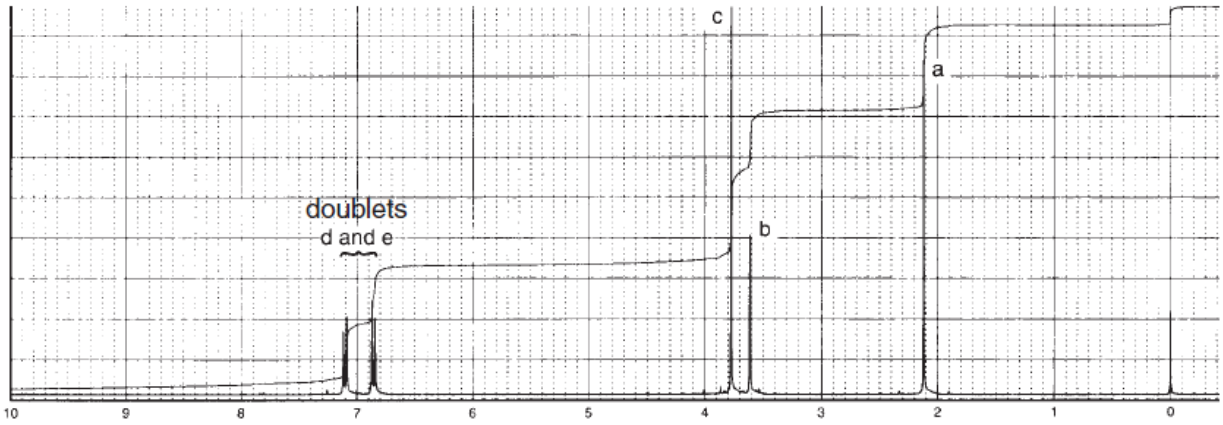






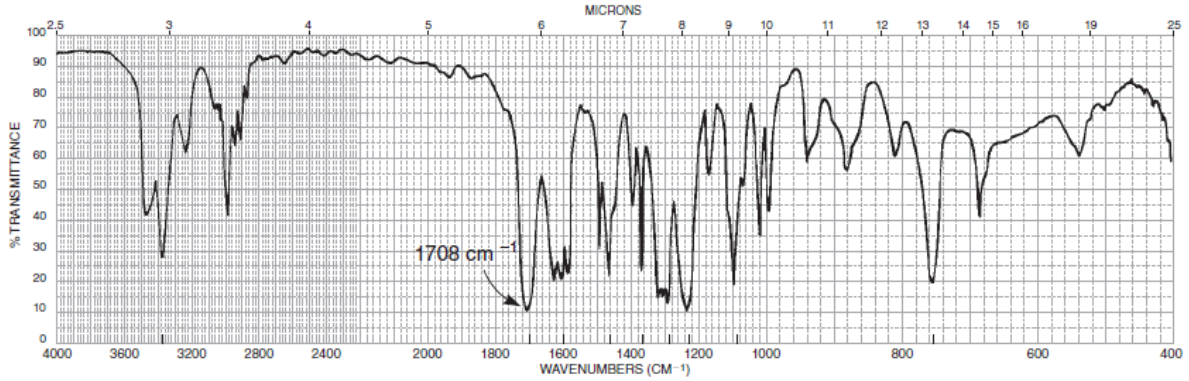
Determine the structure of a compound with the formula $C_{10}H_{12}O_2$. In addition to the infrared spectrum and ^{1}H NMR, the problem includes tabulated data for the normal ^{13}C NMR, DEPT-135, and DEPT-90 spectral data.



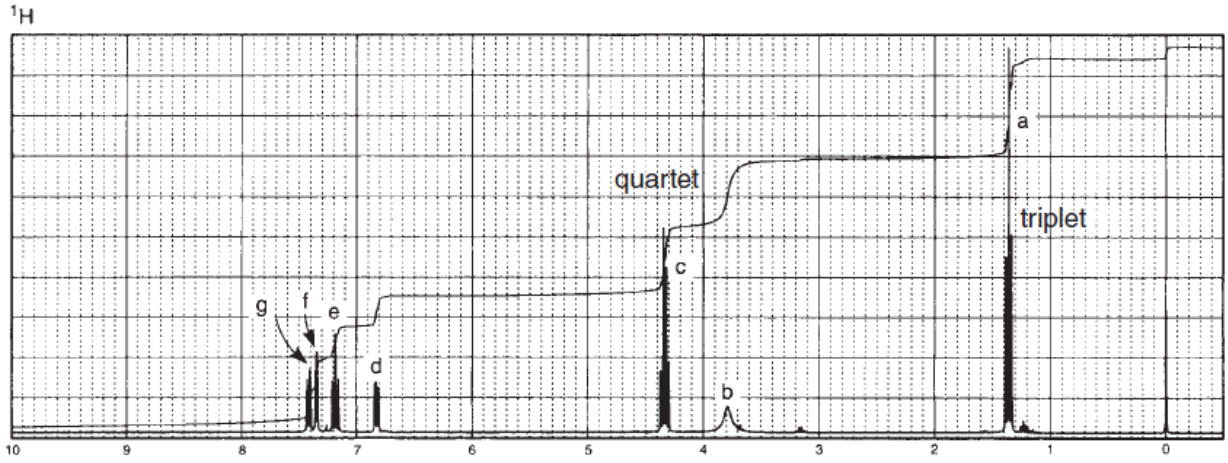


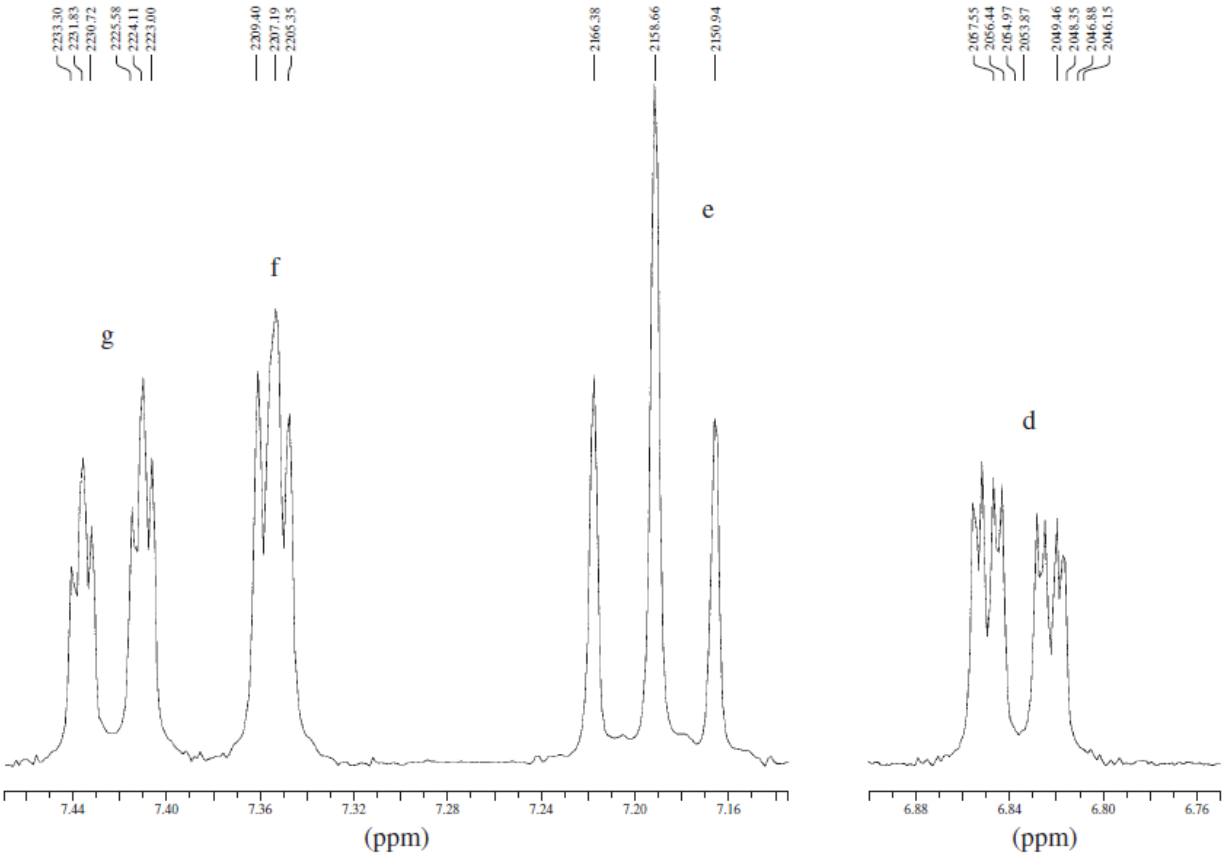
Normal Carbon	DEPT-135	DEPT-90
29 ppm	Positive	No peak
50	Negative	No peak
55	Positive	No peak
114	Positive	Positive
126	No peak	No peak
130	Positive	Positive
159	No peak	No peak
207	No peak	No peak

This compound has the molecular formula $C_9H_{11}NO_2$. Included in this problem are the infrared spectrum, ^1H NMR with expansions, and ^{13}C NMR spectra data.



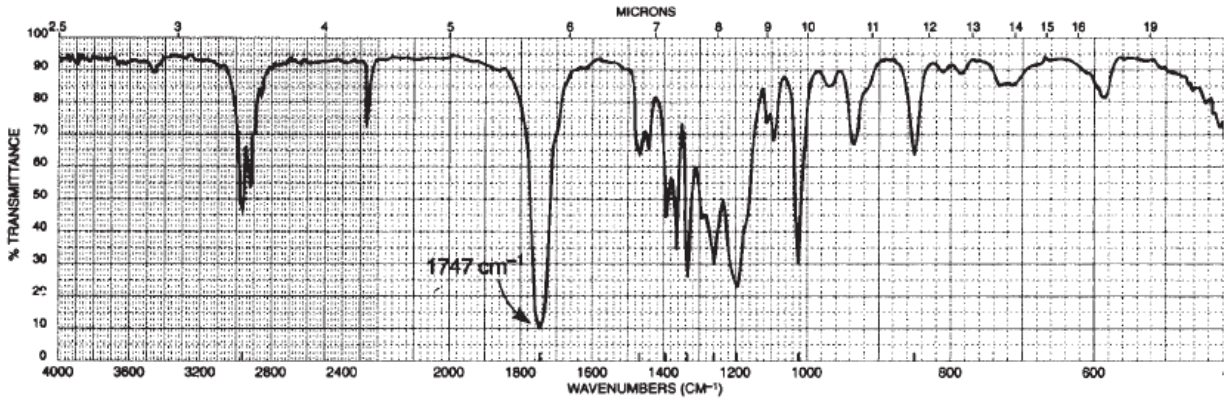
Normal Carbon	DEPT-135	DEPT-90
14 ppm	Positive	No peak
61	Negative	No peak
116	Positive	Positive
119	Positive	Positive
120	Positive	Positive
129	Positive	Positive
131	No peak	No peak
147	No peak	No peak
167	No peak	No peak

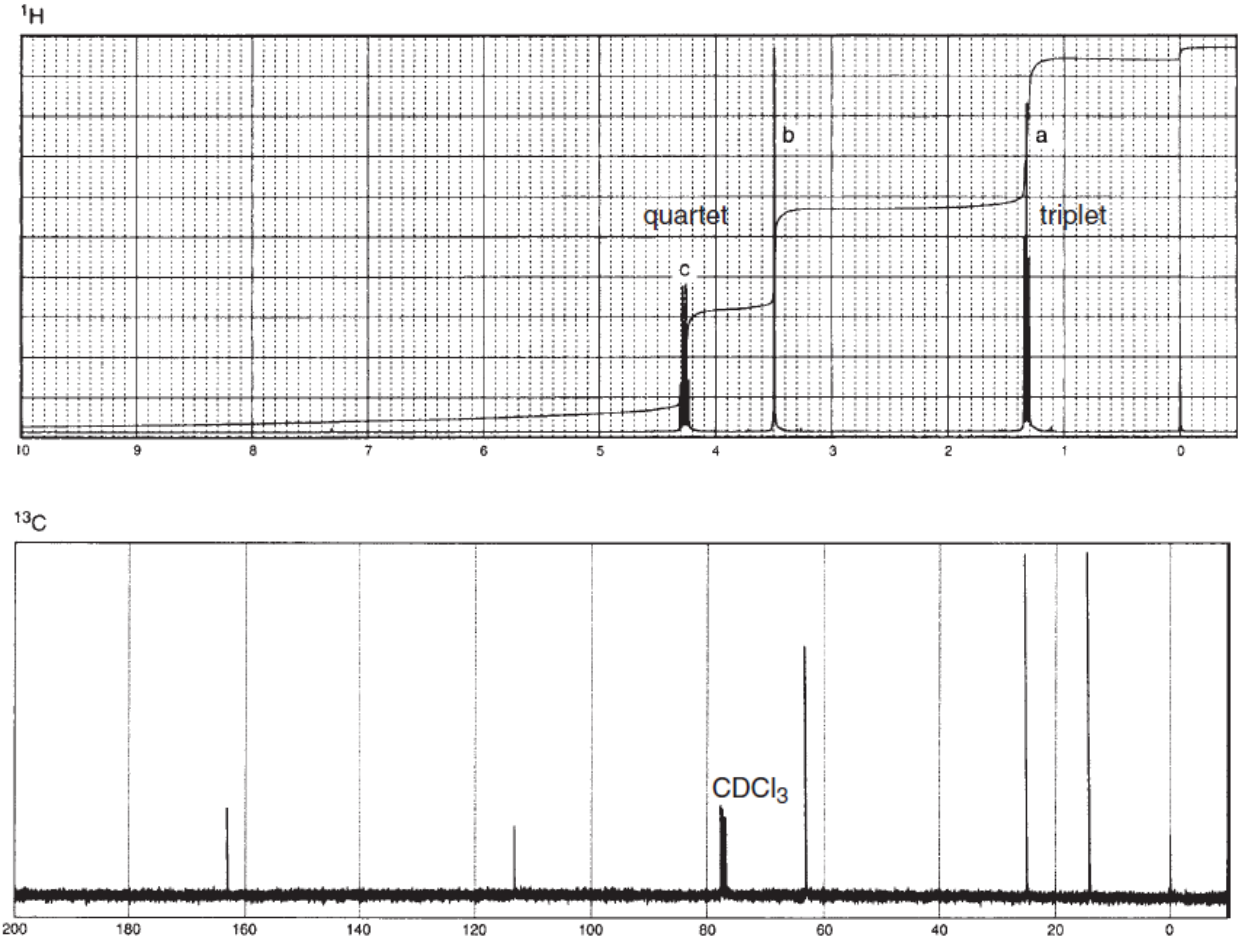




Problem

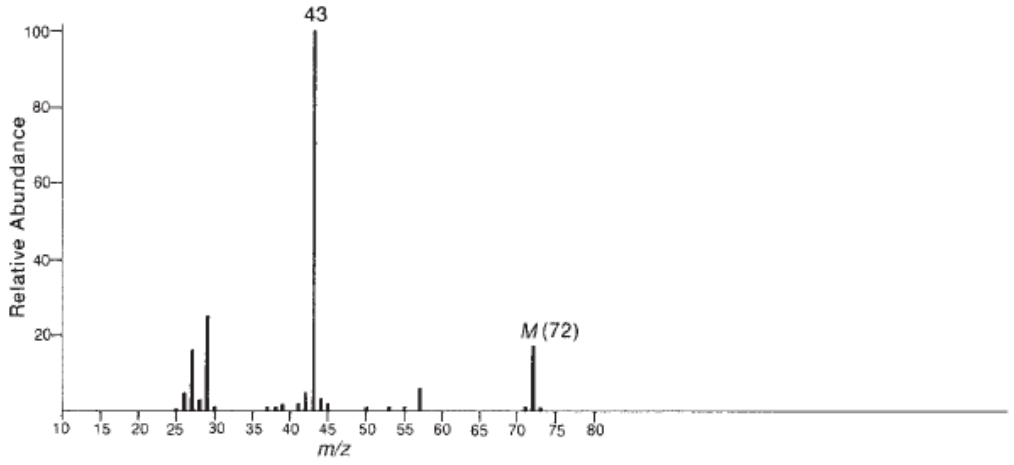
This compound has the molecular formula $C_5H_7NO_2$. Following are the infrared, ^1H NMR, and ^{13}C NMR spectra.



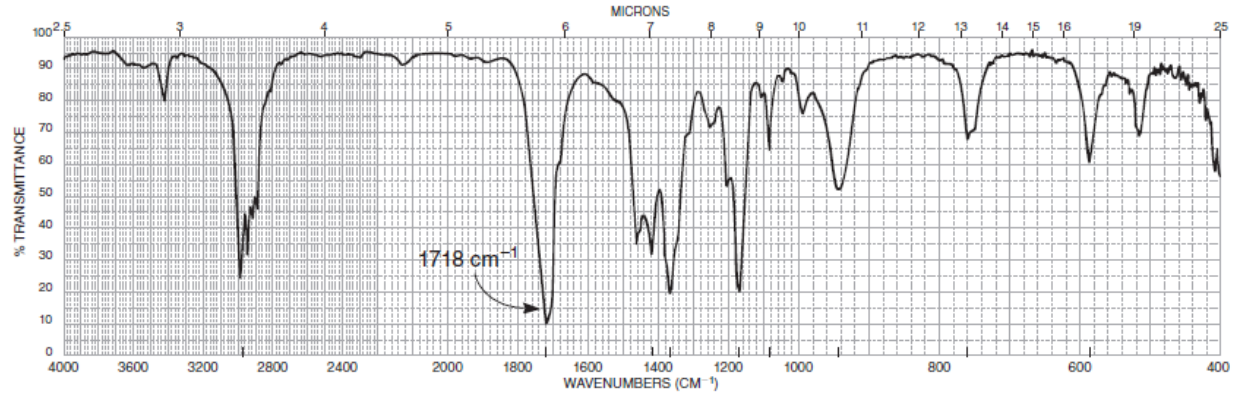


*3. The UV spectrum of this compound is determined in 95% ethanol: λ_{max} 290 nm (log ε=1.3).

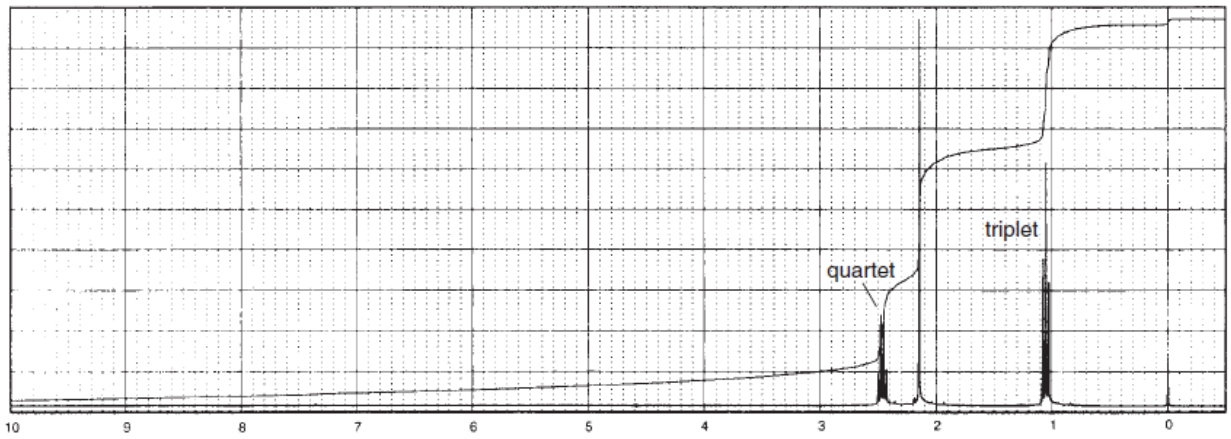
(a)



(b)

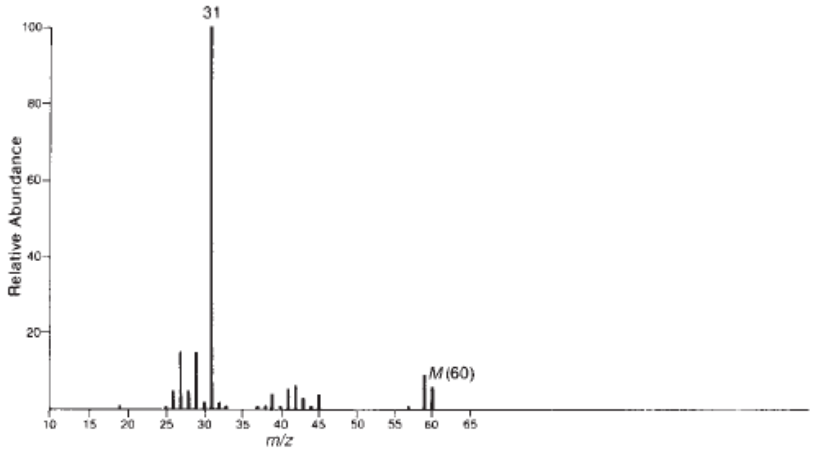


(c)

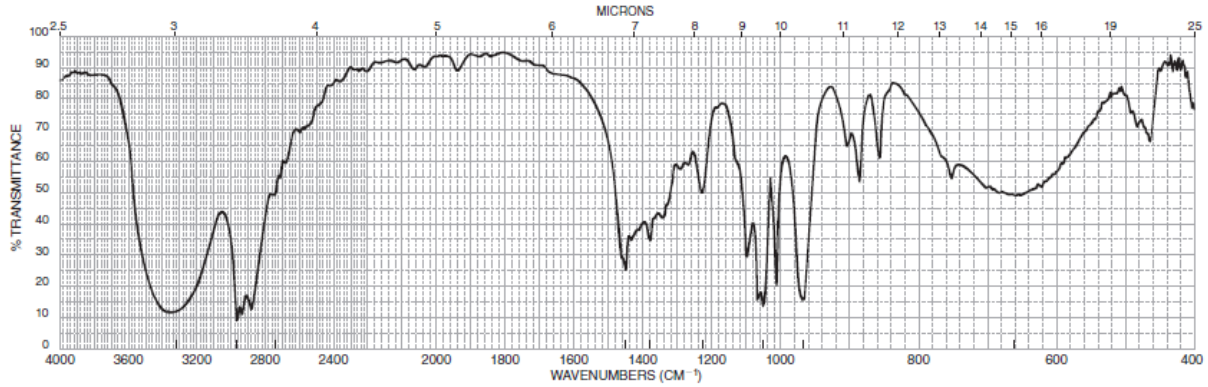


***4.** The UV spectrum of this compound shows no maximum above 205 nm. When a drop of aqueous acid is added to the sample, the pattern at 3.6 ppm in the ^{1}H NMR spectrum simplifies to a triplet, and the pattern at 3.2 ppm simplifies to a singlet.

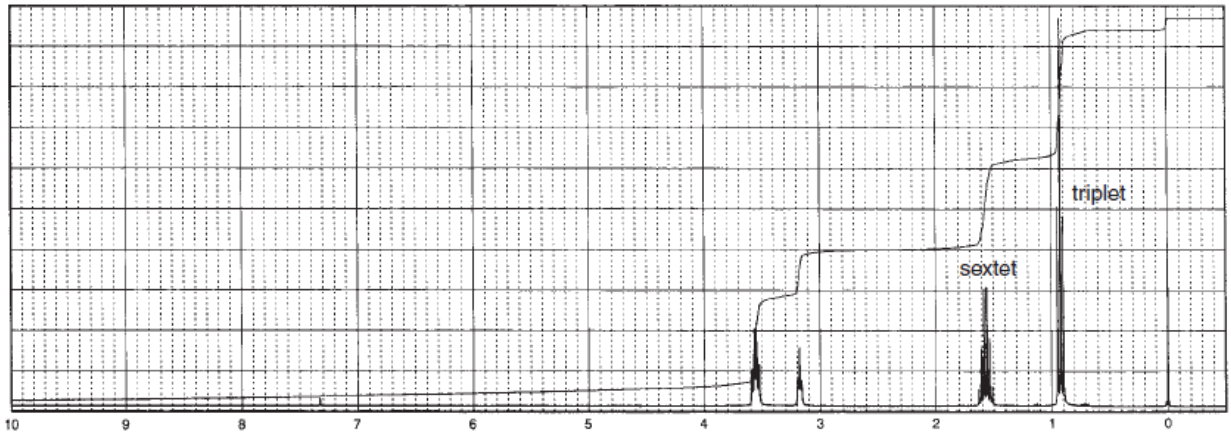
(a)



(b)

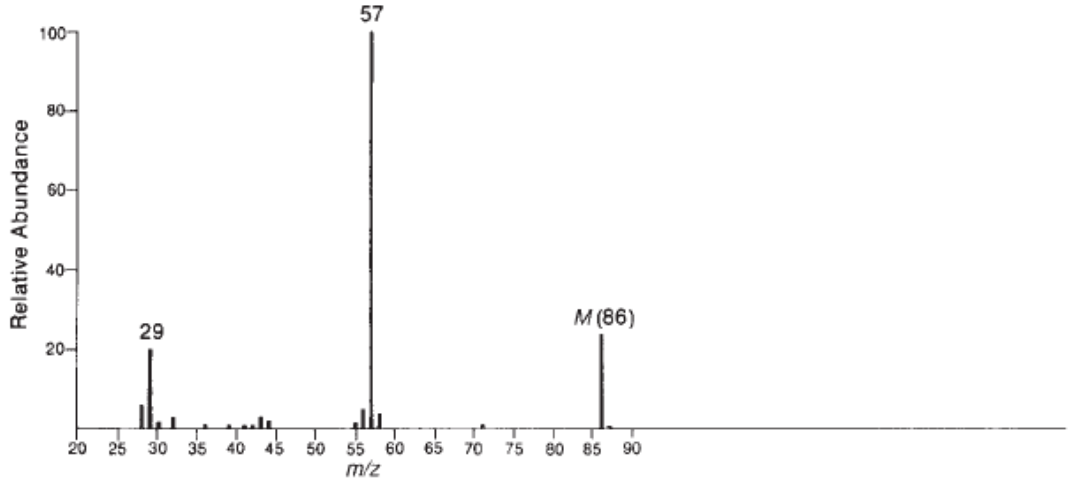


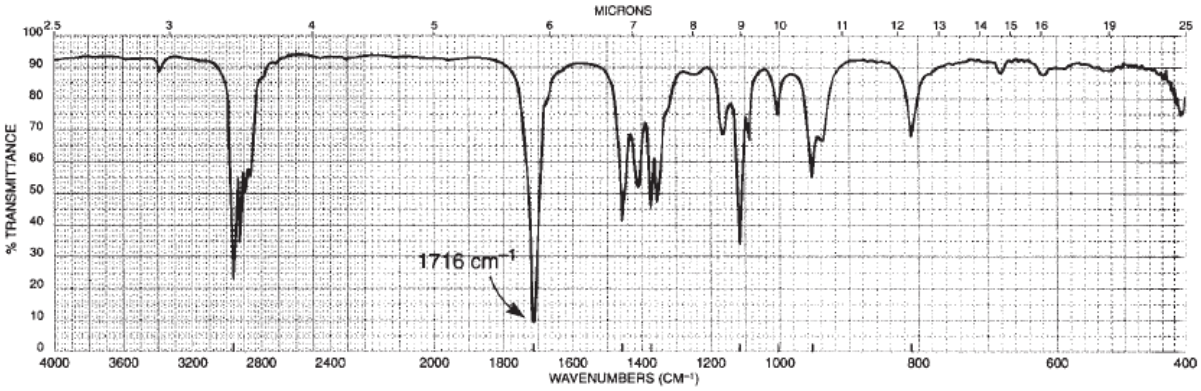
(c)



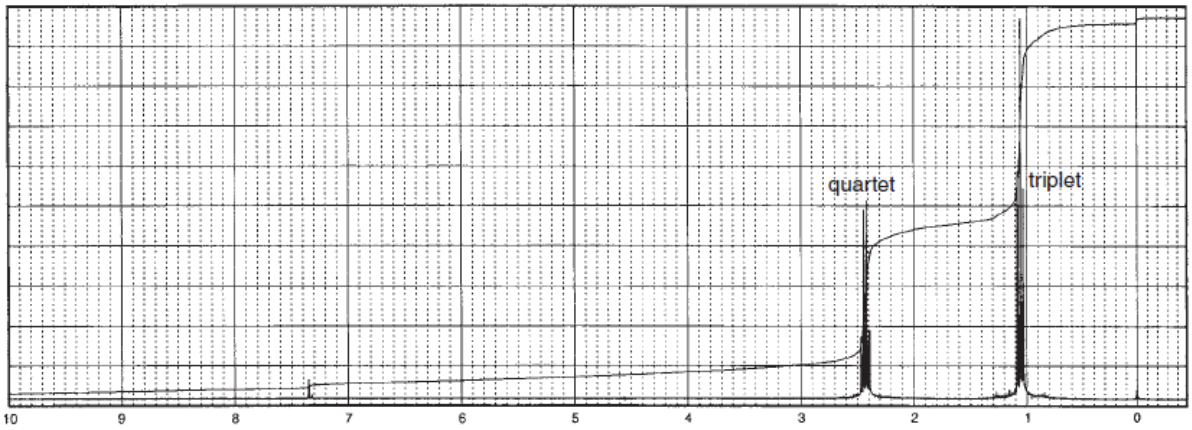
***5.** UV spectrum of this compound is determined in 95% ethanol: λ_{max} 280 nm (log ε=1.3).

(a)



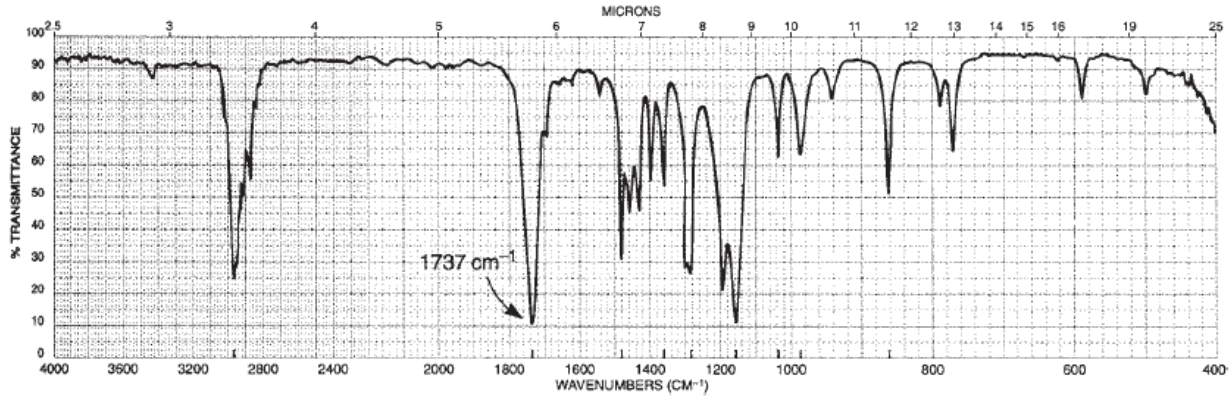


(c)

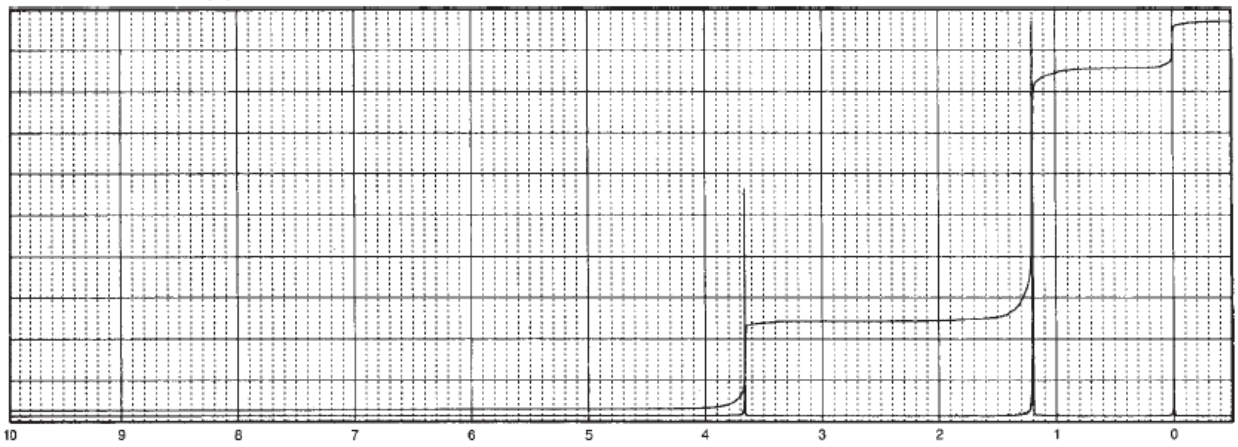


*6. The formula for this compound is $C_6H_{12}O_2$.

(a)



(b)



(c)