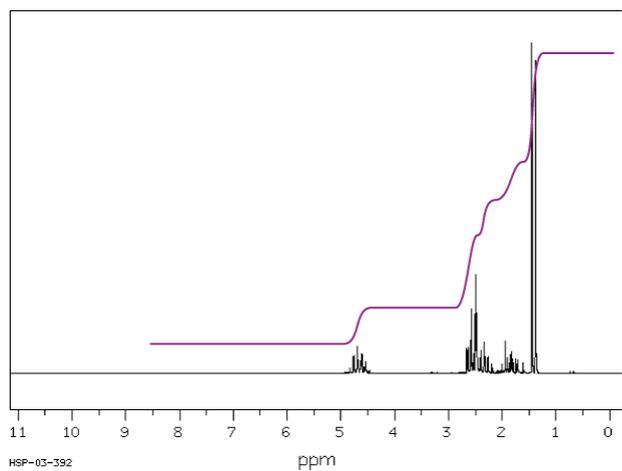


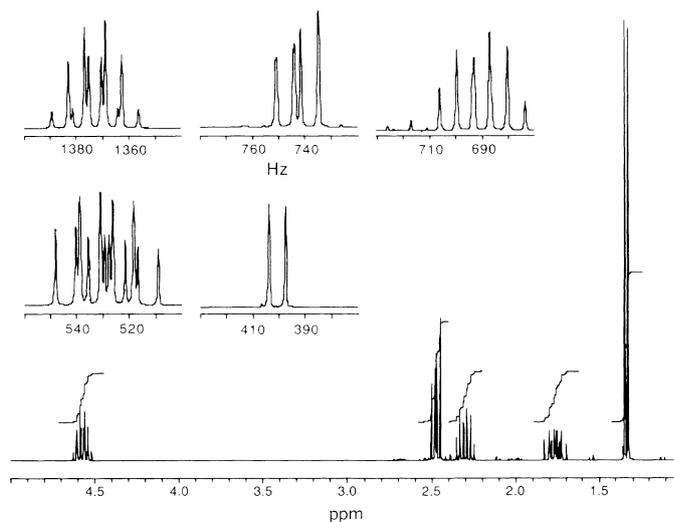
## 有機機器分析 演習問題2

(21) 次のスペクトルを与える化合物の構造式を示せ。

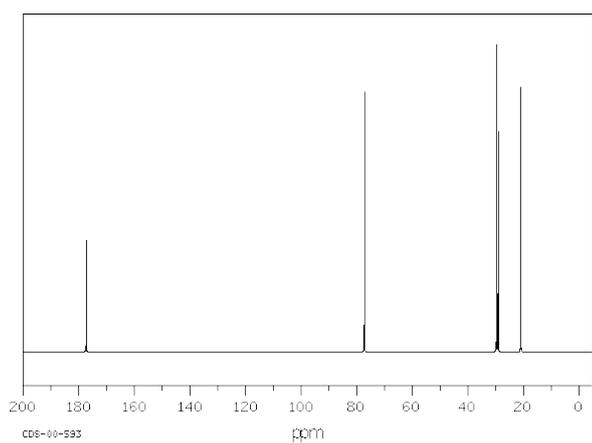
$^1\text{H}$  NMR (90 MHz,  $\text{CDCl}_3$ )



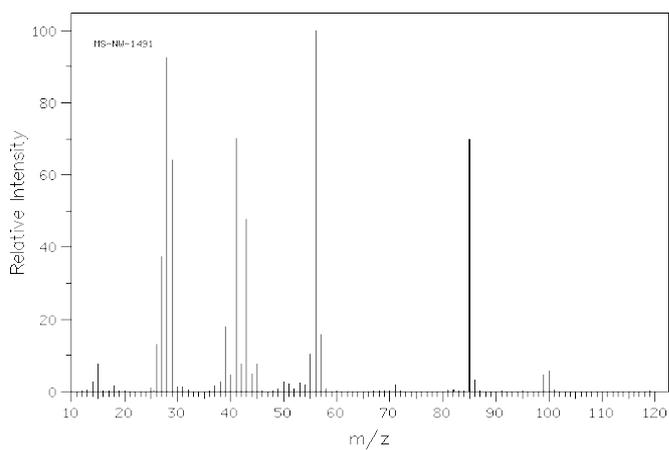
(300 MHz,  $\text{CDCl}_3$ )



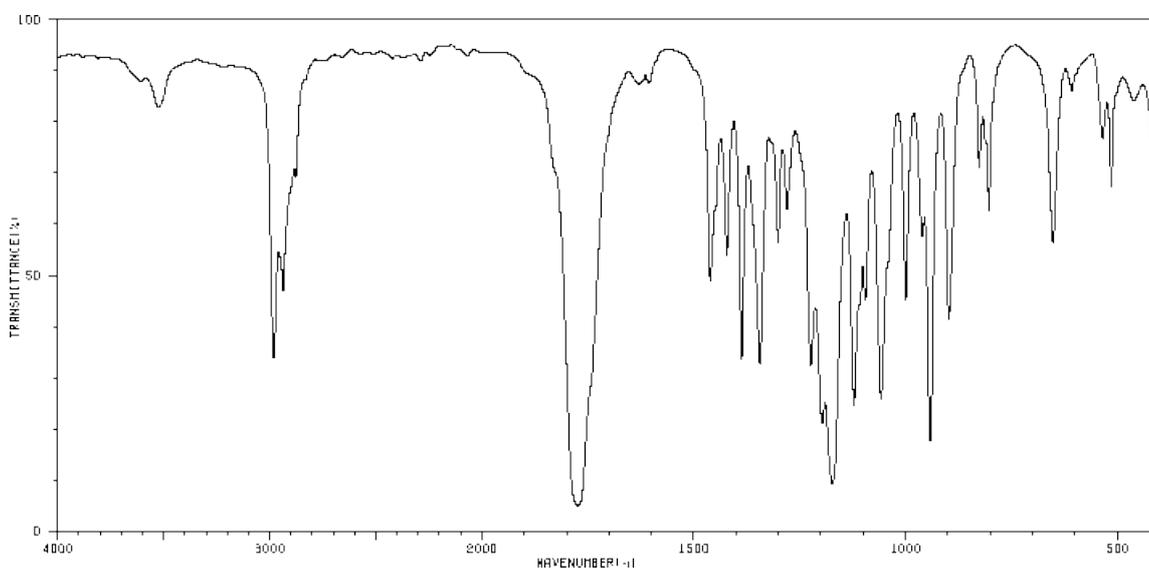
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (25 MHz, 25 vol % in  $\text{CDCl}_3$ )



MS (EI)

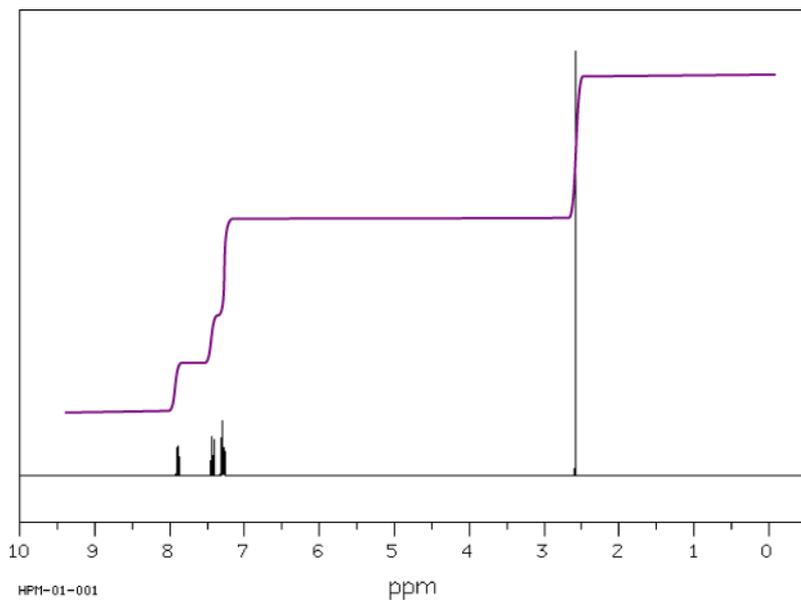


IR (liquid film)

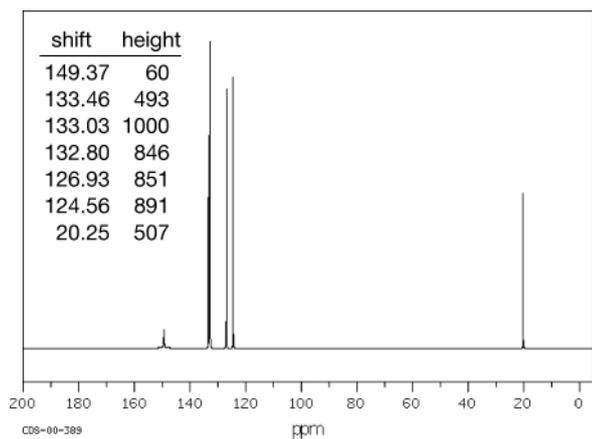


(22) 次のスペクトルを与える化合物の構造式を示せ。

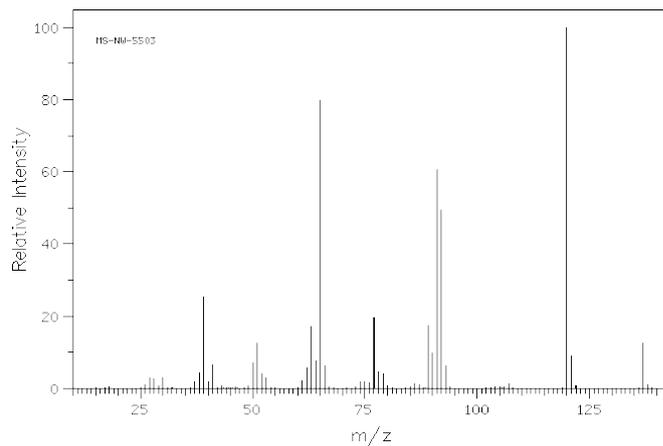
$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )



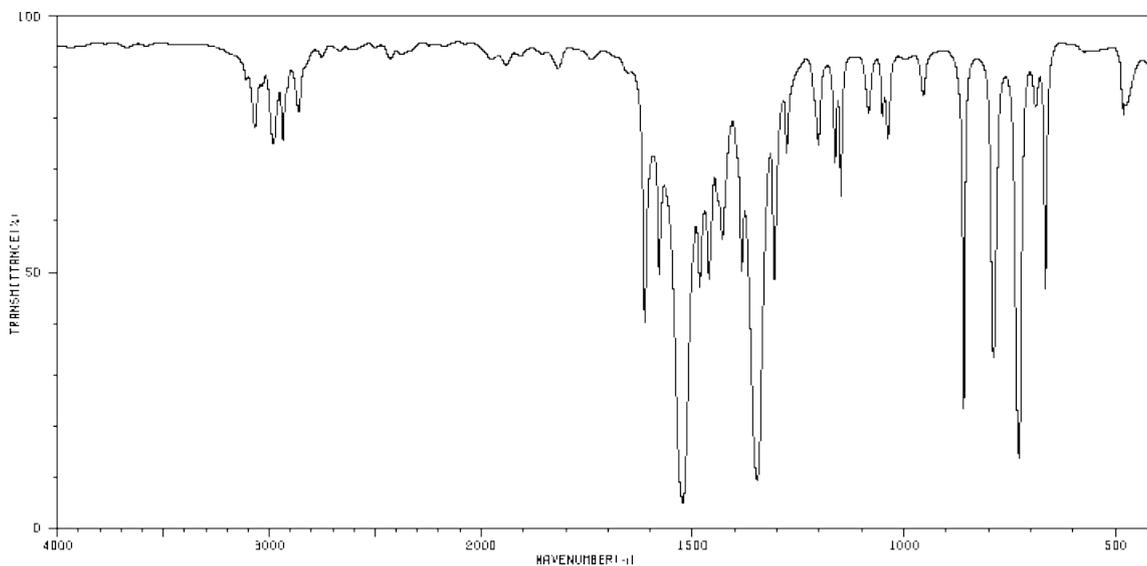
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (25 MHz, 25 vol % in  $\text{CDCl}_3$ )



MS (EI)

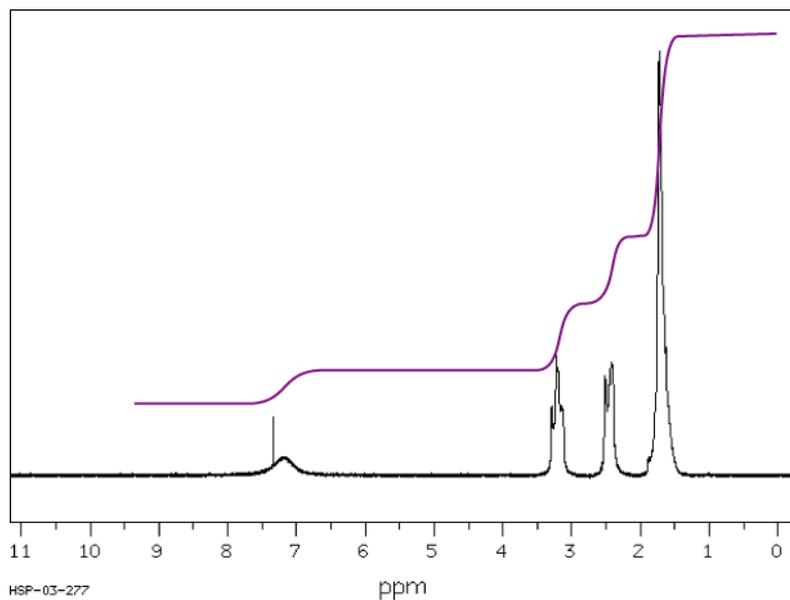


IR (liquid film)

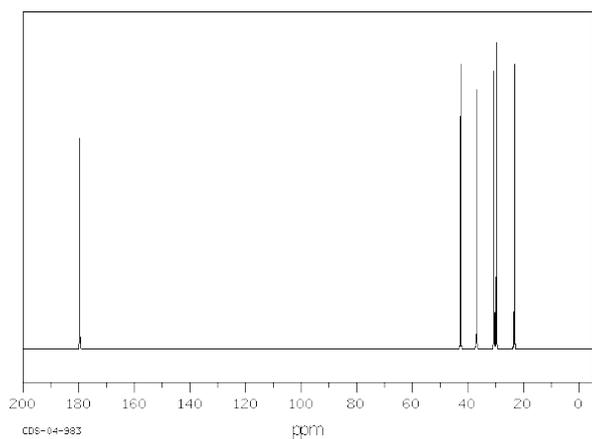


(23) 次のスペクトルを与える化合物の構造式を示せ。

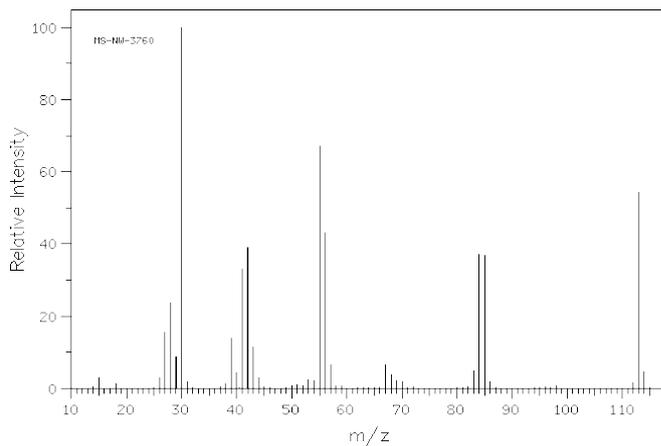
$^1\text{H}$  NMR (90 MHz,  $\text{CDCl}_3$ )



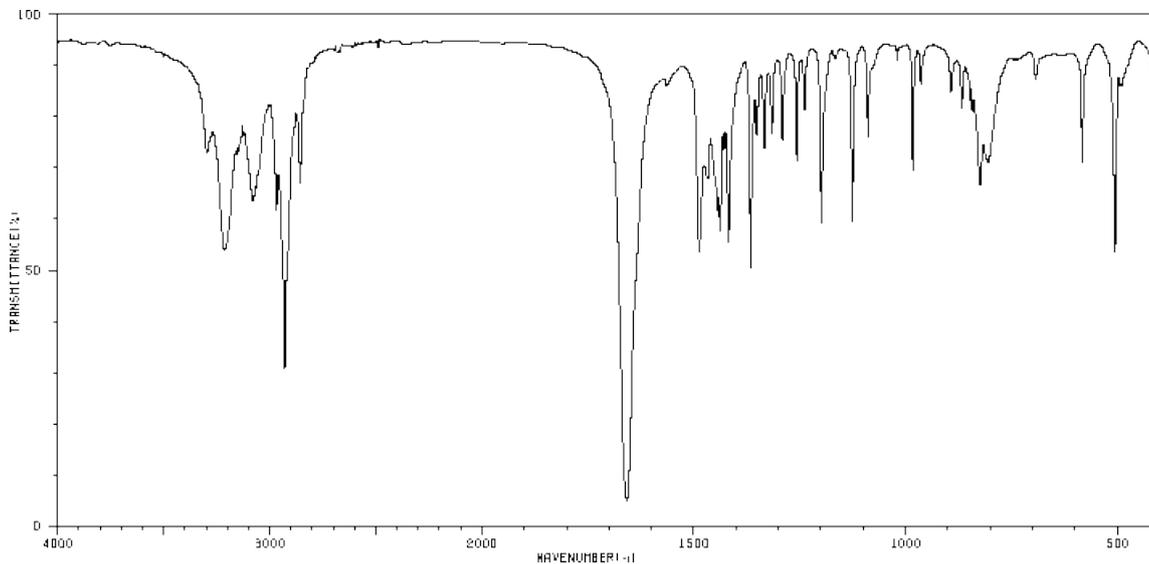
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (15 MHz, 25 vol % in  $\text{CDCl}_3$ )



MS (EI)

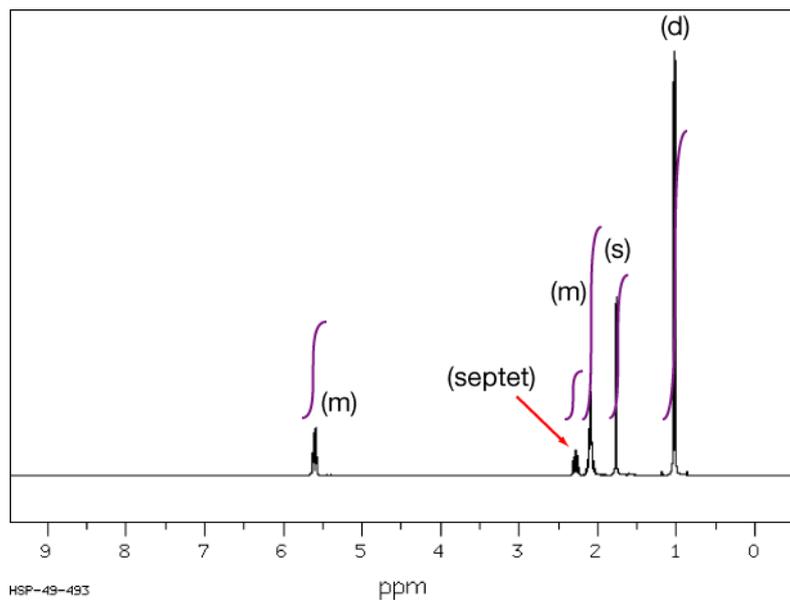


IR (KBr)

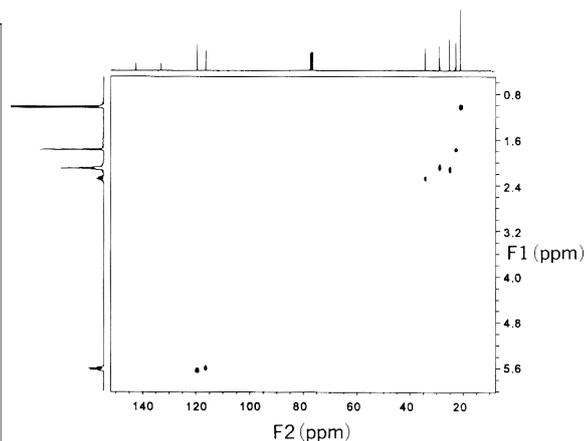


(24) 次のスペクトルを与える化合物の構造式を示せ。

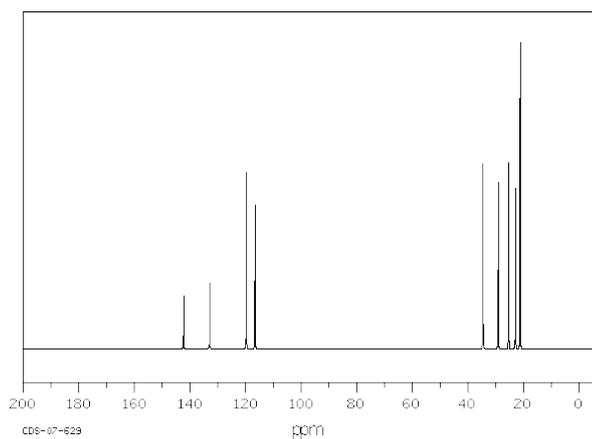
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



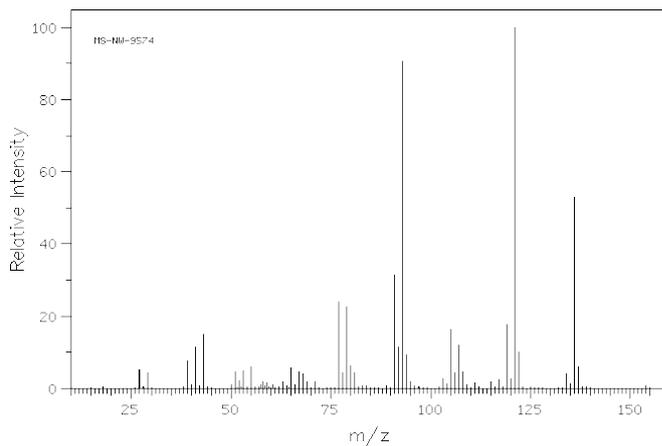
$^{13}\text{C}-^1\text{H}$  COSY



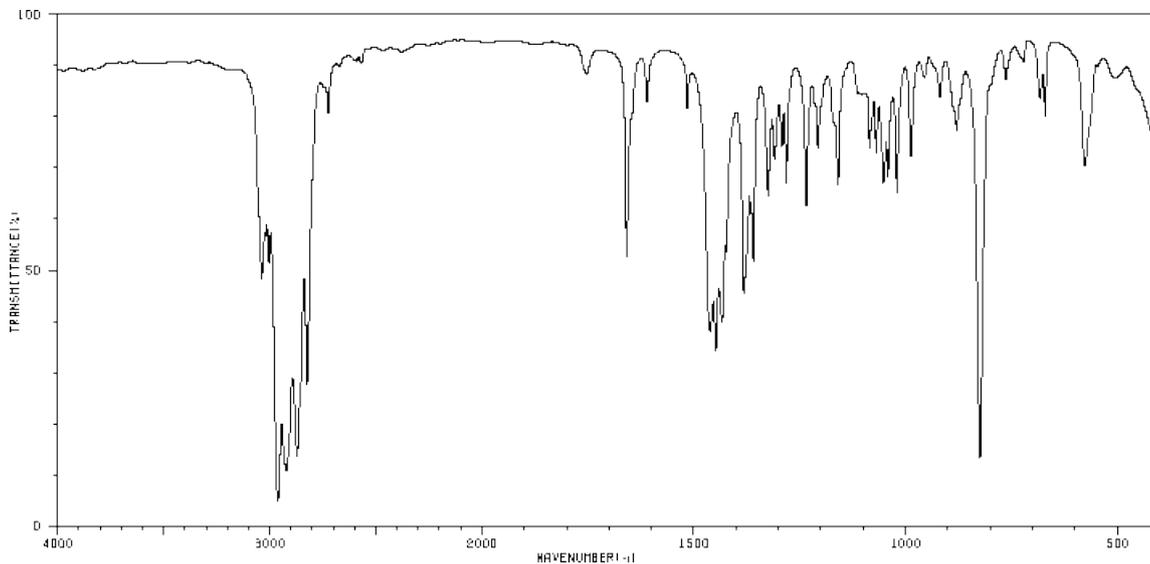
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (15 MHz,  $\text{CDCl}_3$ )



MS (EI)

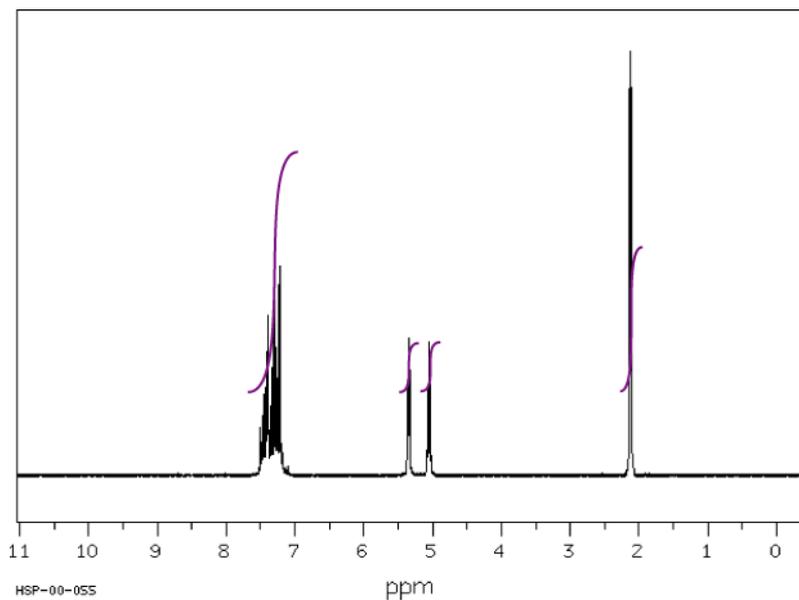


IR (liquid film)

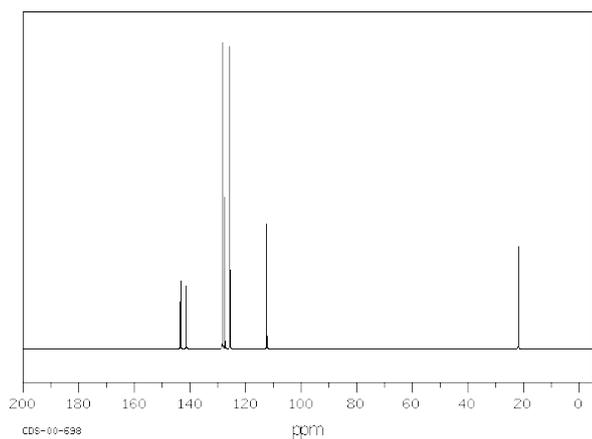


(25) 次のスペクトルを与える化合物の構造式を示せ。

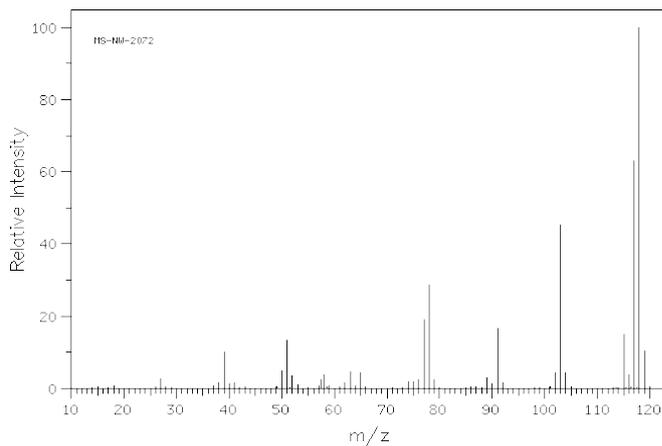
$^1\text{H}$  NMR (90 MHz,  $\text{CDCl}_3$ )



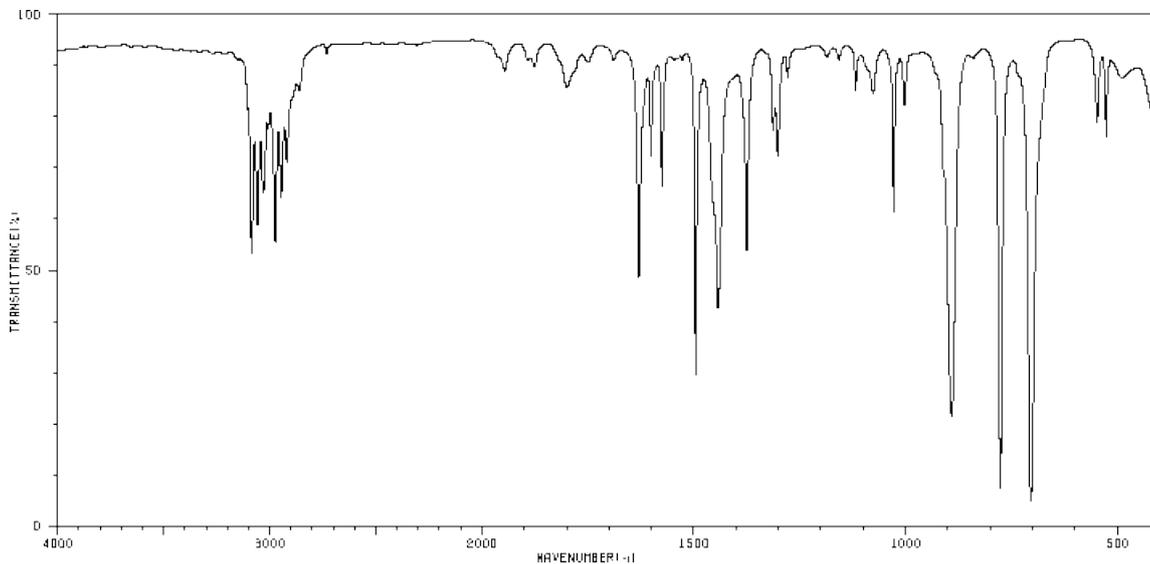
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (25 MHz,  $\text{CDCl}_3$ )



MS (EI)

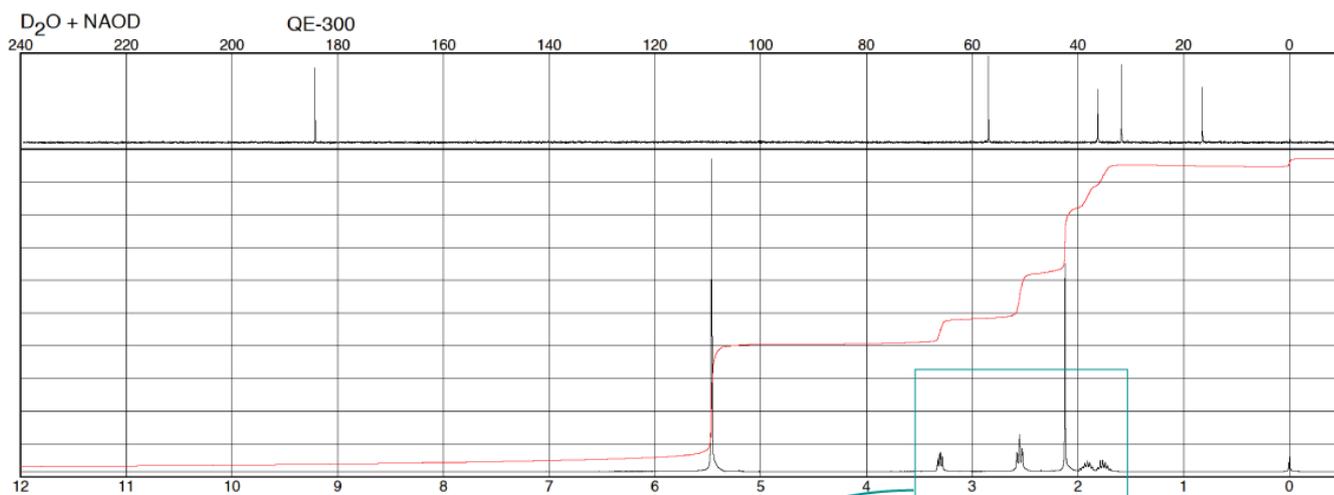


IR (liquid film)

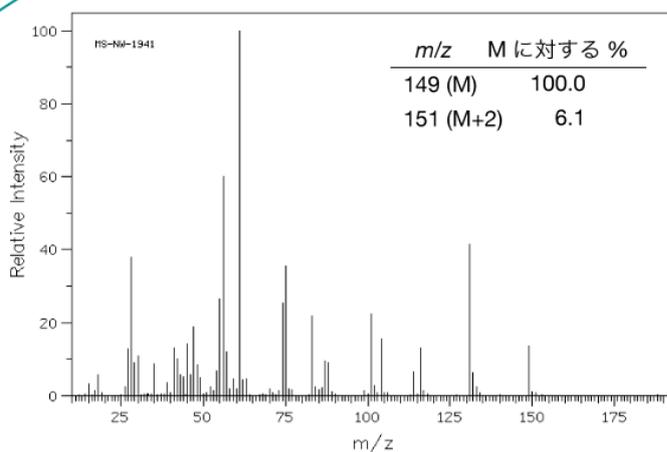
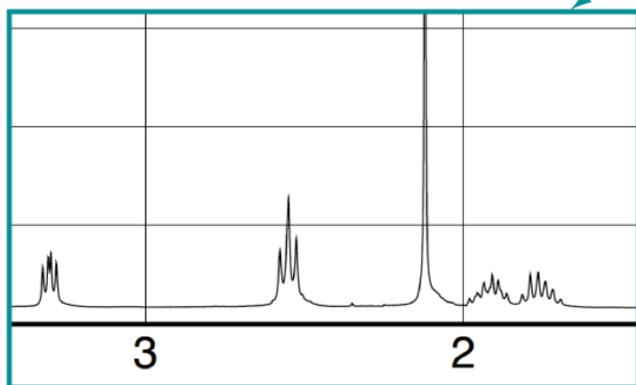


(26) 次のスペクトルを与える化合物の構造式を示せ。

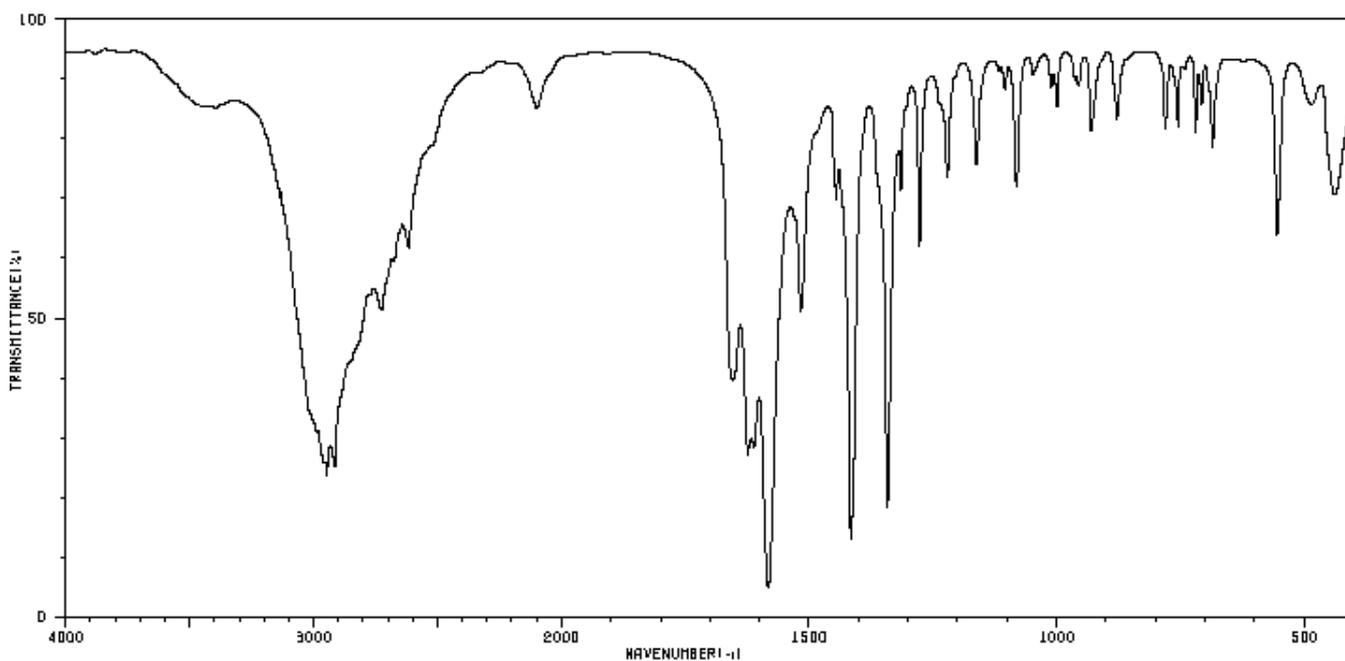
$^1\text{H}$  NMR (300 MHz,  $\text{D}_2\text{O}$ ) &  $^{13}\text{C}$   $\{^1\text{H}\}$  NMR (75 MHz,  $\text{D}_2\text{O}$ )



MS (EI)

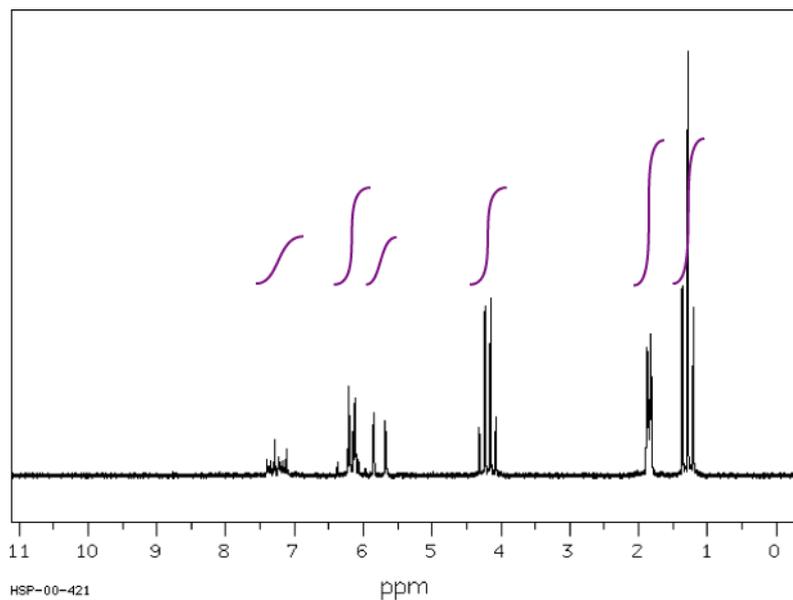


IR (liquid film)

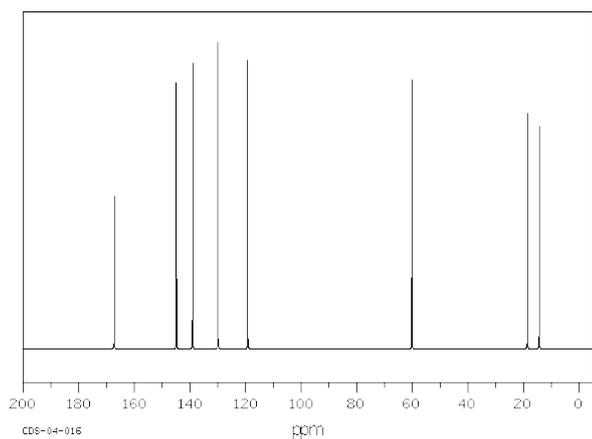


(27) 次のスペクトルを与える化合物の構造式を示せ。

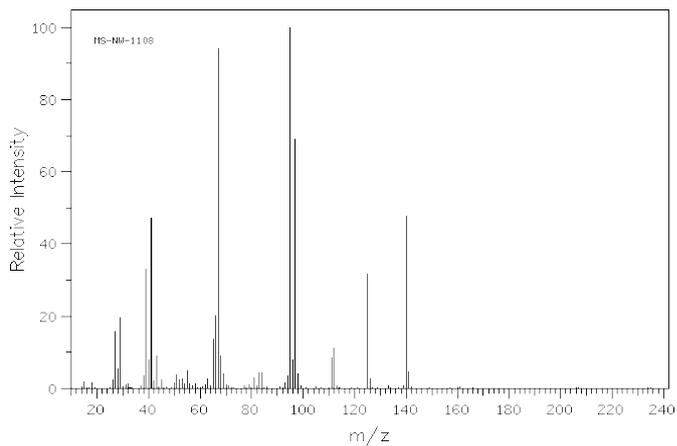
$^1\text{H}$  NMR (90 MHz,  $\text{CDCl}_3$ )



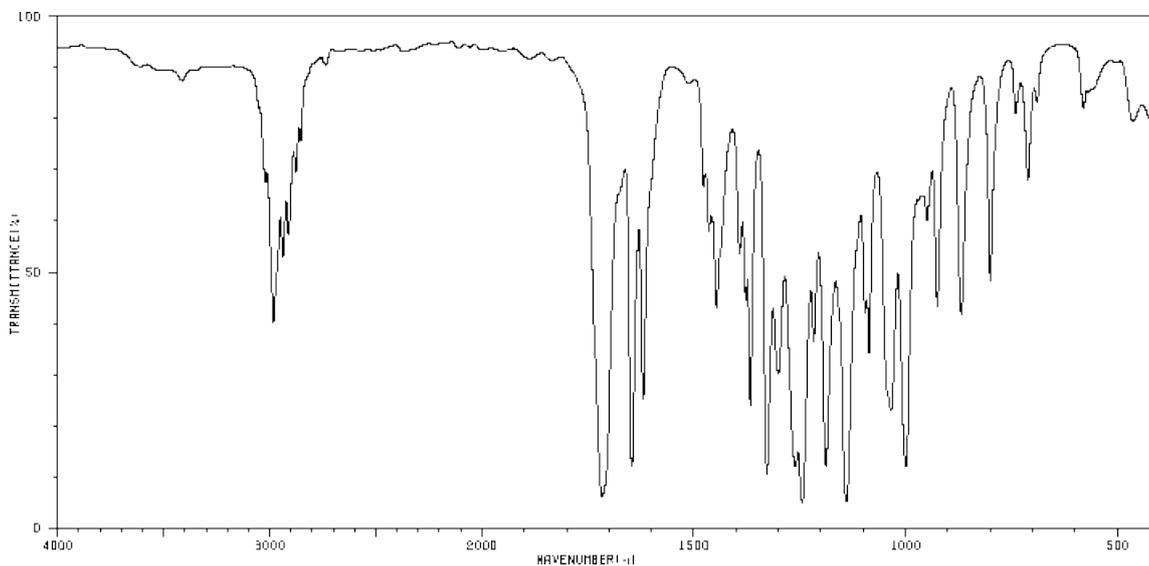
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (25 MHz, 25 vol % in  $\text{CDCl}_3$ )



MS (EI)

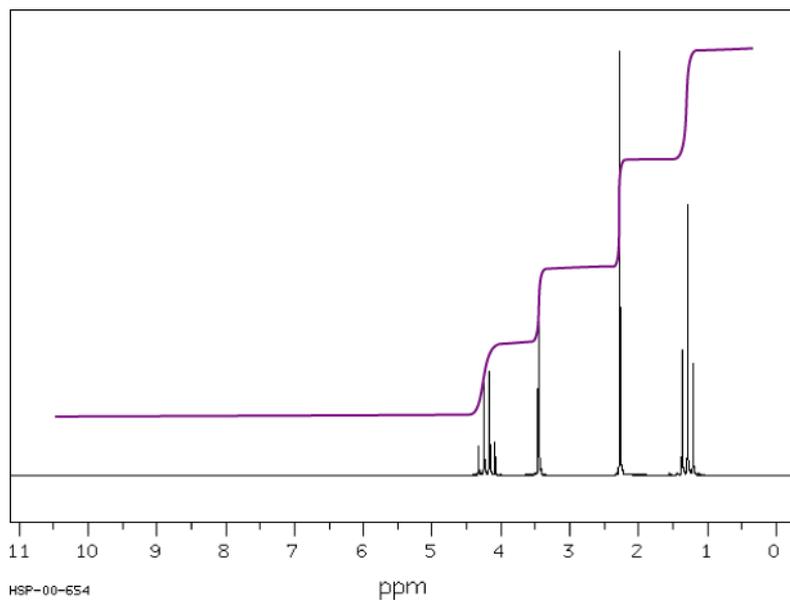


IR (liquid film)

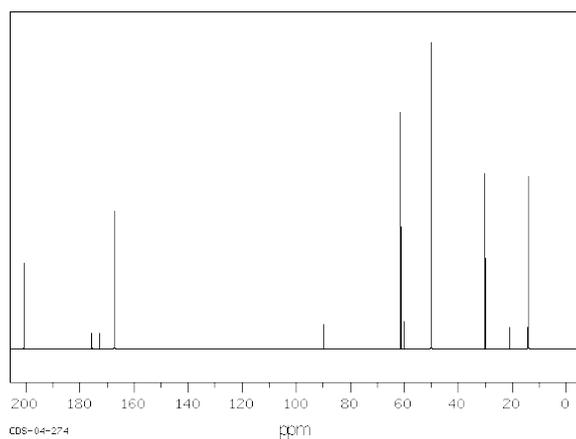


(28) 次のスペクトルを与える化合物の構造式を示せ。

$^1\text{H}$  NMR (90 MHz,  $\text{CDCl}_3$ )

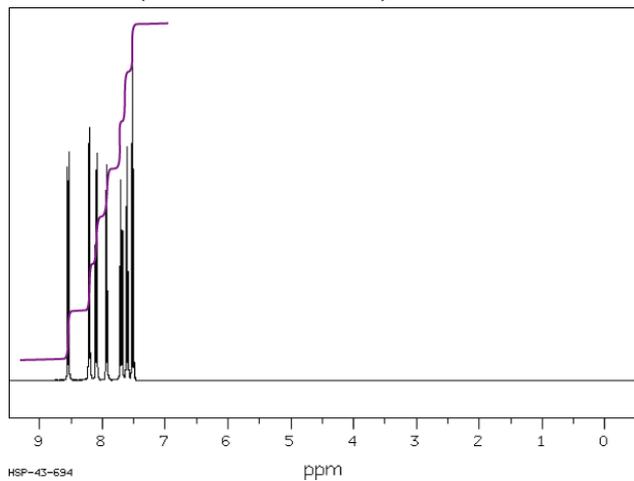


$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (100 MHz,  $\text{CDCl}_3$ )

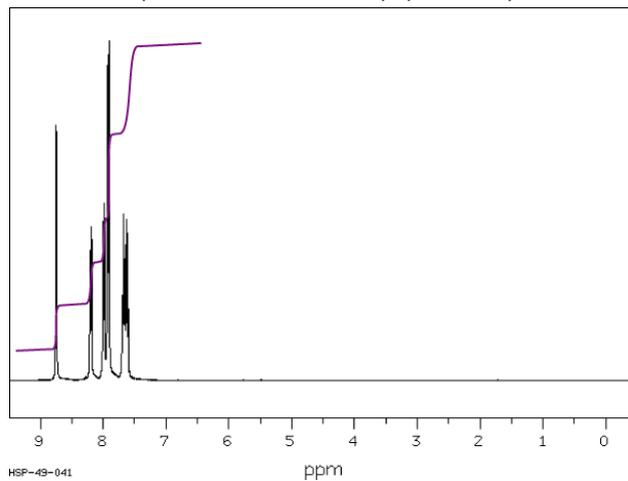


(29) 次のスペクトルを与える化合物はある芳香族化合物と硝酸を反応させて得られた化合物である。この化合物の構造式を示せ。

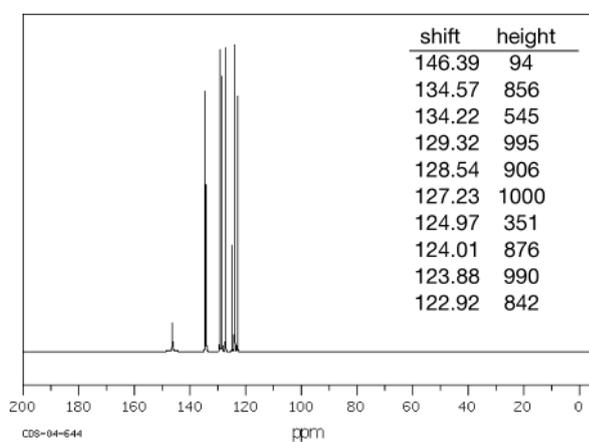
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )



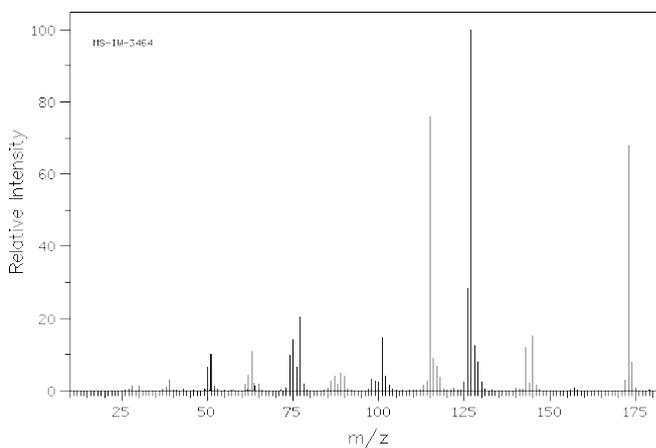
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) (異性体)



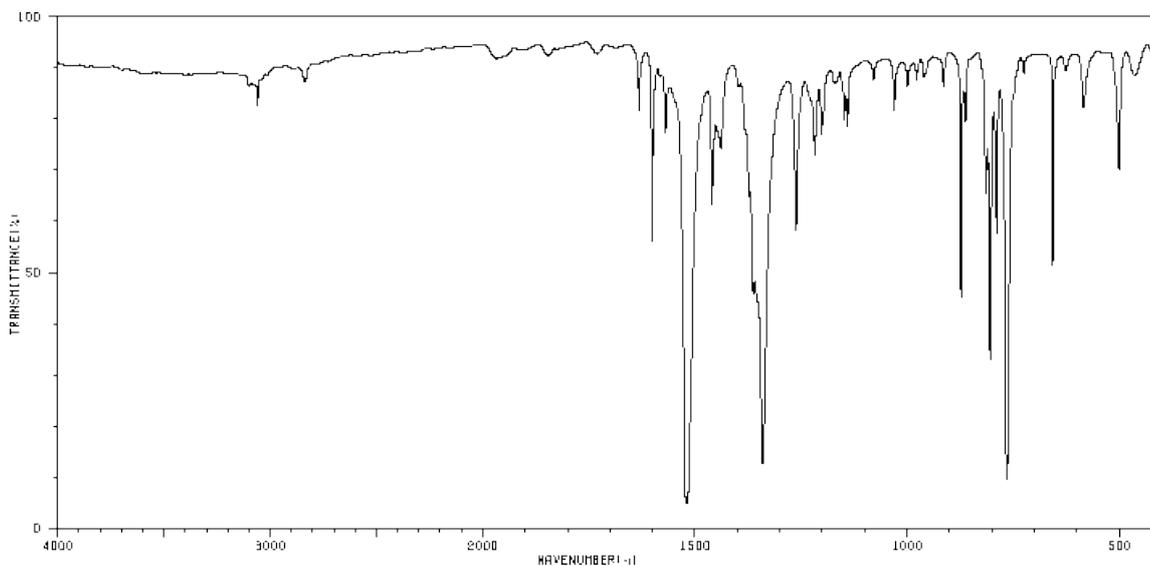
$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (25 MHz,  $\text{CDCl}_3$ )



MS (EI)

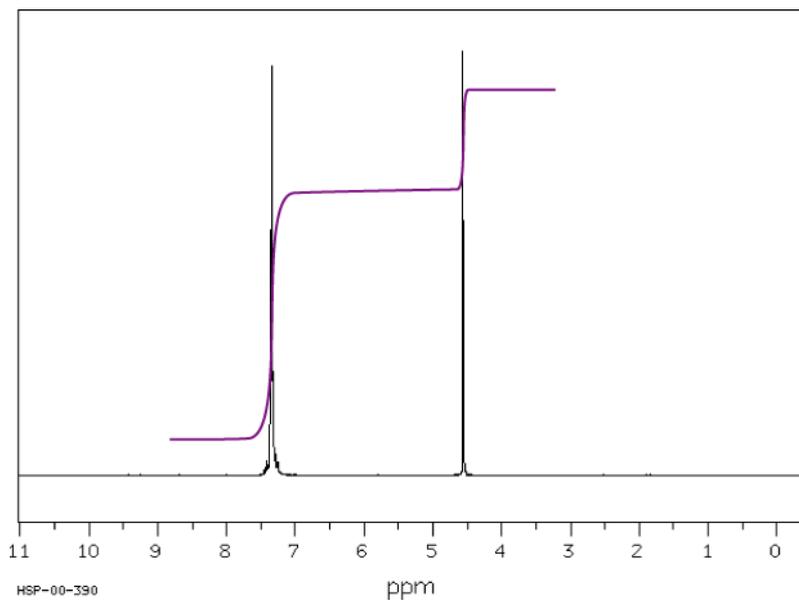


IR (KBr)

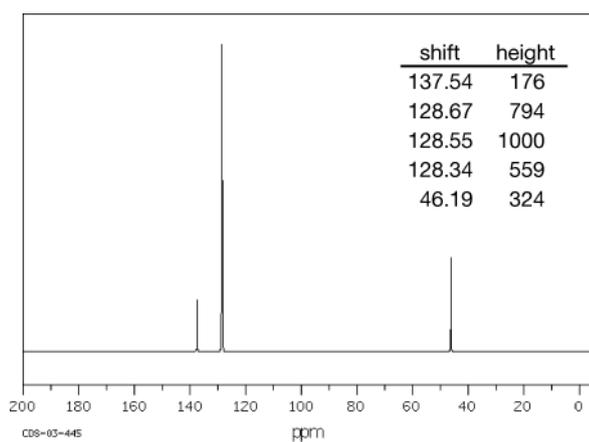


(30) 次のスペクトルを与える化合物の構造式を示せ。

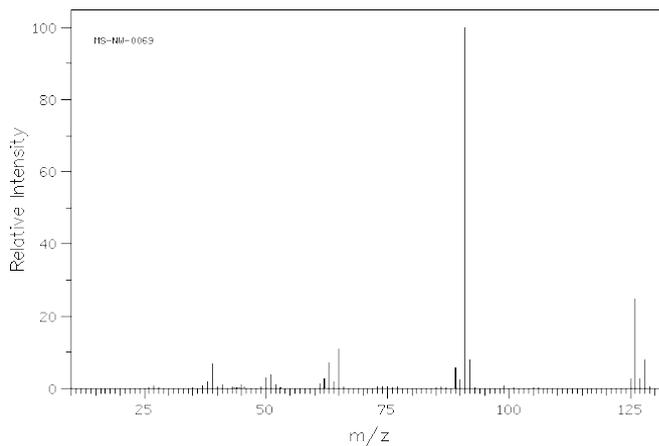
$^1\text{H}$  NMR (90 MHz,  $\text{CDCl}_3$ )



$^{13}\text{C}$   $\{^1\text{H}\}$  NMR (15 MHz,  $\text{CDCl}_3$ )



MS (EI)



IR (liquid film)

