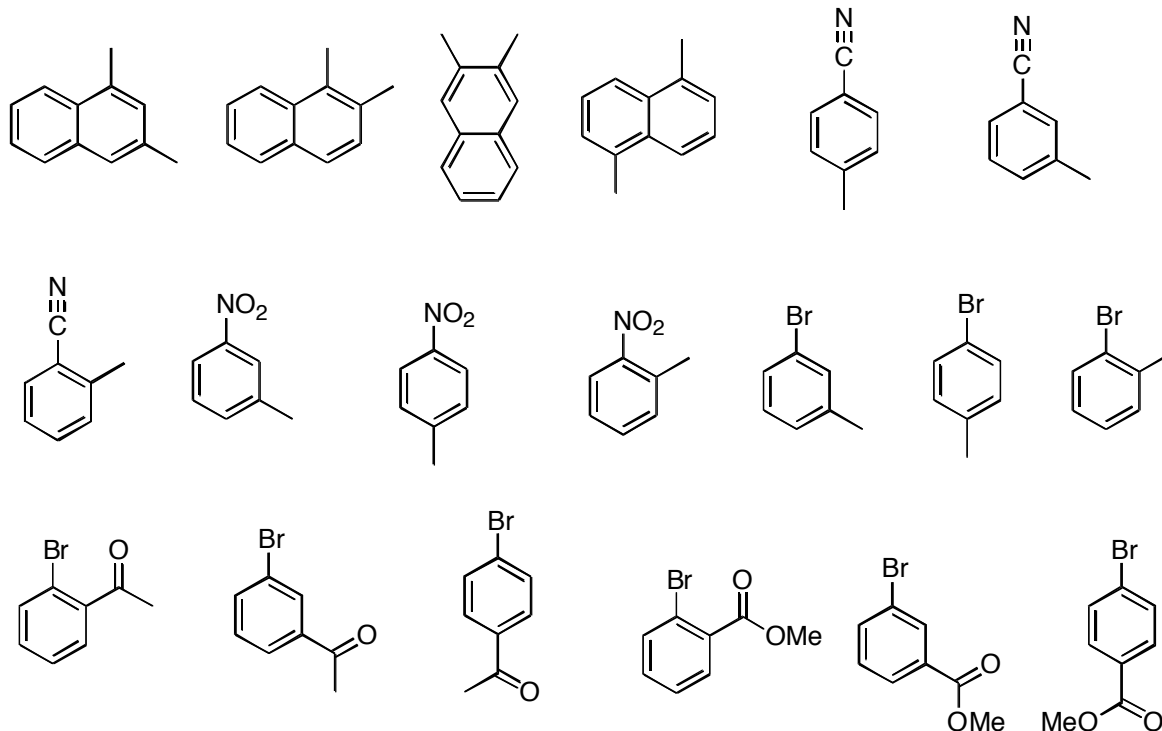


Chem 334, Exam 2
Professor Fox
TA Andrew DeAngelis
Spring 2007

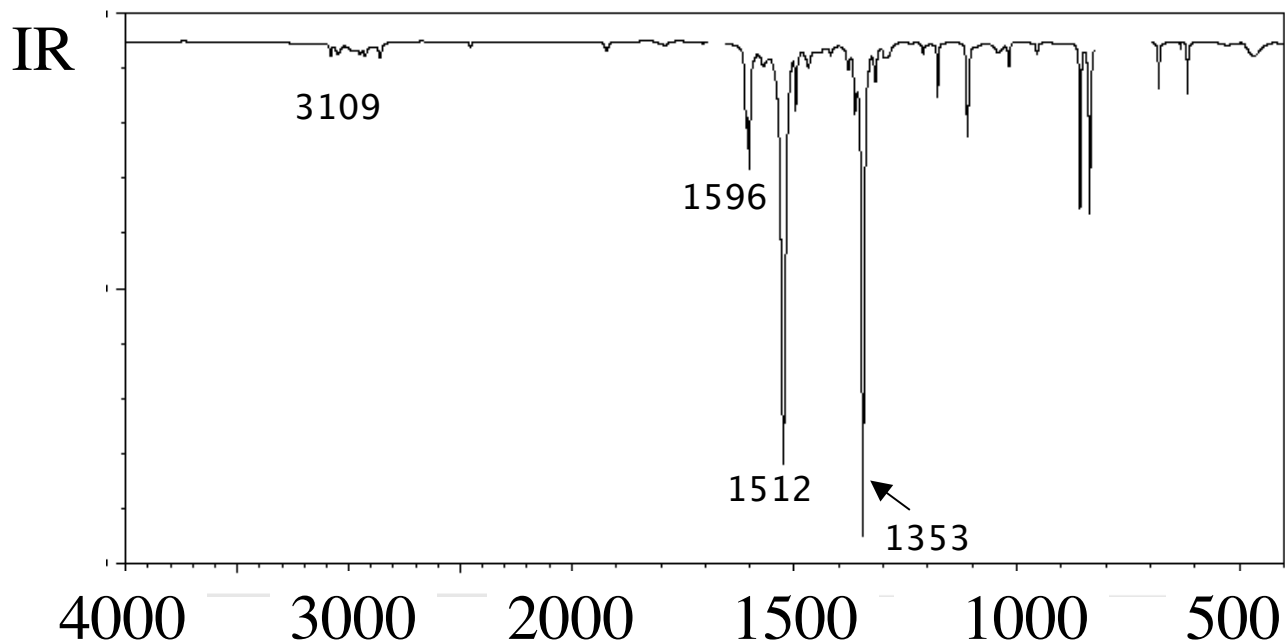
Your Name_____

Question 1-4, 15 points each
Question 5a, 10 points
Question 5b, 10 points
Question 5c, 20 points

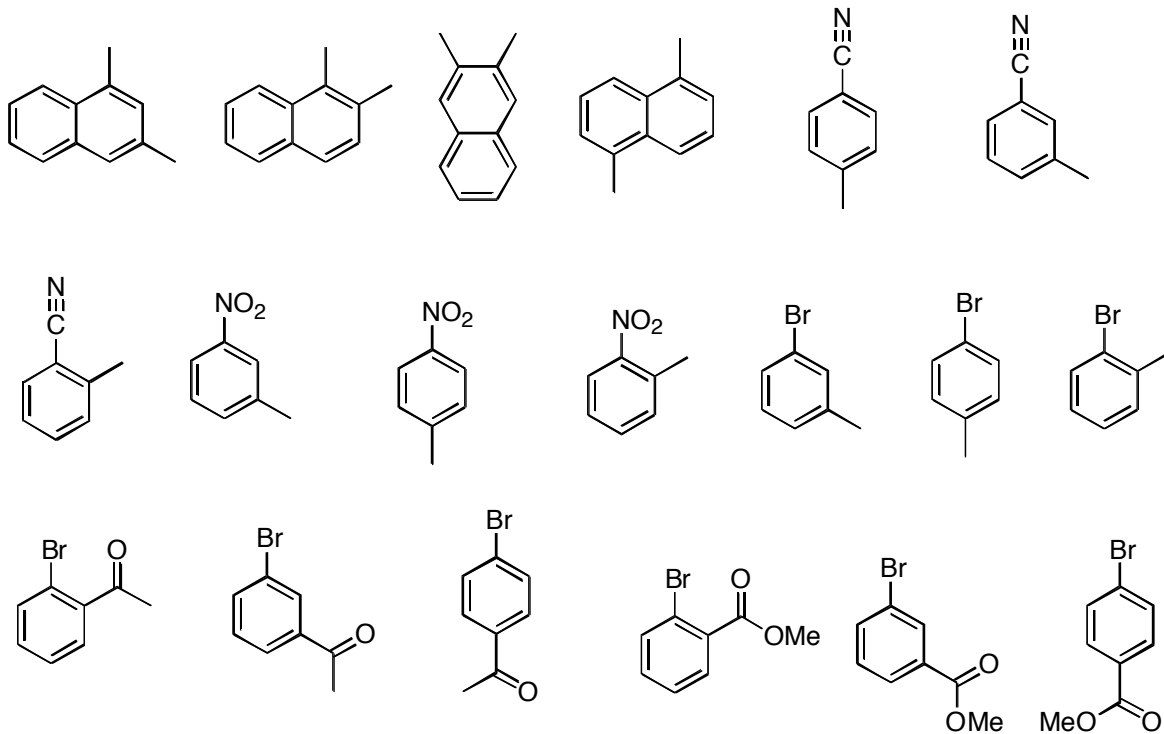
1. Circle the structure of the product that corresponds to the ^1H NMR and IR data below. Circle only one structure



^1H NMR 8.07 ppm (d, $J=7.9$ Hz, 2H)
 7.32 ppm (d, $J=7.9$ Hz, 2H)
 2.35 ppm (s, 3H)

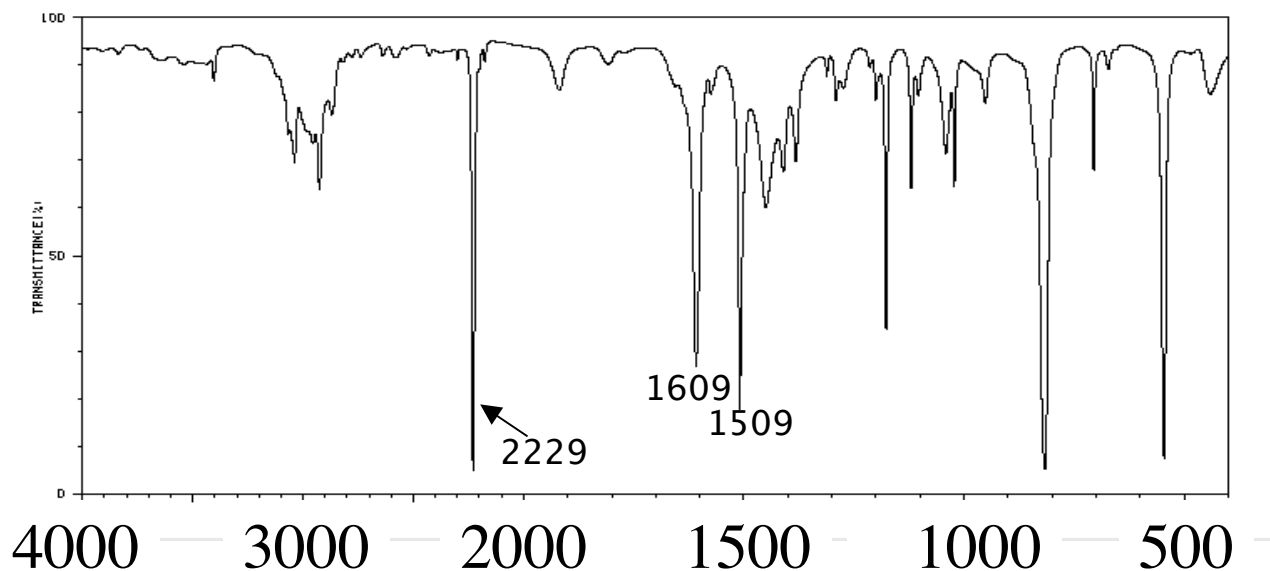


2. Circle the structure of the product that corresponds to the ^1H NMR and IR data below. Circle only one structure

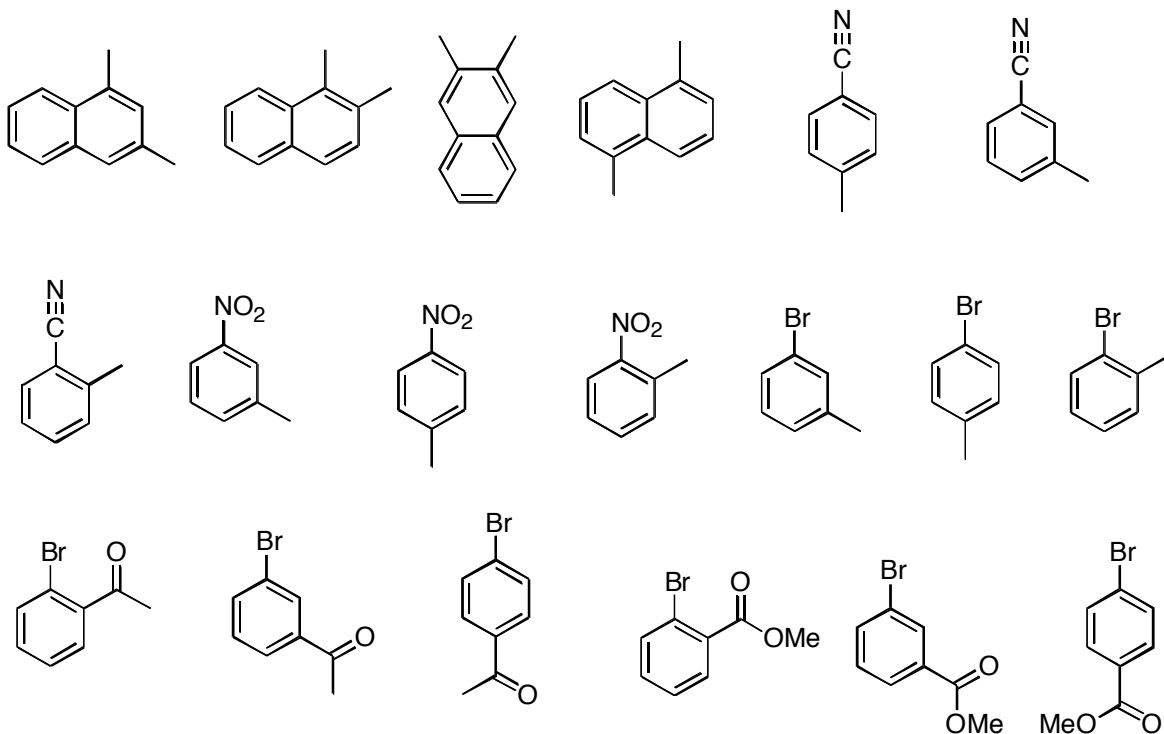


^1H NMR
 7.22 ppm (d, $J=7.9$ Hz, 2H)
 7.45 ppm (d, $J=7.9$ Hz, 2H)
 2.41 ppm (s, 3H)

IR



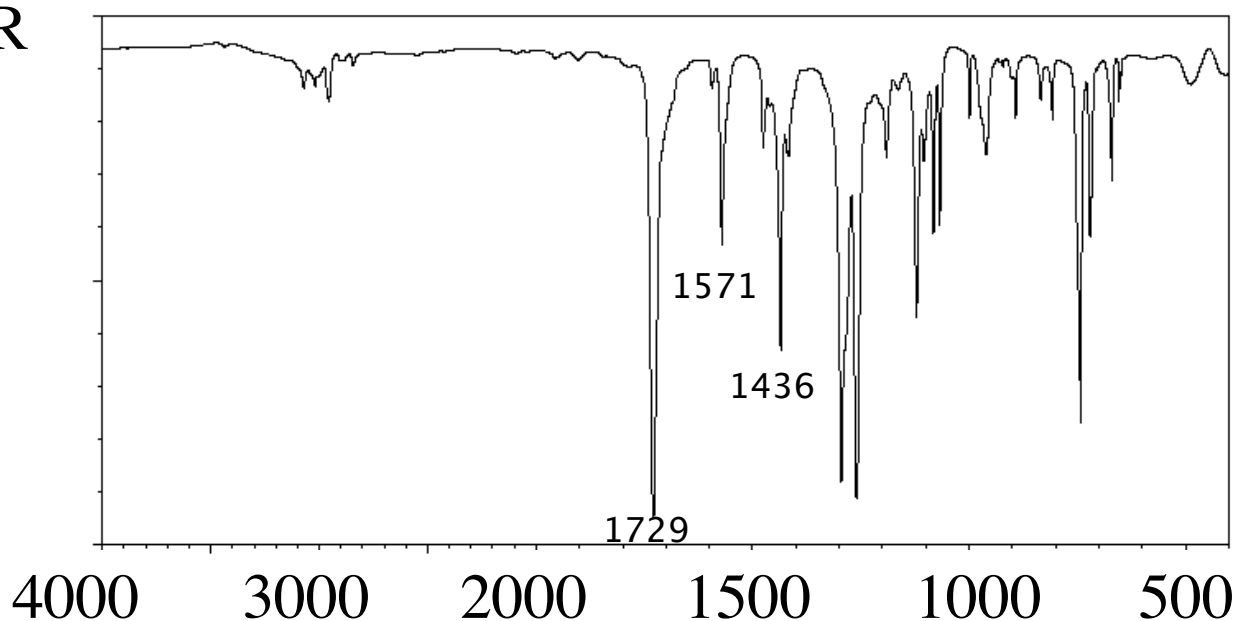
3. Circle the structure of the product that corresponds to the ^1H NMR and IR data below. Circle only one structure



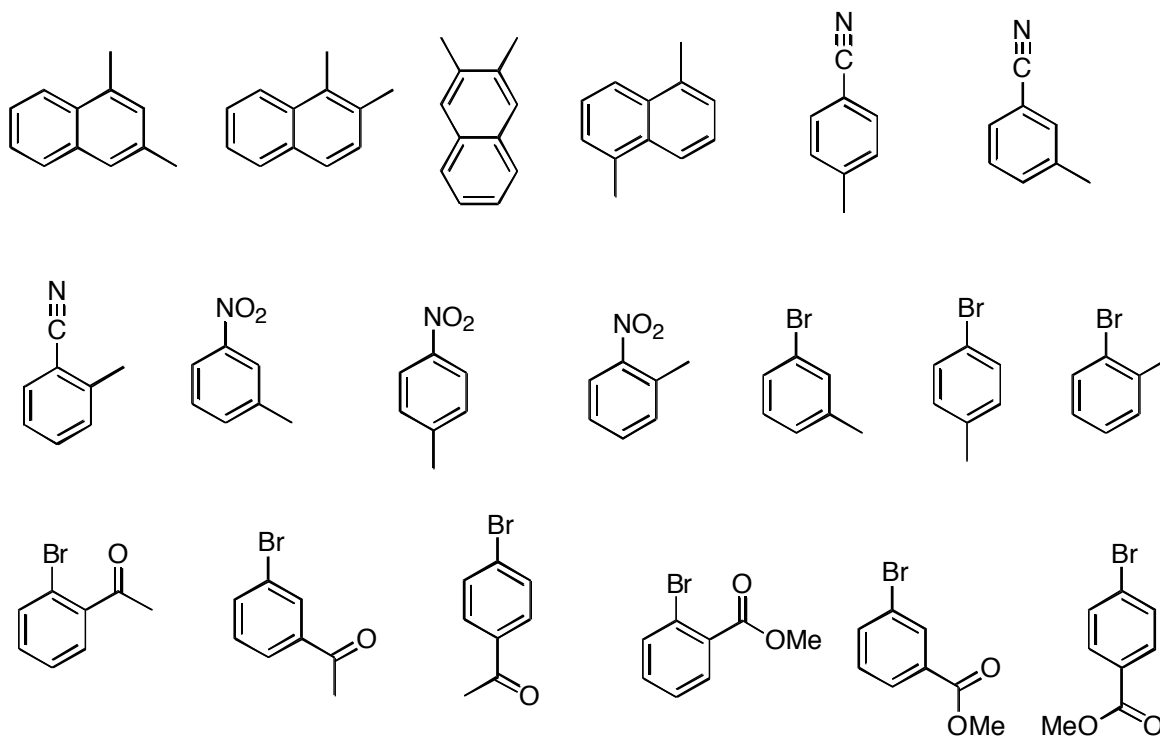
^1H NMR

- 8.17 ppm (t, $J=2.1$ Hz, 1H)
- 7.96 (dt, $J=8.0, 2.1$ Hz, 1H)
- 7.67 (dt, $J=7.7, 2.1$ Hz, 1H)
- 7.31 (dd, $J=8.0, 7.7$ Hz, 1H)
- 3.91 ppm (s, 3H)

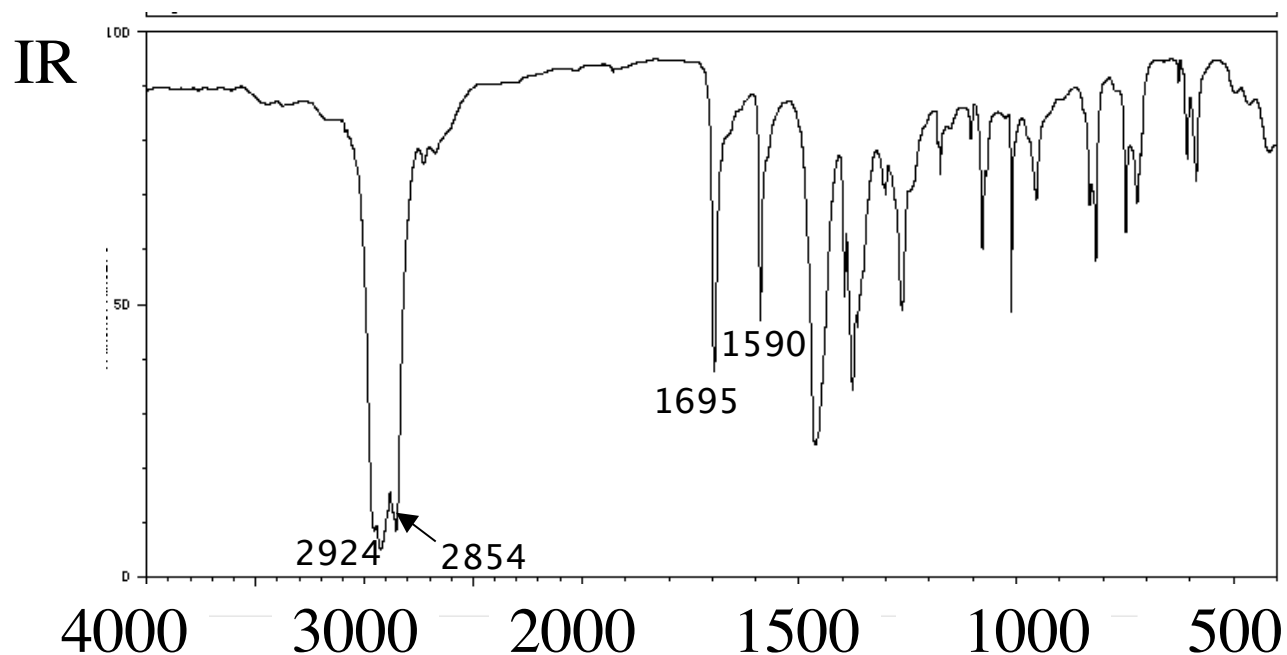
IR



4. Circle the structure of the product that corresponds to the ^1H NMR and IR data below. Circle only one structure



^1H NMR 7.81 ppm (d, $J=7.9$ Hz, 2H)
 7.61 ppm (d, $J=7.9$ Hz, 2H)
 2.60 ppm (s, 3H)



5. Elucidate the following structure

AD: C₁₃H₁₈O₃

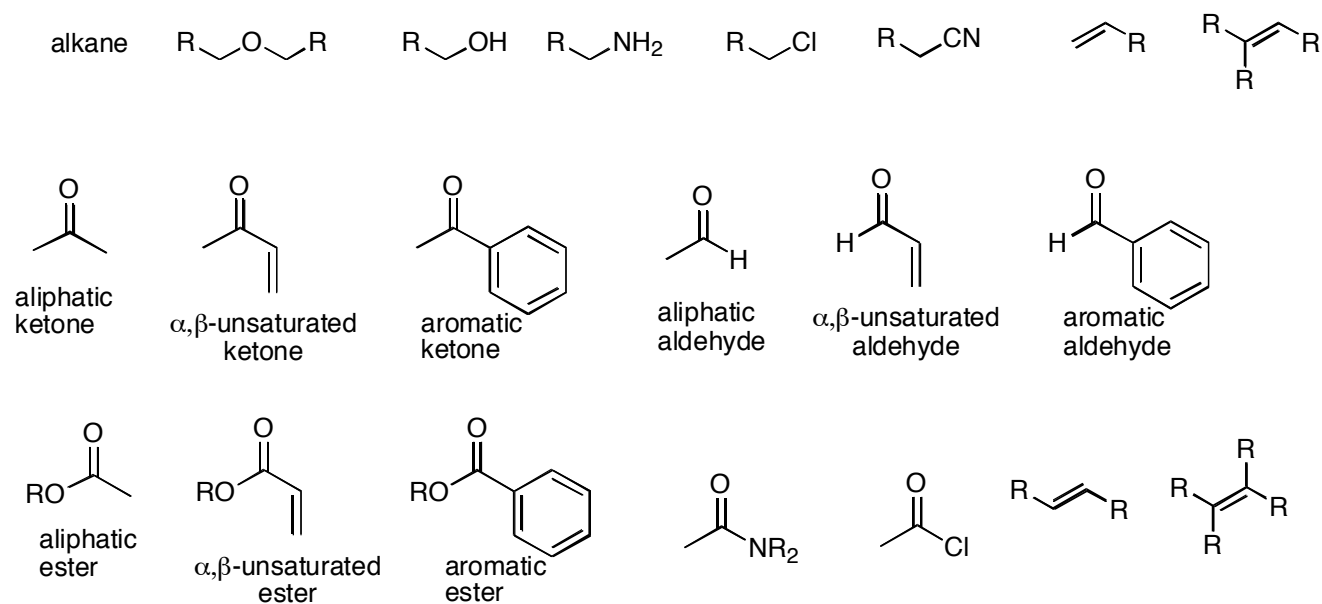
¹³C NMR

IR: 1729 cm⁻¹

7.86 ppm (d, J=8.0 Hz, 2H)	167 (s)
6.88 ppm (d, J=8.0 Hz, 2H)	163 (s)
3.86 ppm (m, 1H)	130 (2 carbons, d)
3.91 (s, 3H)	122 (s)
1.67 (m, 2H)	114 (2 carbons, d)
1.43 (d, J=7.0 Hz, 3H)	73 (d)
1.33 (m, 2H)	50 (q)
0.96 (t, J=6.9 Hz, 3H)	39 (t)
	20(q)
	16.9 (t)
	14 (q)

a) Circle the functional group that is associated with

(i) IR: 1729 cm⁻¹



b) Identify the substructure that is associated with the following. Rationalize your answer based both on the chemical shifts and the coupling constants:

7.86 ppm (d, J=8.0 Hz, 2H)

6.88 ppm (d, J=8.0 Hz, 2H)

5. Elucidate the following structure (continued)

AD: C₁₃H₁₈O₃

¹³C NMR

IR: 1729 cm⁻¹

7.86 ppm (d, J=8.0 Hz, 2H)	167 (s)
6.88 ppm (d, J=8.0 Hz, 2H)	163 (s)
3.86 ppm (m, 1H)	130 (2 carbons, d)
3.91 (s, 3H)	122 (s)
1.67 (m, 2H)	114 (2 carbons, d)
1.43 (d, J=7.0 Hz, 3H)	73 (d)
1.33 (m, 2H)	50 (q)
0.96 (t, J=6.9 Hz, 3H)	39 (t)
	20(q)
	16.9 (t)
	14 (q)

c) draw the structure of the product (no partial credit)

