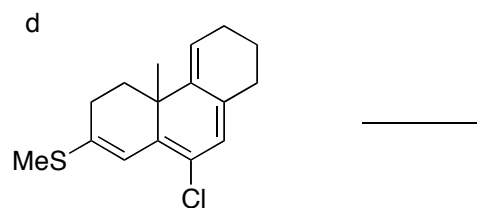
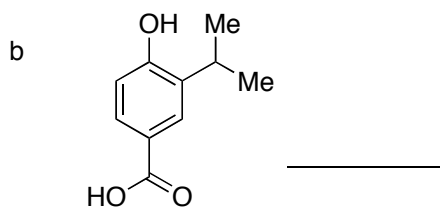
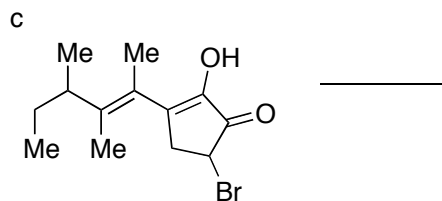
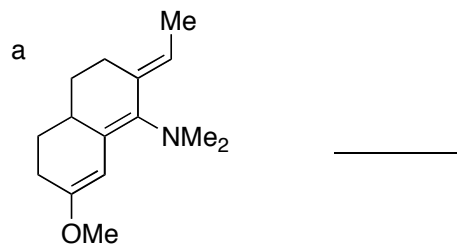


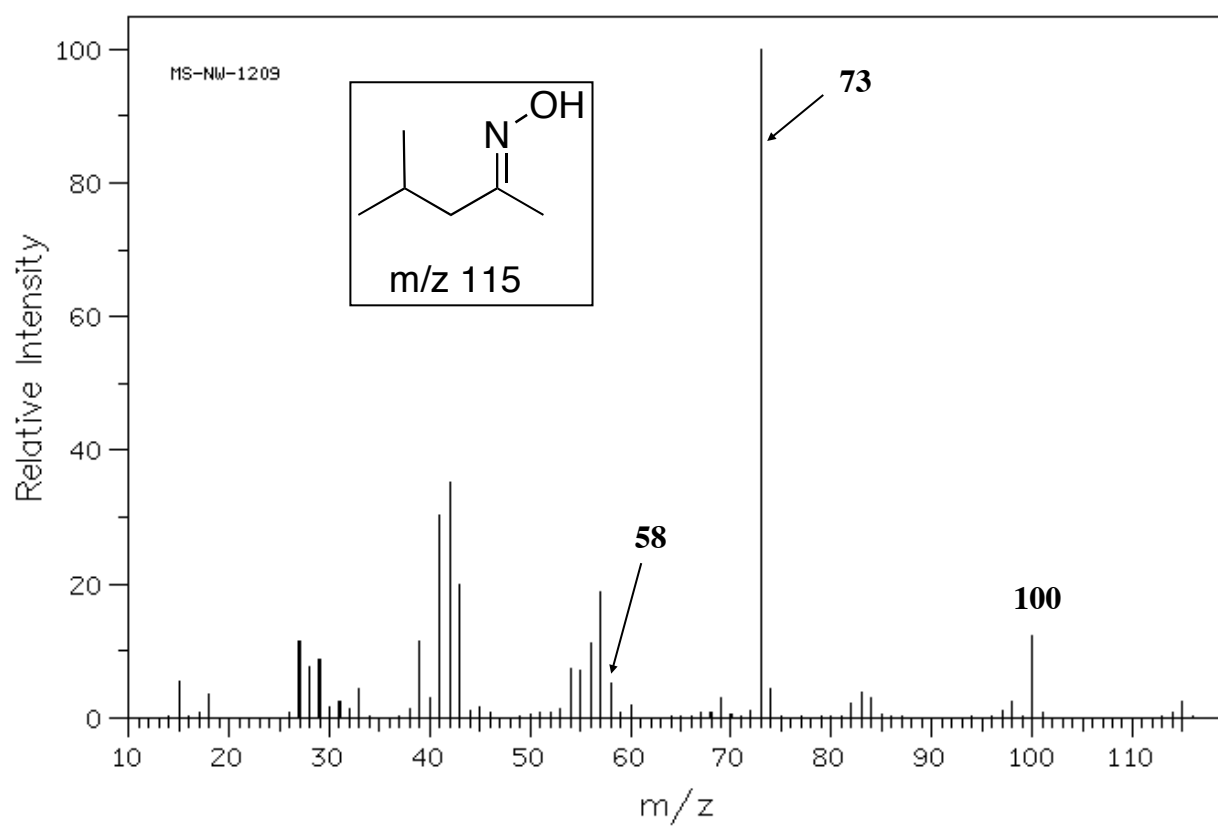
Chem 333, Exam 2
Professor Fox
FALL 2009

Your Name_____

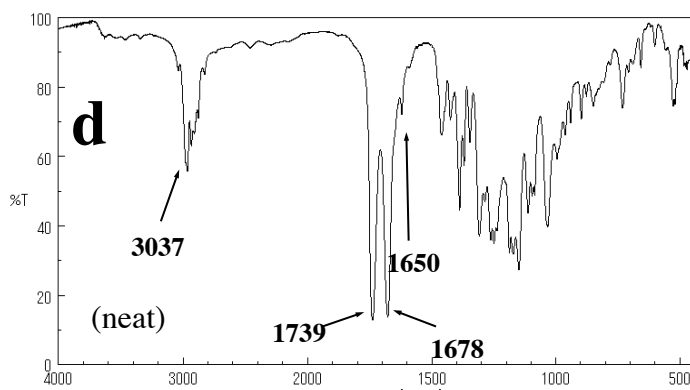
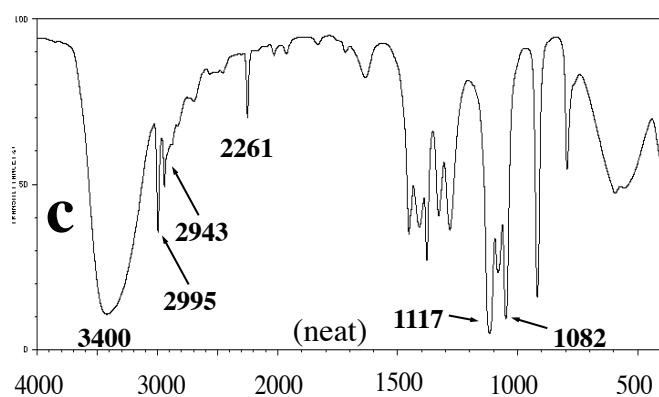
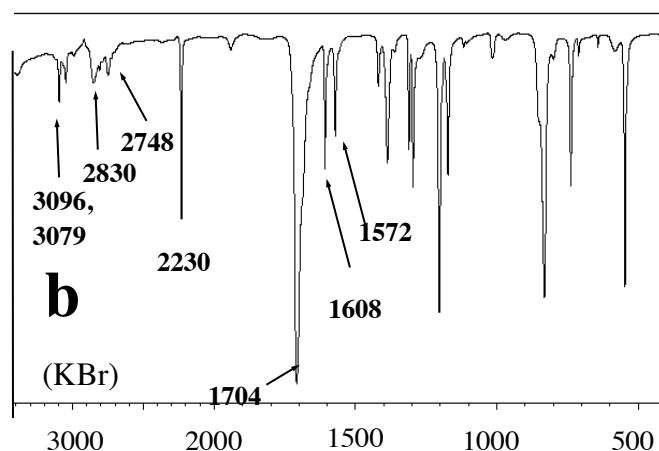
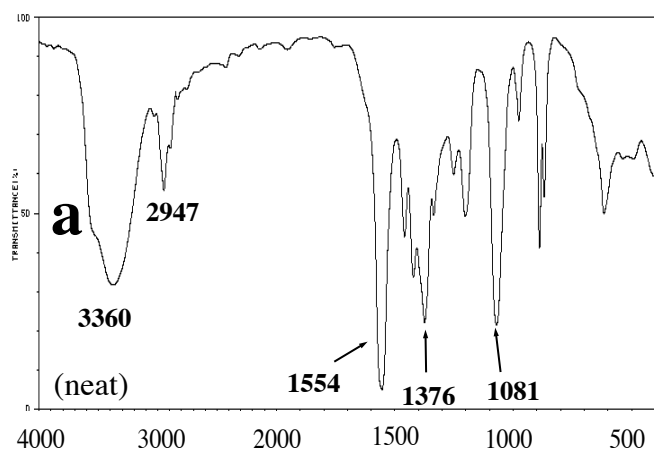
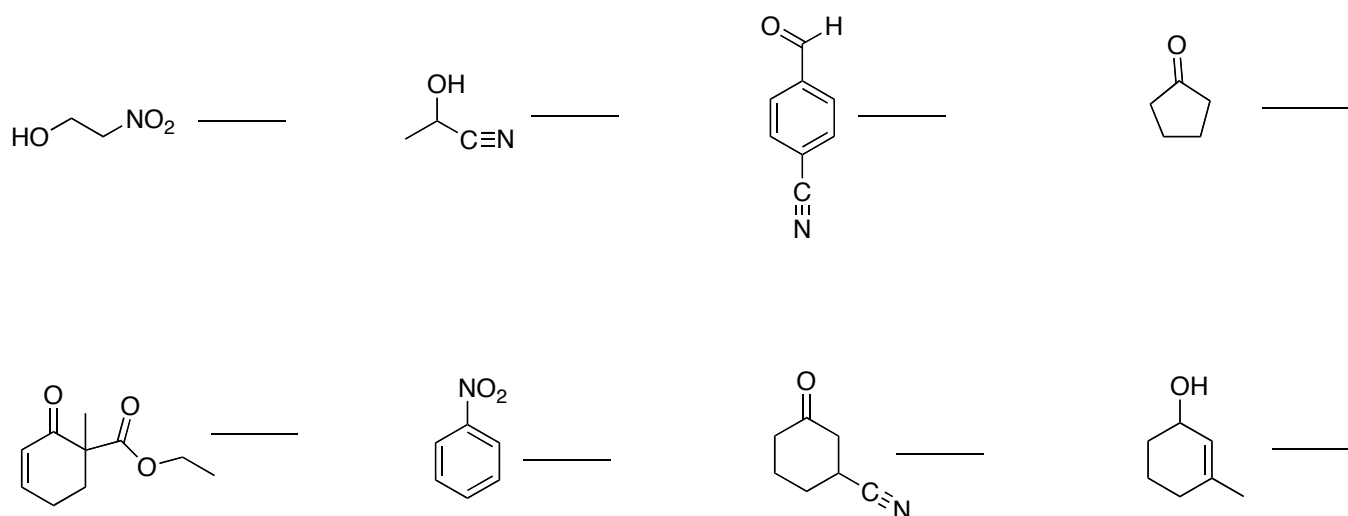
1. Calculate the UV maximum for the following compounds (16 points)



2. Explain how the labeled fragments are formed. (12 points)



3. Match the following to their IR spectra. Note, only 4 spectra have a match. Place an X next to those compounds that do not have a match 20 points total



4. Elucidate the following structure based on the spectral data

C₁₄H₂₀O₃	¹³C NMR	IR (neat, cm⁻¹)
¹H NMR	207, s	3051, 2956,
6.90 (d, <i>J</i> = 2.1 Hz, 1H)	151, s	1713, 1592,
6.76 (d, <i>J</i> = 7.9 Hz, 1H)	150, s	1515, 1260,
6.68 (dd, <i>J</i> = 7.9, 2.1 Hz, 1H)	128, s	1237
3.83 (s, 3H)	122, d	
3.80 (s, 3H)	114, d	
3.34 (s, 2H)	113, d	
2.22-2.10 (d, <i>J</i> = 6.9 Hz, 2H)	56, q	
2.06 (m, 1H)	55, q	
0.91 (d, <i>J</i> = 6.3 Hz, 6H)	52, t	MS: 236 (M ⁺ , parent peak),
	50, t	194, 179, 151, 85
	25, d	
	23, q (2 carbons)	

a) Calculate the IHD: _____ (1 point)

b) Show the substructure that is associated with the following IR peak (6 points)

1713 cm⁻¹

NOTE: For questions about IR spectroscopy, be sure to indicate if the peaks tell you any information about ring size, conjugation, lack of conjugation etc.

c) Show the substructure that is associated with the following ¹H NMR resonances. Assign the coupling constants (10 points).

6.90 (d, *J* = 2.1 Hz, 1H)

6.76 (d, *J* = 7.9 Hz, 1H)

6.68 (dd, *J* = 7.9, 2.1 Hz, 1H)

d) Assign the following mass spectral fragments (16 points)

194, 179, 151, 85

e) Show your final structure (19 points)

