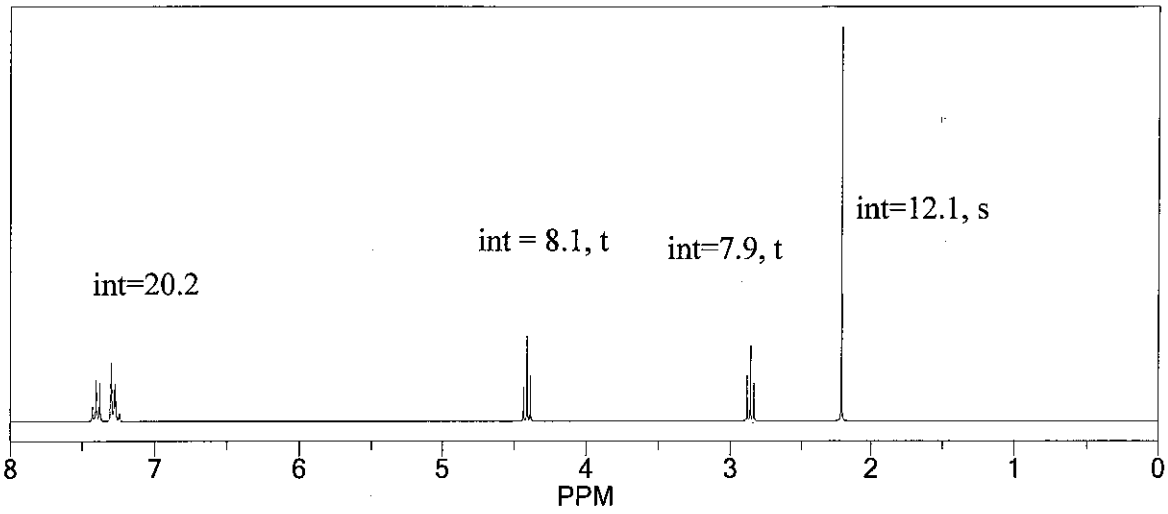
S343 Quiz 5
11/13/14

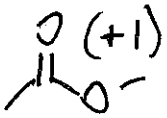
Name Key

AI (or Lab Section) _____

1. (8pts) Predict the structure of this $C_{10}H_{12}O_2$ compound. It has characteristic IR peaks at 1599 cm^{-1} (sharp) and 1739 cm^{-1} (strong.) Show your thought process for partial credit.

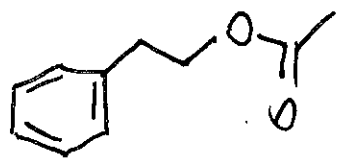


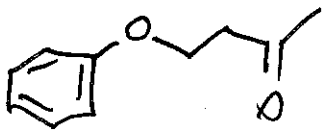
Partial credit: maximum 5 pts (+1) integration is 5, 2, 2, 3

(+1)  (+1) $-CH_3$  (+1) $-CH_2-CH_2-$ (+1)

(+1) a methylene attached to oxygen

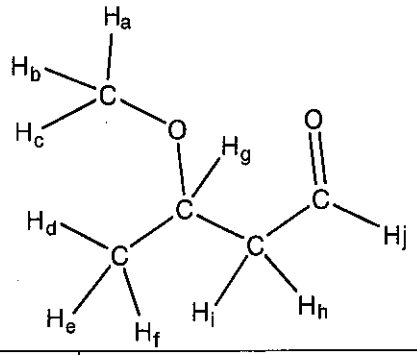
final structure +8





+7

2. (8pts) In the following table, list the letter of each proton that contributes to the given signal, and then describe the multiplicity of each signal (singlet, doublet, etc.)



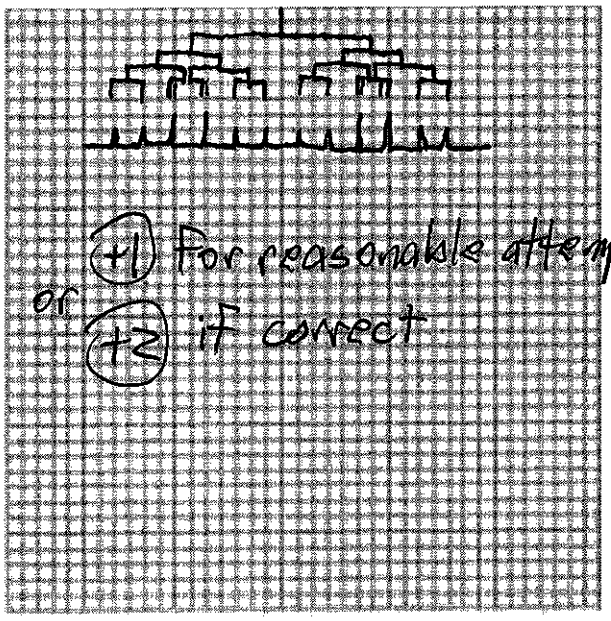
+1 for each box

Signal	Shift (ppm)	Letter(s) of protons	multiplicity
1	9.5	J	singlet
2	3.6	a b c	singlet
3	3.4	g	sextet or ddq or tq
4	2.4	i	dd
5	2.2	h	dd
6	1.2	d e f	d

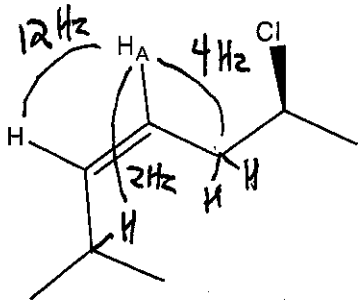
3. (4pts)What is the multiplicity of HA? Use a tree diagram to draw the signal for H_A to scale on the graph paper below. (1 square = 1Hz.) For coupling constants, refer to the typical constants given in the chart.

Multiplicity of H_A = ddt (+1)

correct J values (+1)



(+1) For reasonable attempt
or (+2) if correct



Vinyl/vinyl, trans	16 Hz
Vinyl/vinyl, cis	12 Hz ★
Vinyl/vinly, gem	2 Hz
Vinyl/allyl, trans	2 Hz ★
Vinly/allyl, cis	0 Hz
Vinyl/allyl, gem	4 Hz ★
H-C-H	14 Hz