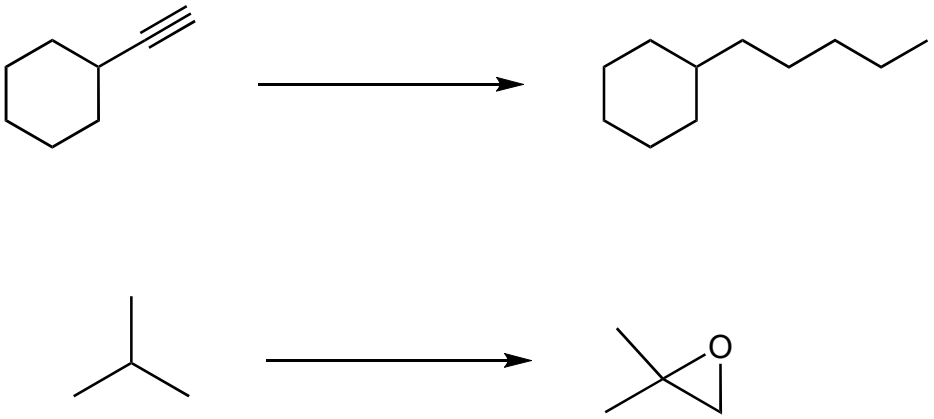
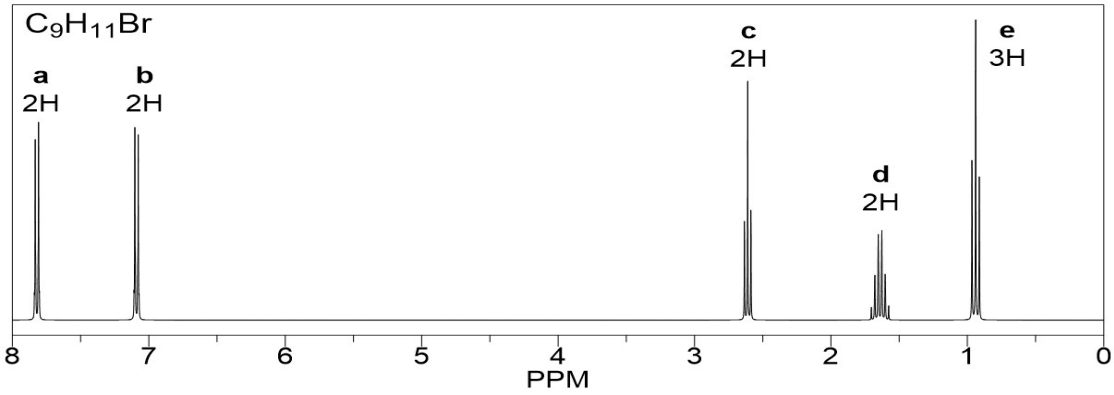
8A) (12 pts) Provide the reagents necessary to transform the given starting material into the desired product. **If more than one synthetic step is needed, you must show the intermediate product(s) formed.** It may help to begin with a retrosynthesis, but you are not required to do so.

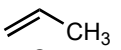
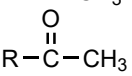
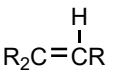
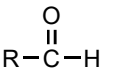


6B) (8 pts) Provide a structure that is consistent with the given ^{1}H NMR spectrum. **Show your work** and justify your answer by **labeling each set of protons on the structure a/b/c** to match the a/b/c peaks in the spectrum, and **confirming the δ value and splitting pattern** for each set of protons. **No work = no credit.**

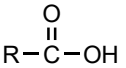


^{1}H NMR

Protons on Carbon

Type of C-H	δ (ppm)
$R-CH_3$	0.9
$R-CH_2-R$	1.3
R_3C-H	1.5-2
	1.8
	2-2.3
$Ar-CH_3$	2.3
$RC\equiv C-H$	2.5
R_2N-CH_3	2-3
$R-CH_2-X$	3-3.5
$RO-CH_3$	3.8
$R-CH_2-F$	4.5
	5-5.3
$Ar-H$	7.3
	9.7

Protons on Oxygen

Type of H	δ (ppm)
ROH	0.5-5
ArOH	4-7
	10-13