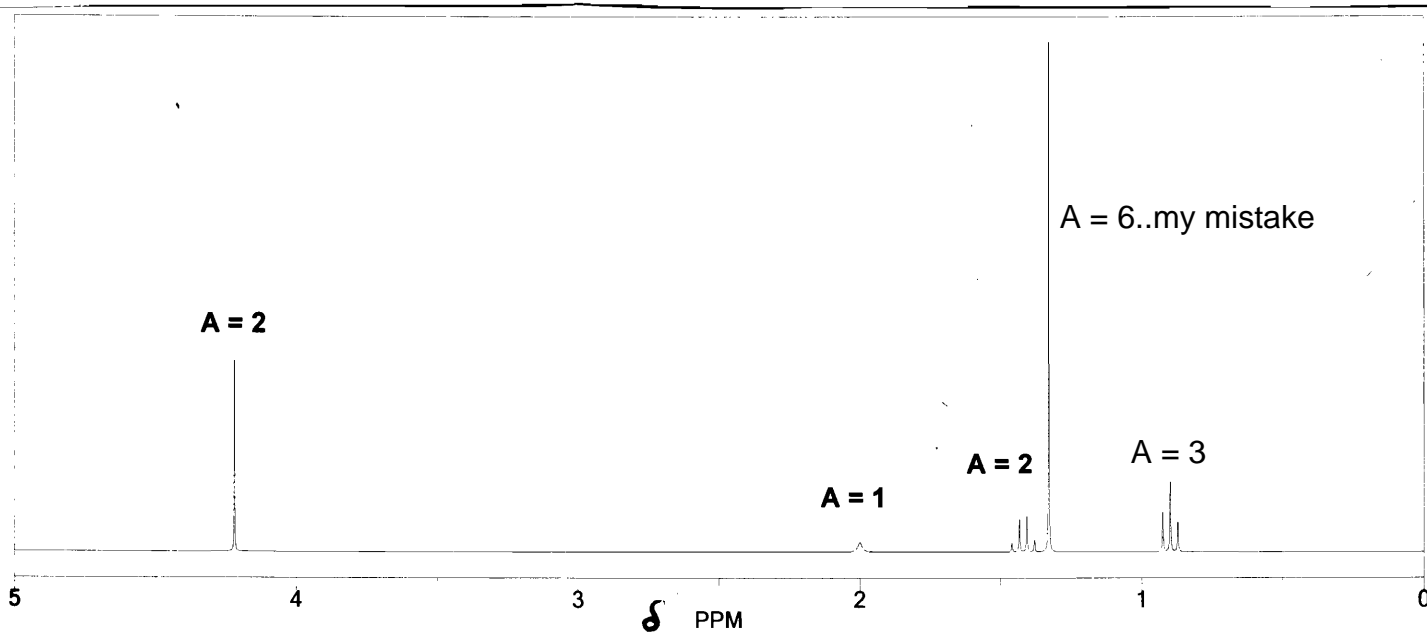
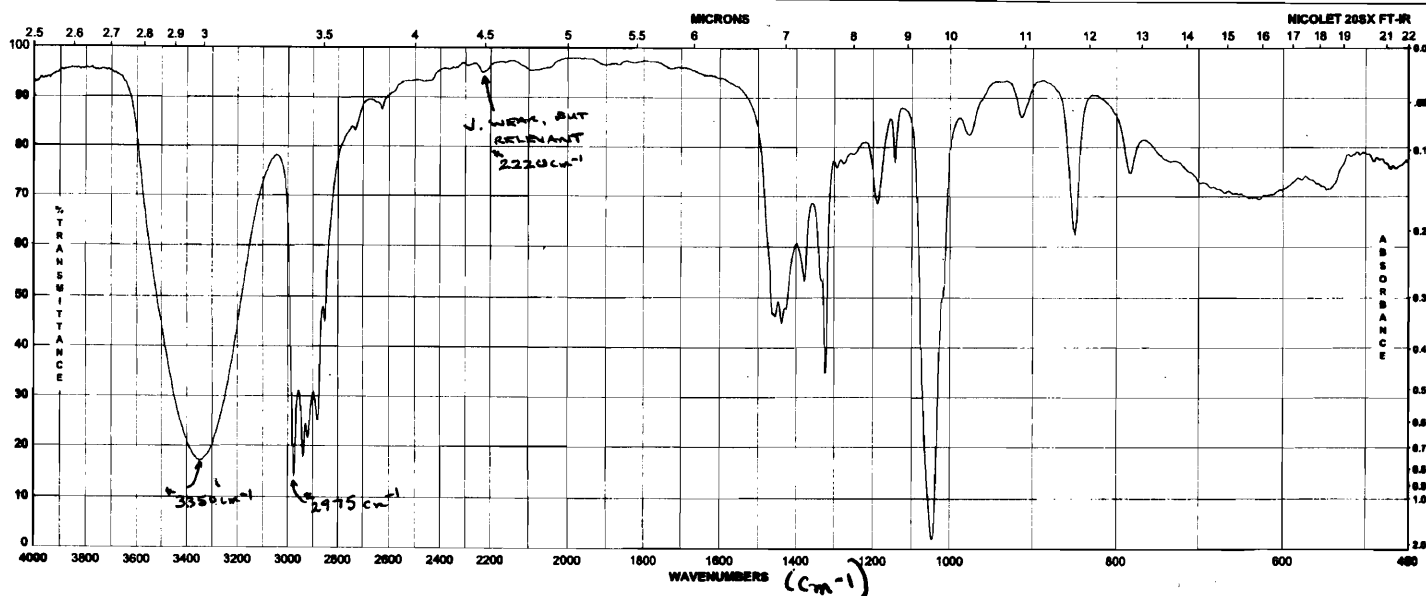
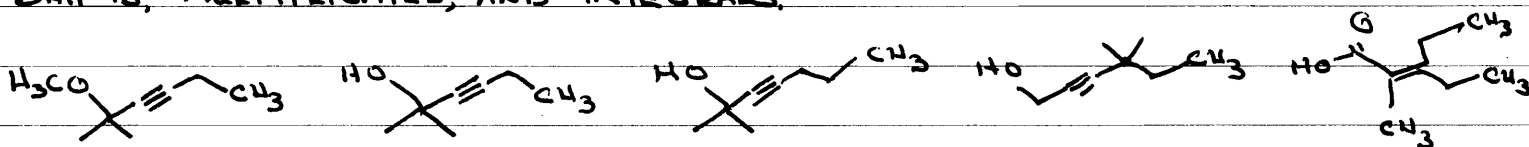


(a) A NEWLY FORMED COMPOUND HAS THE COMPOSITION C, 76.14%; H, 11.18%; O, 12.68%. AND GIVES A MASS SPECTRUM WITH THE HIGHEST $m/e = 126$ WITH THE IR AND 1H NMR SPECTRA BELOW. WHICH OF THE FOLLOWING COMPOUND IS IT? WORK THROUGH THE DATA TO SHOW HOW YOU EXCLUDED THE 'WRONG' ONES. ASSIGN THE MAJOR (*'D) ABSORPTIONS IN THE IR SPECTRUM, AND ALL THE 1H NMR RESONANCES. SHOW THE MATCH OF PREDICTED VERSUS OBSERVED 1H NMR CHEMICAL SHIFTS, MULTIPLICITIES, AND INTEGRALS.

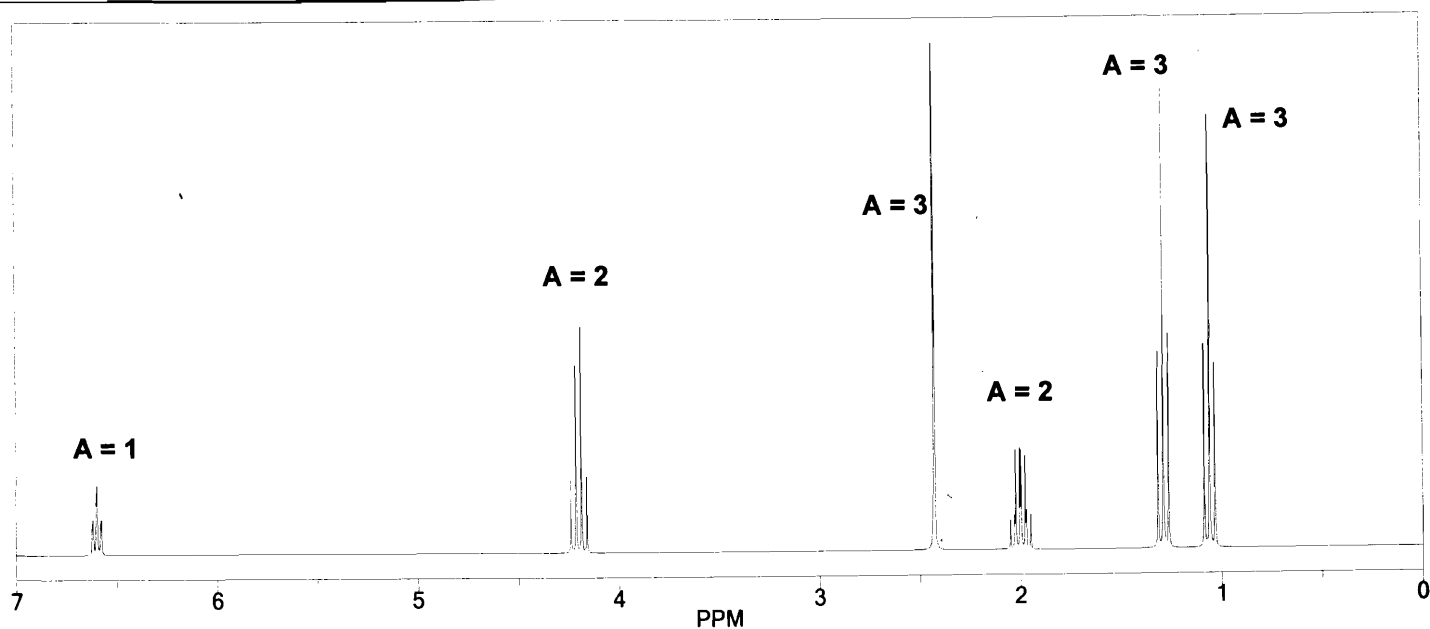
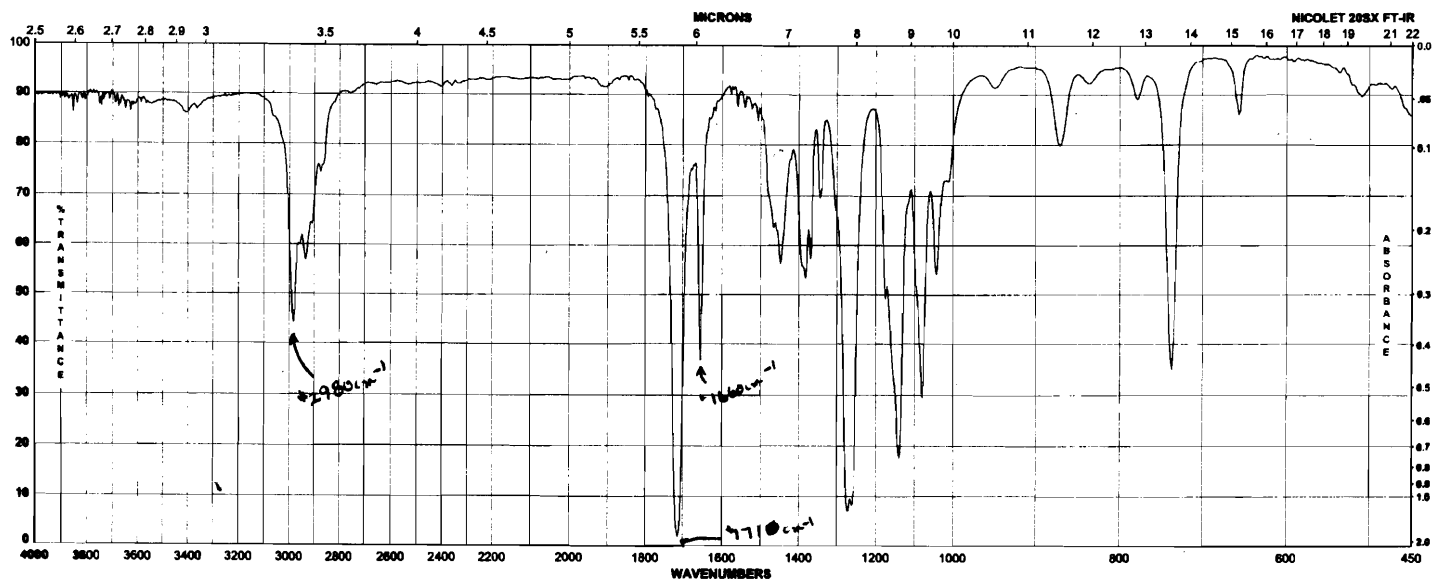
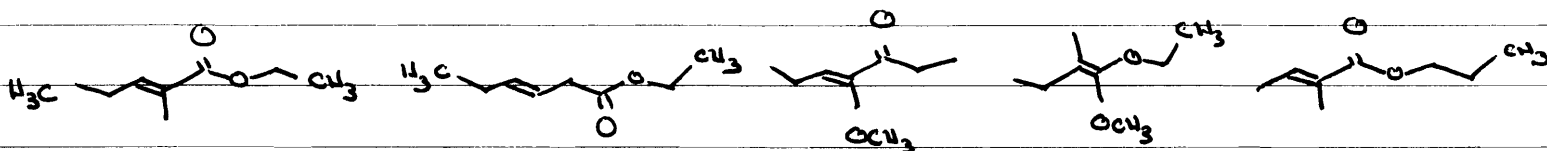


1b) EXACTLY THE SAME QUESTION, EXCEPT

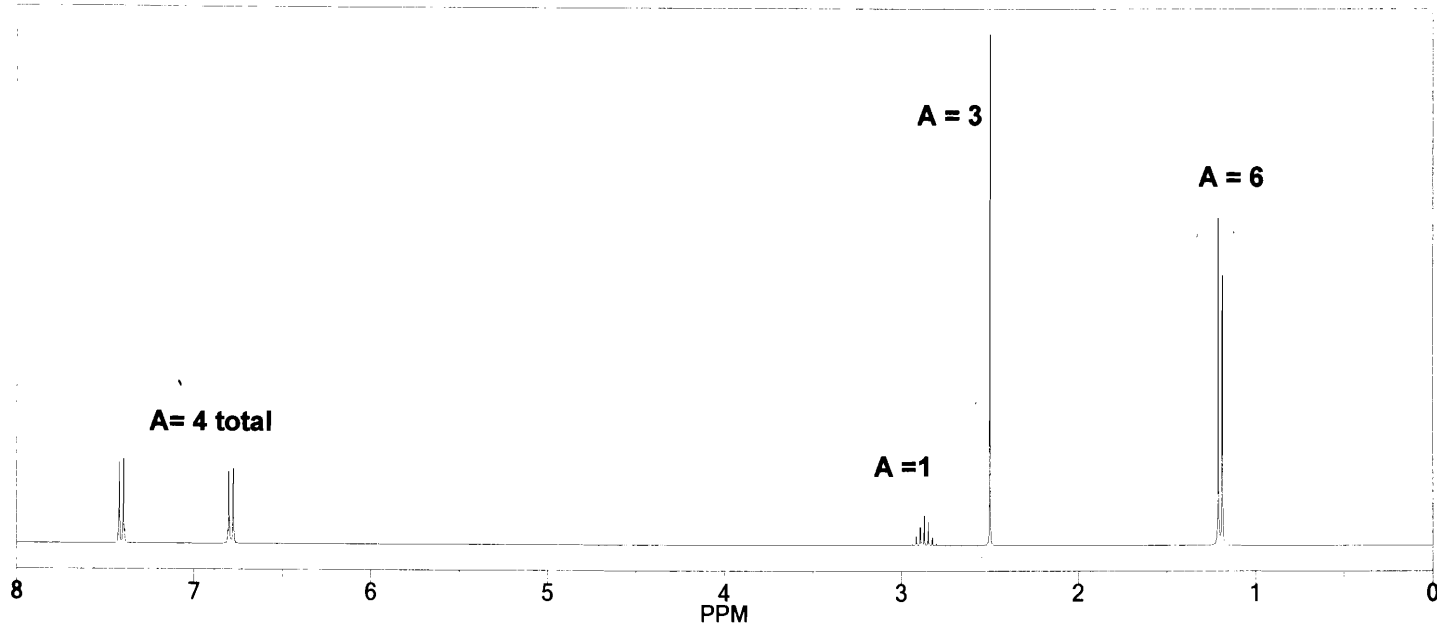
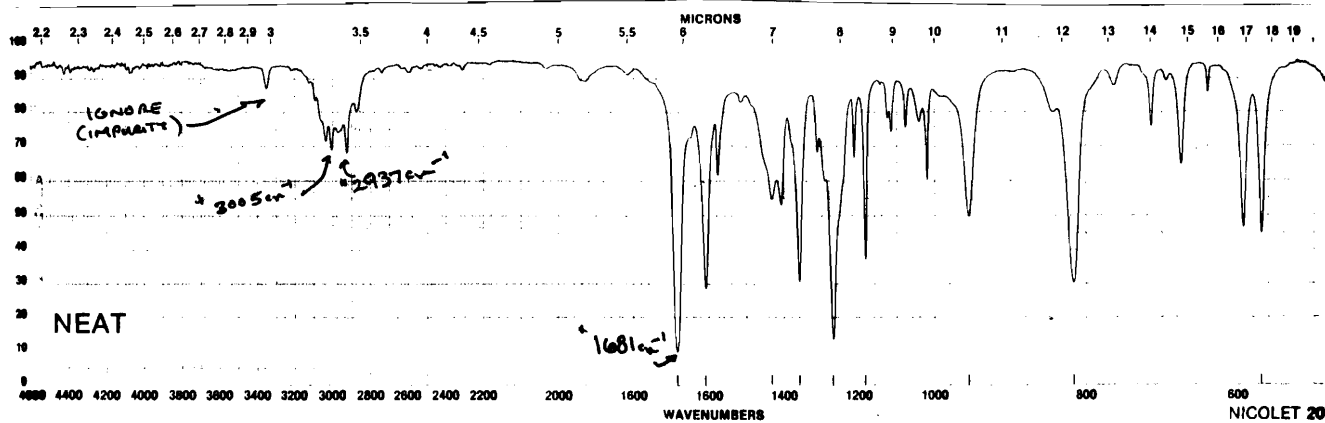
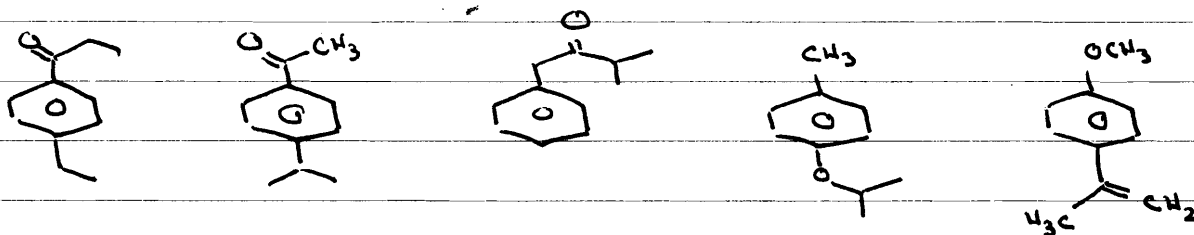
C, 67.57% ; H, 9.92% ; O, 22.50%

$n/e = 142$

AND THE CANDIDATES ARE

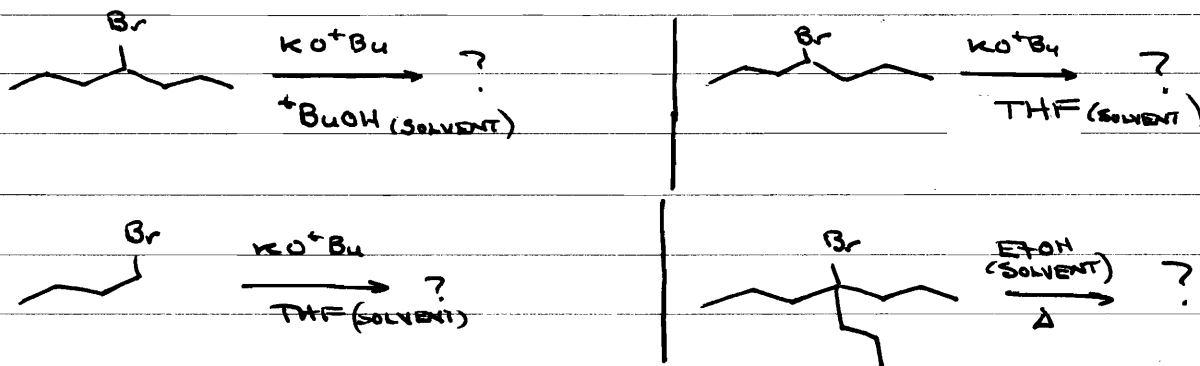


1c) AND ONE MORE, EXCEPT IT'S C, 81.44%; H, 8.70%; O, 9.86%.
 AND n/e = 162

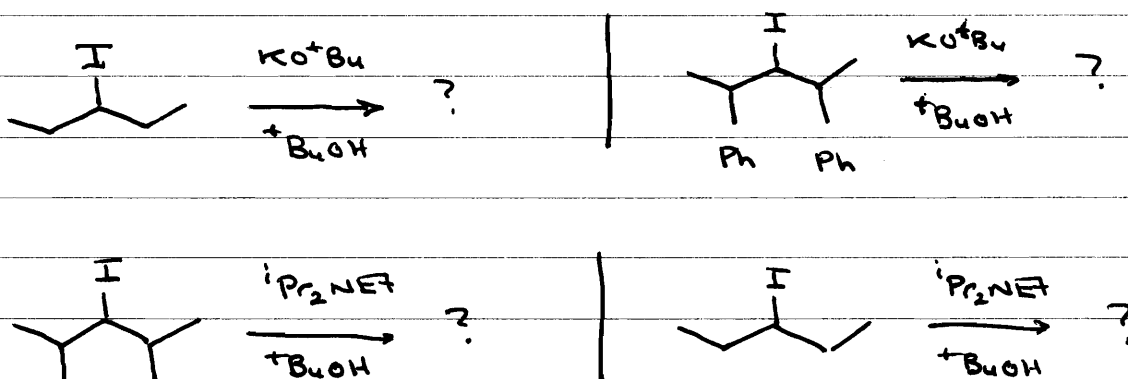


2 a) RANK THE FOLLOWING IN THEIR RELATIVE TENDENCY TO UNDERGO E1 ELIMINATION AS OPPOSED TO E2. YOU MAY IGNORE ANY POSSIBLE COMPETITIVE SUBSTITUTION PRODUCTS. INCLUDE THE (ELIMINATION) PRODUCTS AND GIVE THE REASONING BEHIND YOUR ORDERING.

NOTE: DIELECTRIC CONSTANT THF, 7.6 ; $t\text{BuOH}$ 12.4 ; EtOH, 24.5

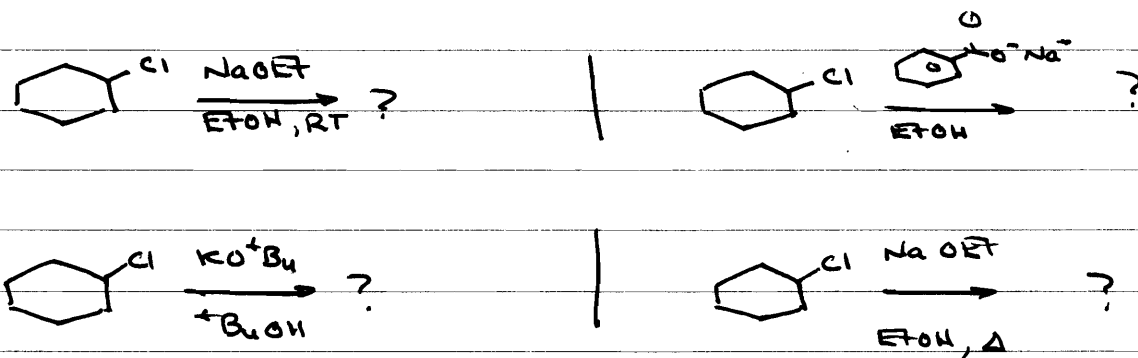


b) SAME QUESTION, DIFFERENT EXAMPLES.



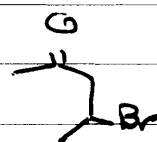
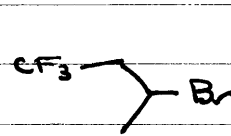
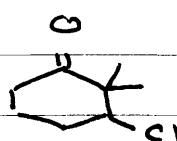
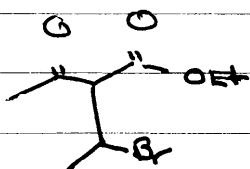
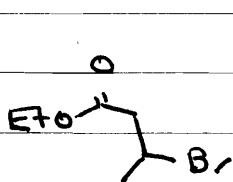
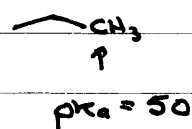
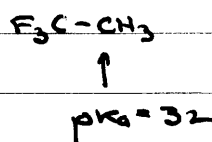
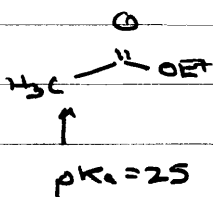
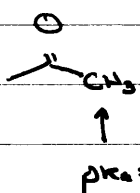
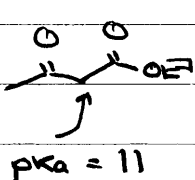
NOTE: $i\text{Pr}_2\text{NEt}$ IS MUCH LIKE TRIETHYLAMINE (Et_3N), EXCEPT A BIT MORE STERICALLY HINDERED.

c.) RANK THE FOLLOWING IN THEIR RELATIVE TENDENCY TO UNDERGO ELIMINATION OVER SUBSTITUTION. INCLUDE PRODUCTS, AND THE REASONS FOR YOUR ORDERING.



d) RANK THE FOLLOWING IN TERMS OF THEIR ABILITY TO DO AN E1cB ELIMINATION REACTION. INCLUDE THE PRODUCTS. LET'S ASSUME THE BASE IS ALWAYS EtO^- IN EtOH (SOLVENT)

SOME USEFUL DATA ON ACIDITY



3. GIVE THE PRODUCTS OF THE FOLLOWING E2 ELIMINATION REACTIONS. YOU MAY NEED TO DRAW NEWMAN PROJECTIONS (ANY OTHER CONVINCING 3-D REPRESENTATION WILL DO) TO WORK THROUGH YOUR RESULTS

