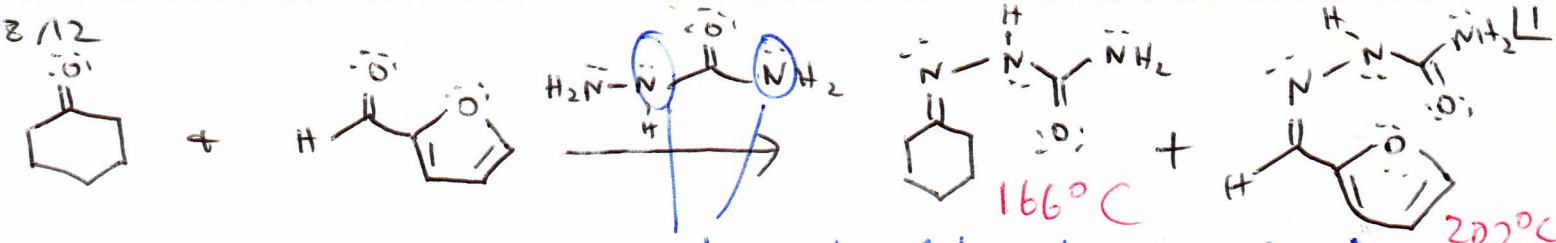
3/8/12



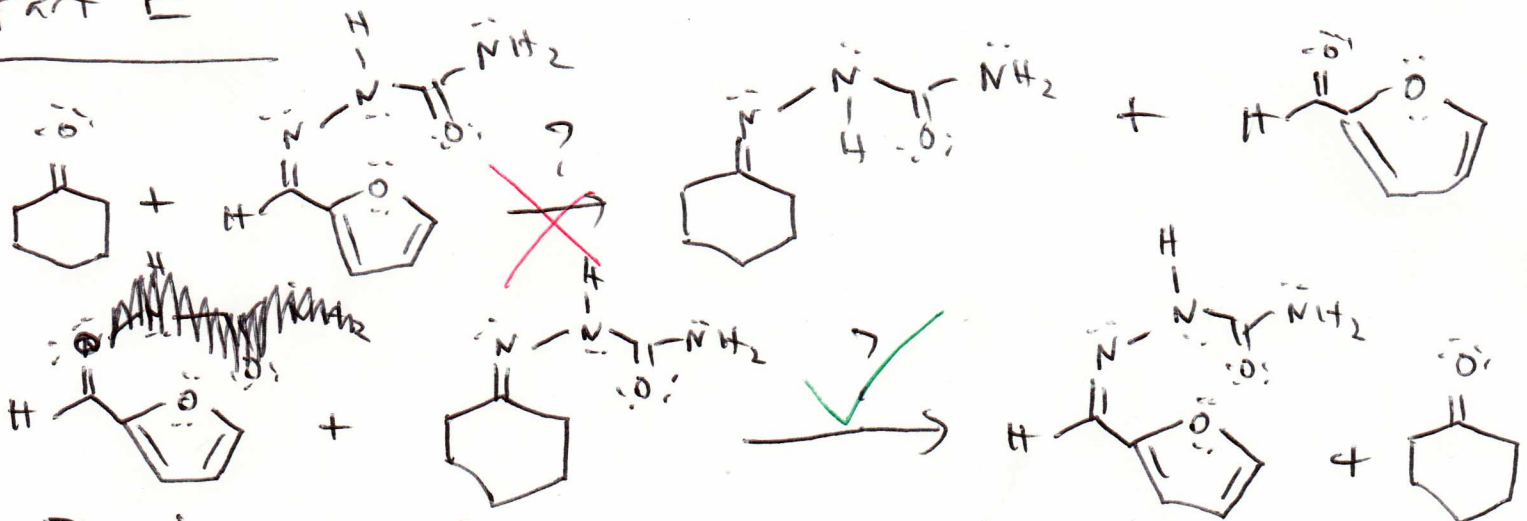
These lone pairs are heavily delocalized w/ the carbonyl so they are less reactive,

*There is no connection between the magnitude of the melting point + which product is the thermodynamic vs kinetic product.

Part C

When the rxn is conducted @ low T, the kinetic product should predominate, while @ high T, the thermo. product should predominate. Whichever of the two refence compounds (made in parts A + B) most closely matches the MP obtained from the mixture formed @ low T is the kinetic product, and whichever matches the MP for the mixture formed @ high T is the thermodynamic product.

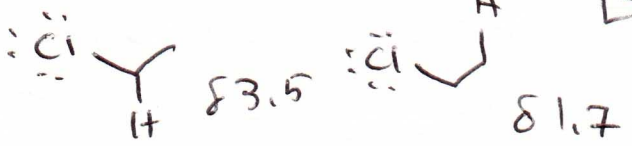
Part E



In these competition reactions, whichever rxn involves the thermodynamic product should not occur, since the thermo. product is unlikely to reverse,

$C_5H_{11}Cl$

δ 1.704, q, 2H
δ 1.556, s, 6H
δ 1.036, t, 3H



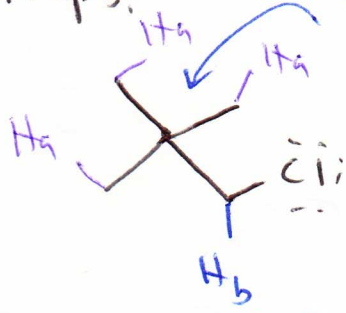
0 D.U, so no rings and no double bonds

Method #1: δ analysis

The δ data provided appear to indicate there are no H on the same carbon as the chlorine. This means the carbon chlorine is attached to must be quaternary.

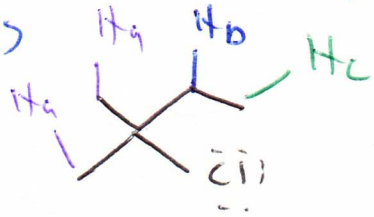
Method #2: δ symmetry

With an integration of 6, there must be two equivalent carbons each w/ 3 hydrogens, or 3 carbons w/ two hydrogens. Given the small size of the compound, it is much more likely to be 2 methyl groups. The peak that integrates to 6 is also a singlet, so those hydrogens have no neighbors



2 signals ✗

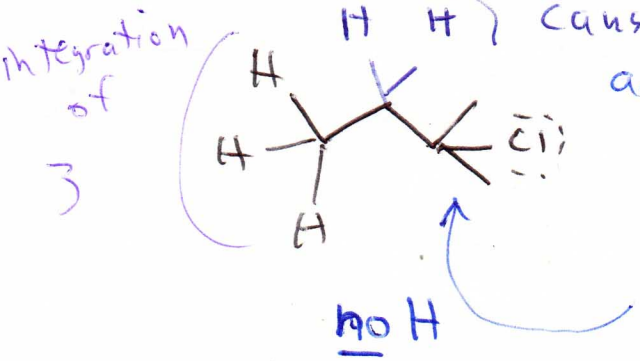
or



3 signals ✓

Method #3: Splitting

- There is a triplet that integrates to 3,

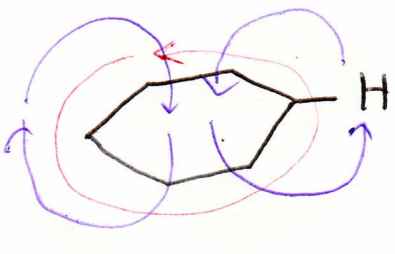


H H causes triplet, ← these hydrogens are only split into a quartet, so they only have neighbors on one side.

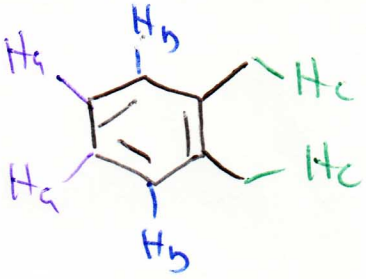
C_8H_{10} δ 7.04, 5, 4
δ 2.296, 5, 6

D.O.U. $\longrightarrow$ 4

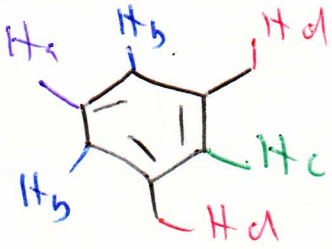
← Has 4 D.O.U. and $7 \leq \delta \leq 8$.



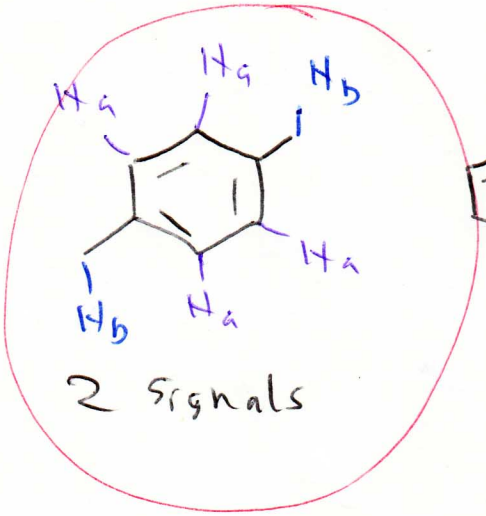
When benzene is placed in a magnetic field, a ring current is generated which causes a local magnetic field to form that opposes the external field on the interior of the benzene ring but adds to the magnetic field on the exterior of the magnetic field. This means benzene hydrogens experience a higher magnetic field and ∴ have a higher chemical shift.



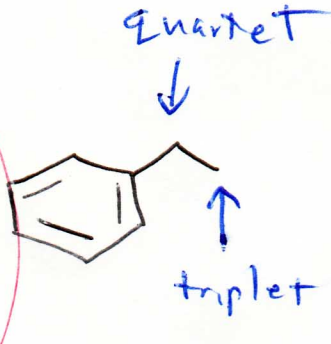
3 signals



4 signals



2 signals



5 signals