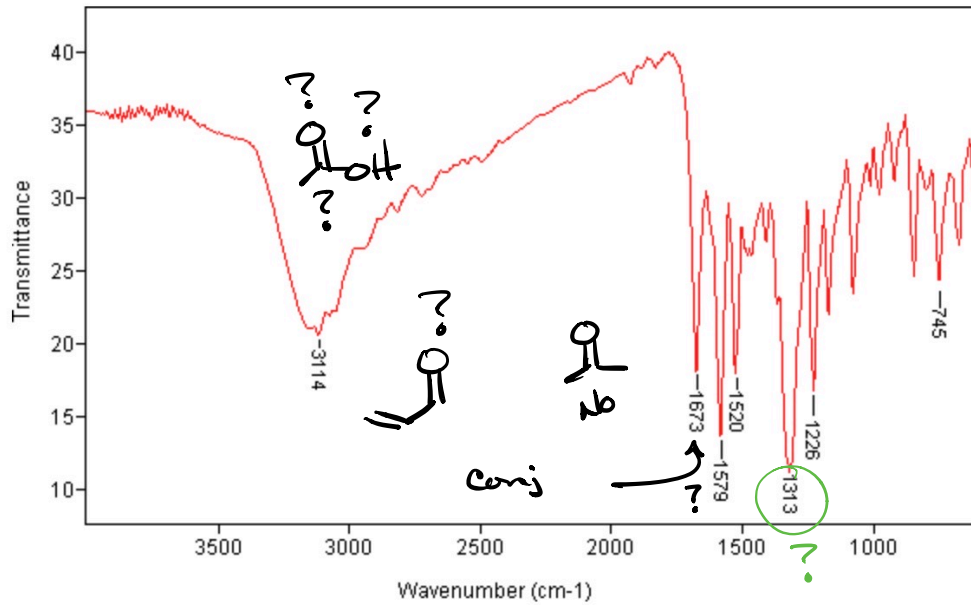


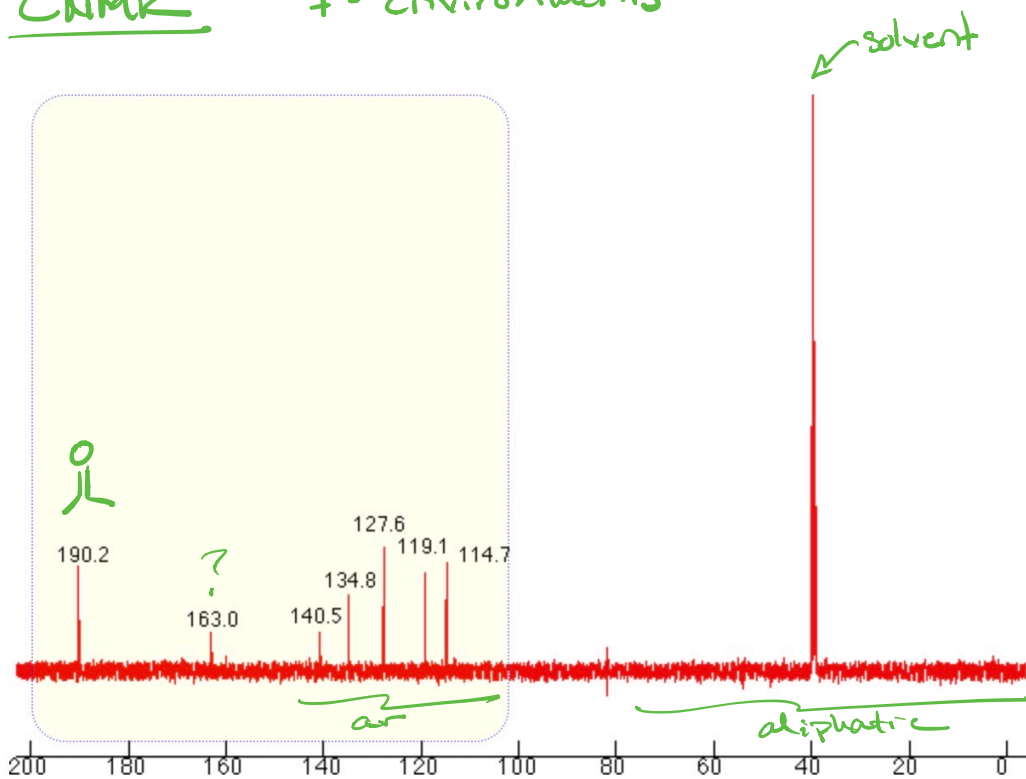
All In One Problem - Mass Spec, NMR, IR

FTIR



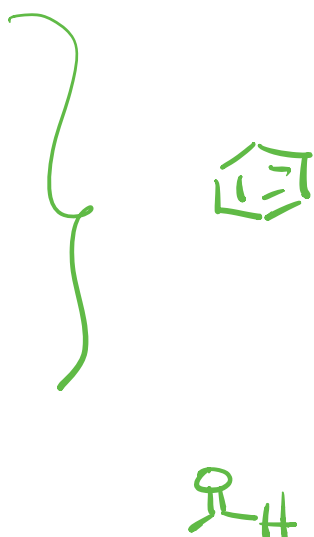
CNMR

7 - Environments



Click on the highlighted area to zoom. Click again to zoom back out.

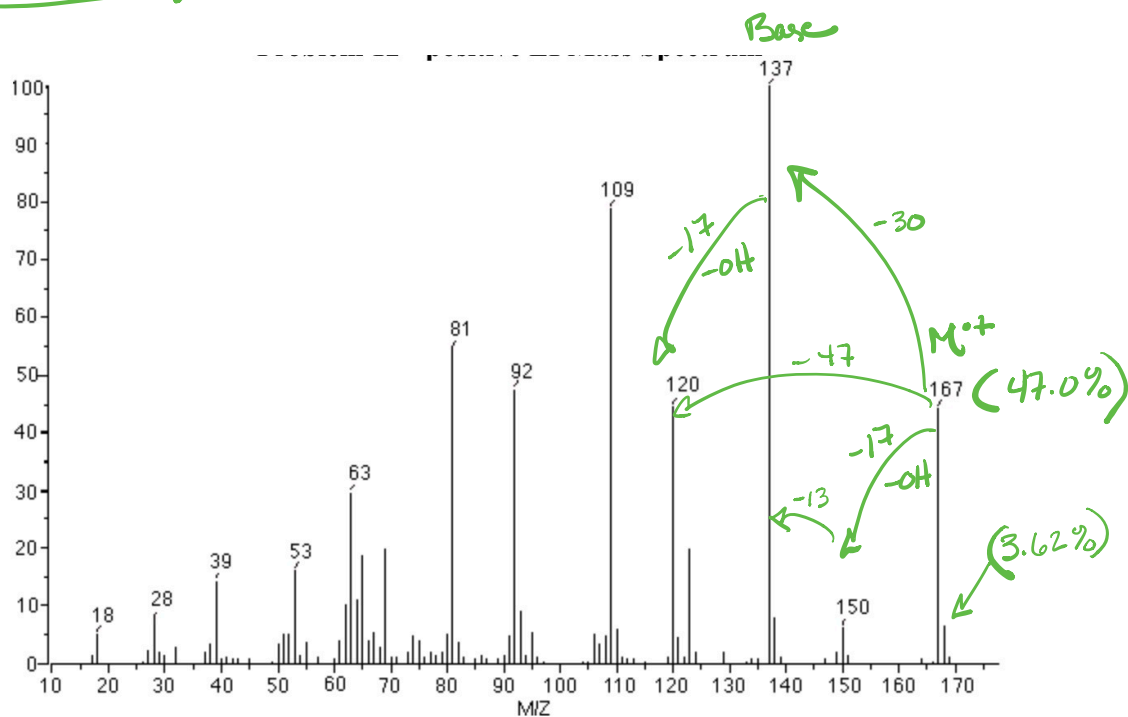
- 114.7
- 119.1
- 127.6
- 134.8
- 140.5
- 163.0
- 190.2



No carbons
Remaining for

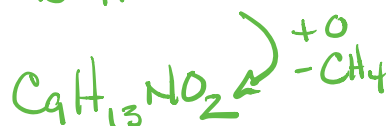
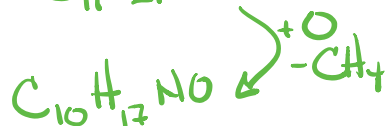
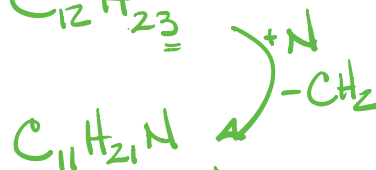
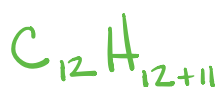


Mass Spec



M^+ odd \Rightarrow odd # of N

$$13 \overline{) 167} \\ \underline{156} \\ 11$$



C_{13} isotope

$$\left[\frac{\frac{3.62}{47.0} \times 100}{1.1} \right] = 7.00 = C_7$$

^{13}C isotope \Rightarrow 7 Carbons

$^1\text{H-NMR}$ \Rightarrow 5 Hydrogens

Mass Spec odd M^+ \Rightarrow N

$$\text{C}_7\text{H}_5\text{O}_x\text{N} = 167$$

$$- 103$$

$$\hline 16 \quad | \quad 64$$

4 \Rightarrow oxygen

Molecular Formula



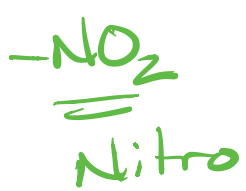
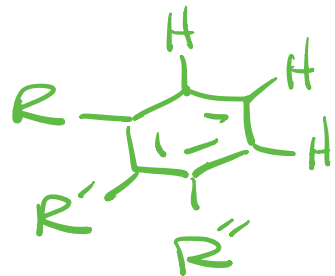
$$\text{C}_n\text{H}_{2n+2+N-x}$$

$$2(7)+2+1 =$$

$$\frac{17}{5}$$

$$\hline 2 \quad | \quad 12$$

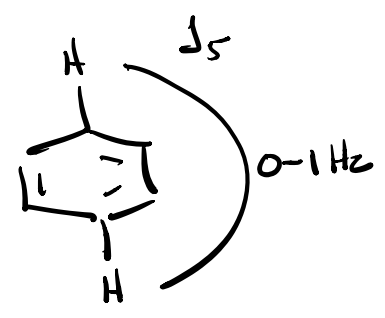
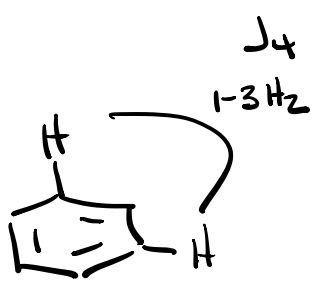
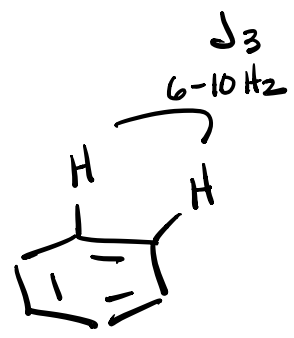
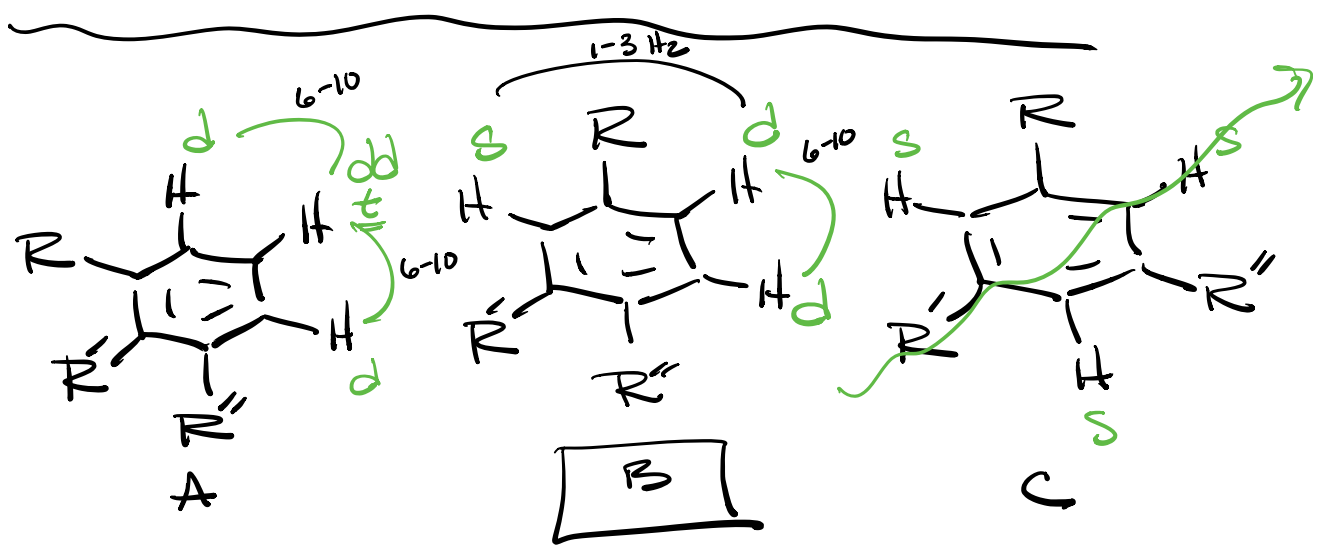
6 units
unsaturation



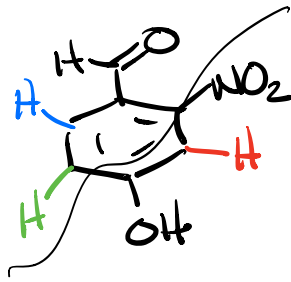
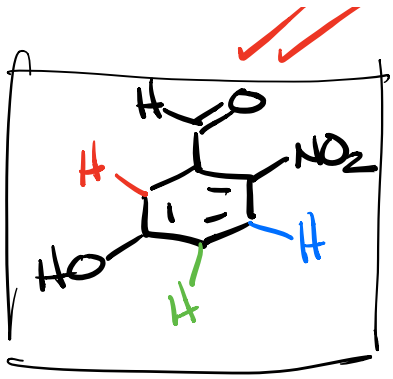
no more Carbons

Long Range
 $J_4 < 2\text{ Hz}$

dd both J_3
 $9\text{ Hz} + 3\text{ Hz}$

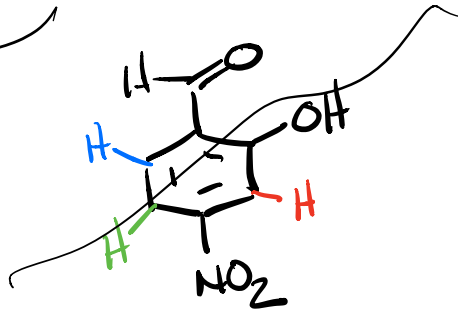
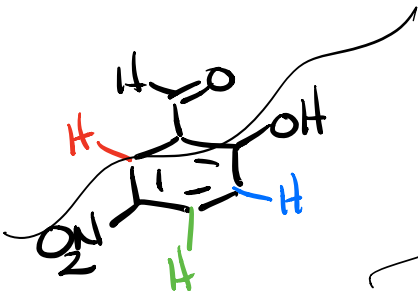


$$\frac{55.4}{56} \times 44 = 44$$

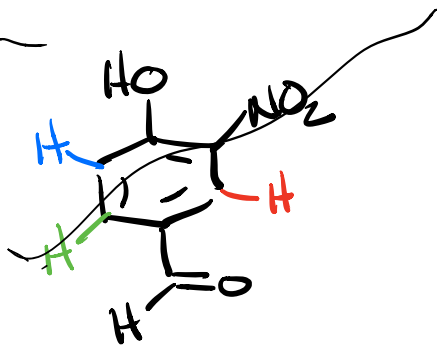
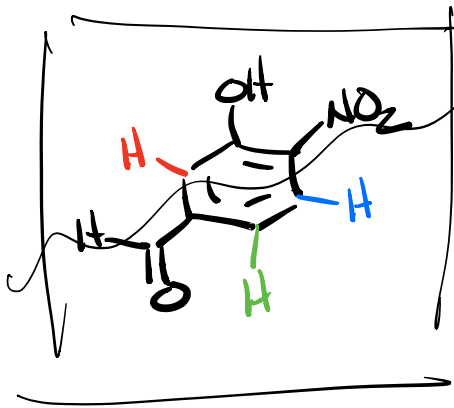


H 3Hz doublet

A



B



C

