1. (2pts) What is the difference between a parent (molecular) peak and a base peak on the mass spectrum?

2. (1 pt) What is the advantage of high resolution mass spectrometry over regular spectrometry? (Be specific.)

3. (3pts) Use the rule of 13 to come up with 3 likely formulas that fit $M^+ = 102$.

4. (4pts) Provide mechanisms to account for the fragments seen in the mass spectrum of these compounds.
5. (10pts) The mass spectrum of an unknown compound was taken and it is shown below. Refer to the spectrum to answer the questions below:

A. The $M^+$ peak is 121. What does that mean about this unknown, besides the fact that its molecular weight is about 121 amu?

B. The compound most likely does not contain chlorine. Explain how you know this:

C. Draw the structure of the group indicated by the peak at m/z = 91.

D. What two situations lead to an even-mass fragment such as the one at 44 amu? Which one is more likely in this case? Explain how you chose this to be the more likely case.