

Unknown 69, C6H8O, had an index of hydrogen deficiency of two and was identified as cyclohexanone by HNMR spectroscopy.

¹HNMR Spectrum:

The HNMR spectrum for cyclohexanone was very simple because of the structure of the molecule. The spectrum gave a chemical shift at 2.5 (t, 4H) of the alpha protons adjacent on either side of the carbonyl. These protons were shifted a little further down field due to the polarity associated with the carbonyl, C=O. The overall resonance at 1.8 (m, 6H) were due to

overlapping multiplets for the beta and gamma protons furthest from the carbonyl on the ring. <u>- include a image of the student assigned NMR known - %%%</u>%%%



%%% - include a CNMR spectrum of the student unknown - %%% The CNMR spectrum of cyclohexanone was also fairly simple and spectrum showed a total

four separate resonances for this symmetrical molecule. The carbonyl carbon showed a resonance in the range of 200-220 ppm, which is characteristic of a ketone carbonyl carbon.



The other three resonances appear in the range of 20-40 ppm, which are characteristic of

saturated carbons, which appear on the ring and for alpha carbons to a carbonyl. check list, 1) include an image of HNMR 2) include image of CNMR 3) write in third person, past tense passive voice, 4) talk the talk, for example "the vinylic resonance at 5.5 (d, 1H) was typical for a proton attached to a double bond as seen the molecule.... 5)Discuss how well spectral data and chemical shift values discussed in our course compared to actual HNMR data from the Reference: reference your spectra.