

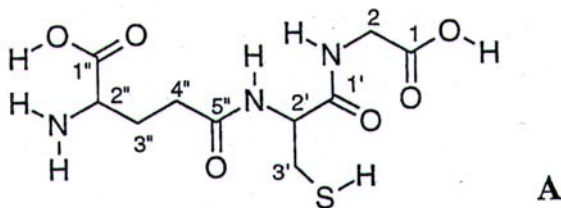
Ch24b Spring Term 2004  
Homework Set #6  
Due: June 2, 2004

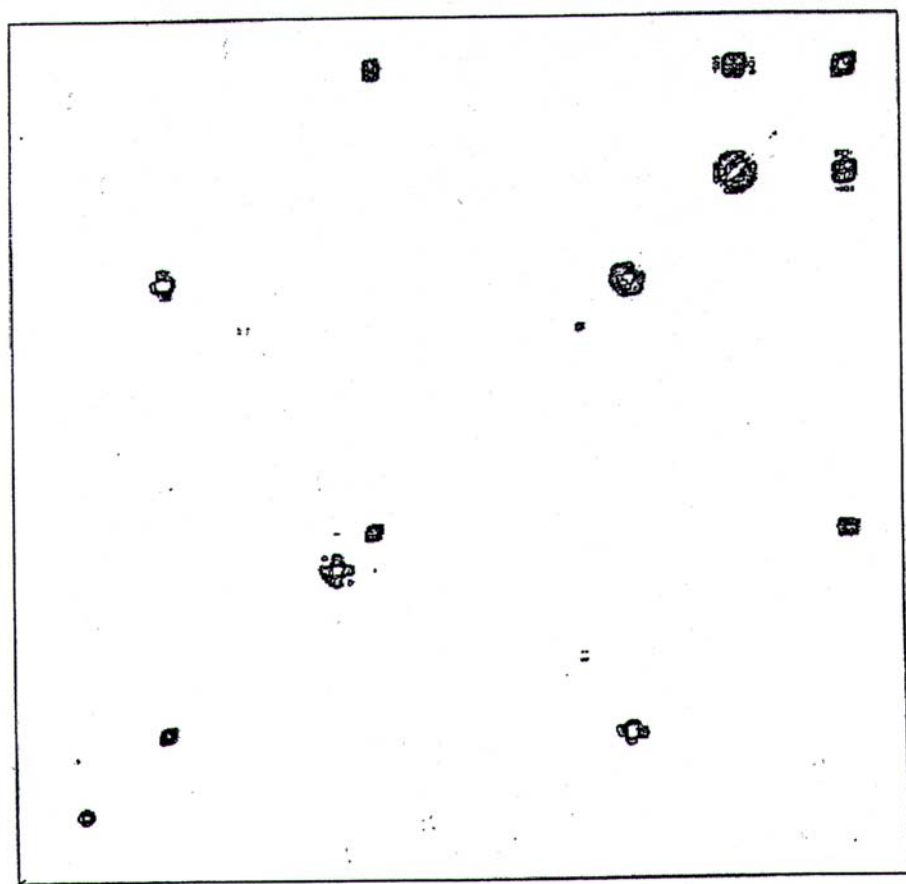
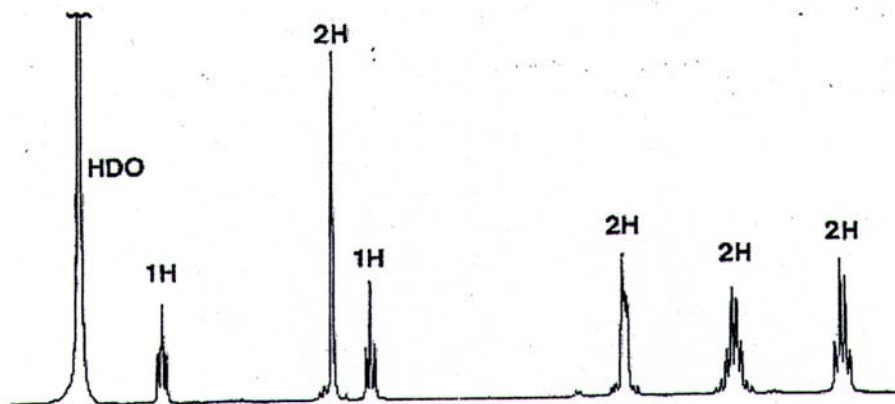
Part A

From Tinoco, Sauer, Wang and Puglisi: Chapter 10, Problems: 9, 21, 22, 26, and 32

Part B

- I. The nucleus  $^{11}\text{B}$  has  $I=3/2$  and  $g_N = 1.792$ . Calculate the energy levels of a  $^{11}\text{B}$  nucleus in a magnetic field of 1.50 T. ( $\gamma = g_N e/2m_p$ )
  
- II. The H,H COSY spectrum on the following page, and the one-dimensional  $^1\text{H}$  NMR spectrum at the top of it have been recorded from a sample of glutathione ( $\gamma$ -L-glutamyl-L-cysteinylglycine, **A**) in  $\text{D}_2\text{O}$ . Assign the signals as far as possible. Explain your reasoning. Why do the signals at  $\delta = 2.3 - 2.4$  and  $\delta = 2.6 - 2.7$  appear as strongly split multiplets?





4.5 4.0 3.5 3.0 2.5 2.0