Part A

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

Part B

I. The nucleus $^{11}$B has $I=3/2$ and $g_N = 1.792$. Calculate the energy levels of a $^{11}$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 $^1$H NMR spectrum at the top of it have been recorded from a sample of glutathione ($\gamma$-L-glutamyl-L-cysteylnylglycine, A) in D$_2$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?