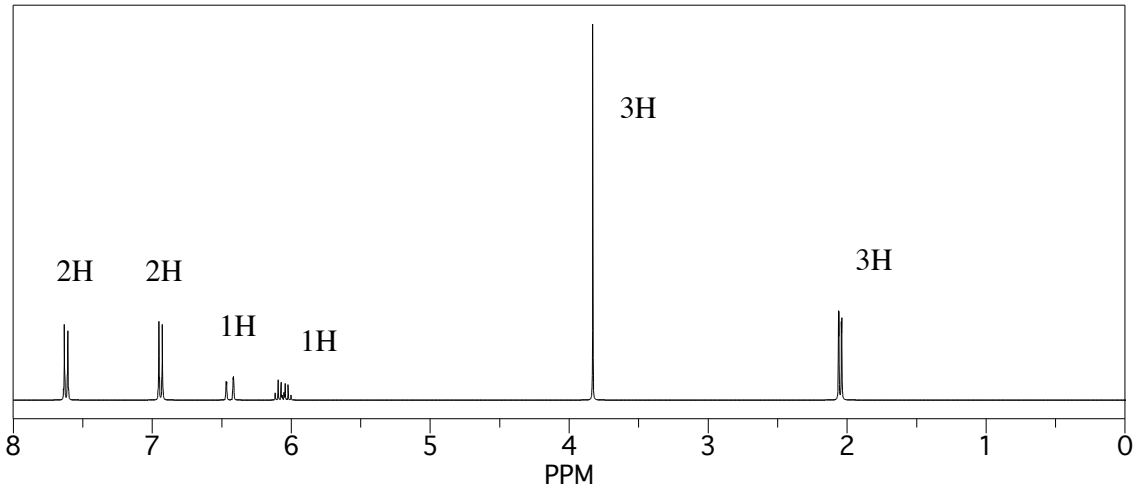
Problem NMR11.4. A sample of a natural product was isolated from plant material and subjected to analysis.

a) IR spectroscopy gave the following data: 3097 (m), 2975 (m), 1600 (m), 1495 (m), 1235 (s), 1056 (s), 747 (m), 705 (m) cm^{-1}. Provide a data table with possible assignments for these peaks.
b) The compound was shown via high-resolution mass spectrometry to have the probable formula $C_{10}H_{12}O$.What is the degree of unsaturation in this compound?

c) ^{1}H NMR spectroscopy provided the following spectrum. Provide a data table with partial structures for each peak.



d) Suggest a likely structure for this compound.