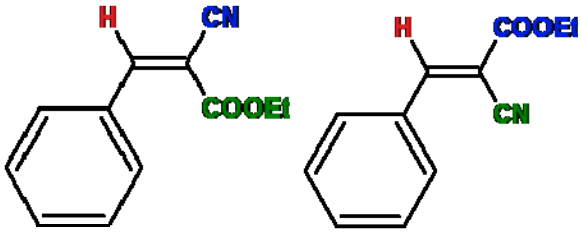
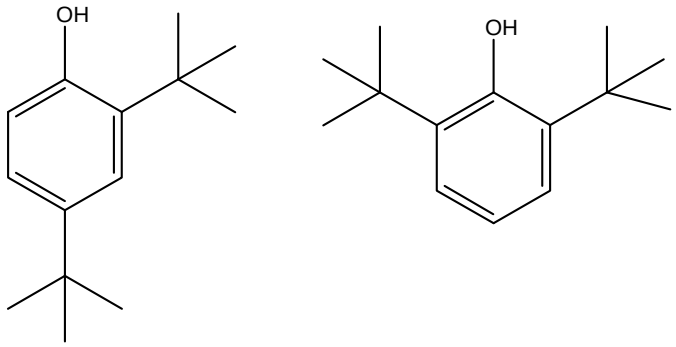
HW 3	Multinuclear NMR	Name:	
Points:	**C6800**	**Date:**	
Max. 100 points	**Spring 2014**	**Version A**	

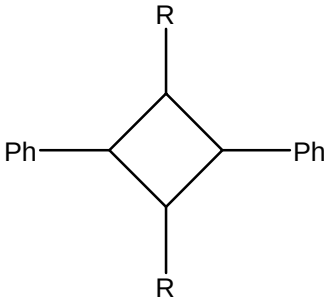
1. Decide which isomer of the compounds below is present when the experimental value of olefinic proton shift in the ^{1}H NMR spectrum is 8.22 ppm. Use tables of increments.



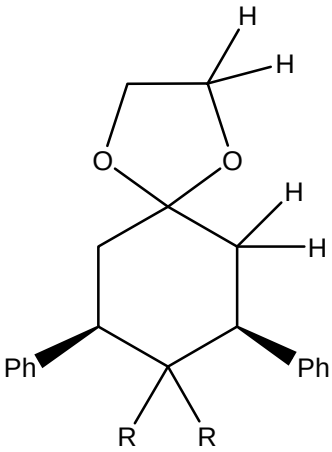
2. How would you distinguish these two isomers. Give the symmetry point groups of the molecules. Calculate chemical shifts of aromatic protons and carbons.

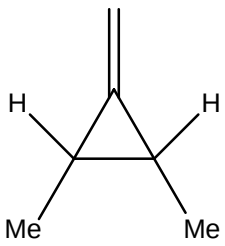


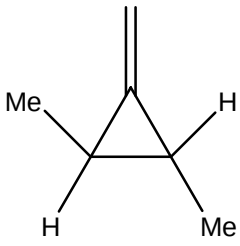
3. Draw possible stereoisomers of the following molecule, assign their symmetry space groups and decide how many signals of CH groups will be present in the ^{1}H NMR spectra:



4. Mark protons as C_2, homotopic (H), enantiotopic (E) and diastereotopic (D) in the following molecules:







5. Calculate relative populations of ^{207}Pb isotopomers in the molecule of plumbane: