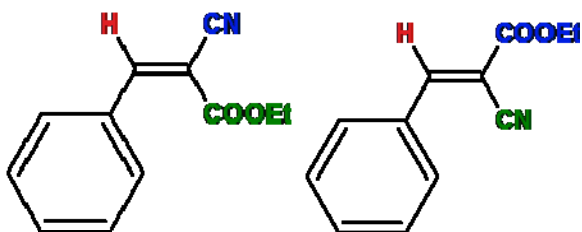
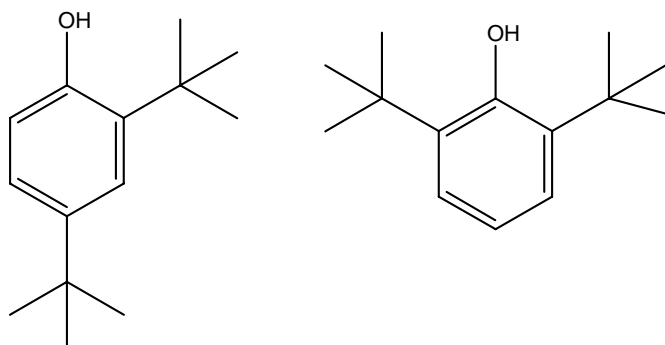


HW 3	Multinuclear NMR	Name:	
Points:	C6800	Date:	
Max. 100 points	Spring 2011	Version A	

1. Decide which isomer of the compounds below is present when the experimental value of olefinic proton shift in the ^1H NMR spectrum is 8.22 ppm. (Calculate chemical shifts of olefinic protons.)



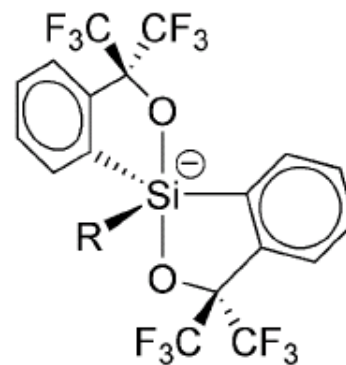
2. How would you distinguish these two isomers. Give the symmetry point groups of the molecules. Calculate chemical shifts of aromatic protons and carbons.



3. Consider two derivatives of the following anion:

A) R = F, **B)** R = CHMePh

- Draw clearly all symmetry elements present in the anion.
- Give the symmetry point group of this anion.
- Are there any geminal groups? If yes, what class do they belong to?
- How many resonances (signals) do you expect in the ^{19}F NMR spectra.
- How would you explain, that in **A** there is only one signal at room temperature.



4. How would you explain the number of signals in the ^{29}Si NMR spectra the following molecules:

- R = Ph, -145.9;
- R = (R,S)-CHMePh, -146.1, -146.4, -146.6;
- R = (R)-CHMePh, -146.2, -146.8;

