HW 4	Multinuclear NMR	Name:	
Points:	C6800	Date:	
Max. 100 points	Spring 2011	Version A	

1. Fluorinated ethers are used as anestethics. Give number of signals, integral intensities, splitting patterns (multiplicity) and relative intensities of lines in the multiplets in their ^{1}H and ^{19}F NMR spectra. Find and classify the geminal groups. Consider only three-bond scalar coupling.

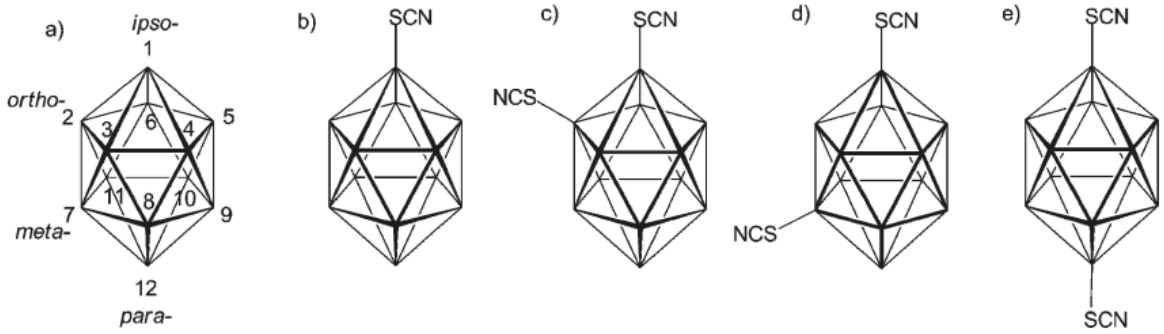
a) Isoflurane $CF_3CHClOCHF_2$

b) Desflurane $CF_3CHFOCHF_2$

c) Enflurane $CHClFCF_2OCHF_2$

d) Sevoflurane $(CF_3)_3CHOCH_2F$

2. For the non-, mono-, and disubstituted $B_{12}H_{12}^{2-}$ molecules with identical substituents SCN consider ^{11}B NMR spectra and give:



A) Symmetry point group of the molecules

a)	b)	c)	d)	e)
			C_{2v}	

B) Number of groups of equivalent ^{11}B atoms

a)	b)	c)	d)	e)
1				

C) Relative intensities of the signals

a)	b)	c)	d)	e)

D) Use the numbering scheme in a) and list atoms in equivalent groups

a)	b)	c)	d)	e)
B1 – B12				