6. How can you explain the fact that trans-1-bromo-2-methylyclohexane yields the non-Zaitsev elimination product 3-methylycyclohexene on treatment with base? (8 points)

7. Ethers can often be prepared by S,2 reaction of alkoxide ions, RO-, with alkyl halides. Suppose you wanted to prepare cyclohexyl methyl ether. Which of the two possible routes shown below would you choose? Explain. (8 points)

8. How would you spectroscopically distinguish between each pair of related compounds? Explain briefly. (4 points each)

(a)

(b)

2750 peak in IR
S 9-10 ppm in NMR
2-3 ppm singlet in NMR