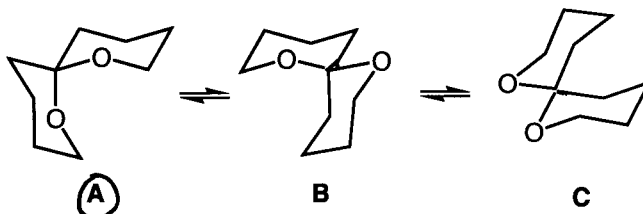


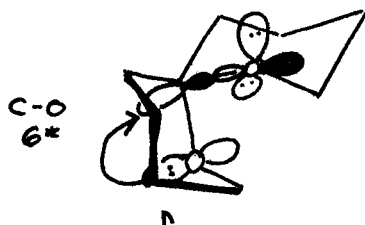
**Week 4 Problem Set**  
*susanp@chem.ucla.edu*

1. The 3 possible conformations of the spiroacetal are labeled A, B, and C, (Delongchamps, P. et al. *Can. J. Chem.* **1981**, *59*, 1105), Only one conformation exists.



i) Circle which conformation is most likely to exist.  $\Rightarrow$  **A**

ii) Briefly explain why this is the prevalent conformation. Please include an orbital argument and a corresponding orbital picture.



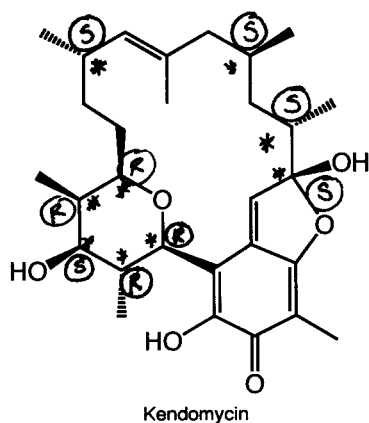
Conformation **A**  $\Rightarrow$

$n_O \rightarrow C-O \sigma^*$   
 donation

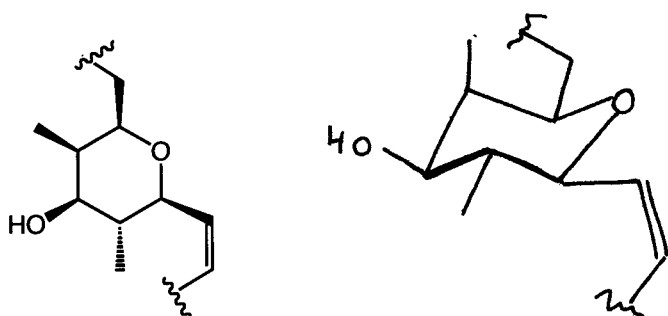
Conformations **B** & **C** do not have  
 this exo anomeric effect

2. Kendomycin is an anti-osteoporotic agent that was recently synthesized by Lee and coworkers (*J. Am. Chem. Soc.* **2004**, *126*, 14720).

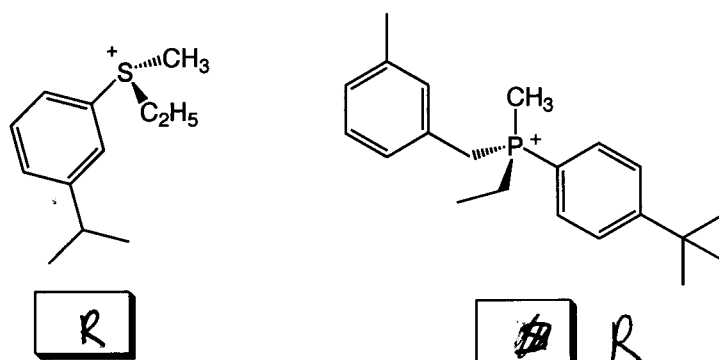
i) Designate each chiral center as *R* or *S*.



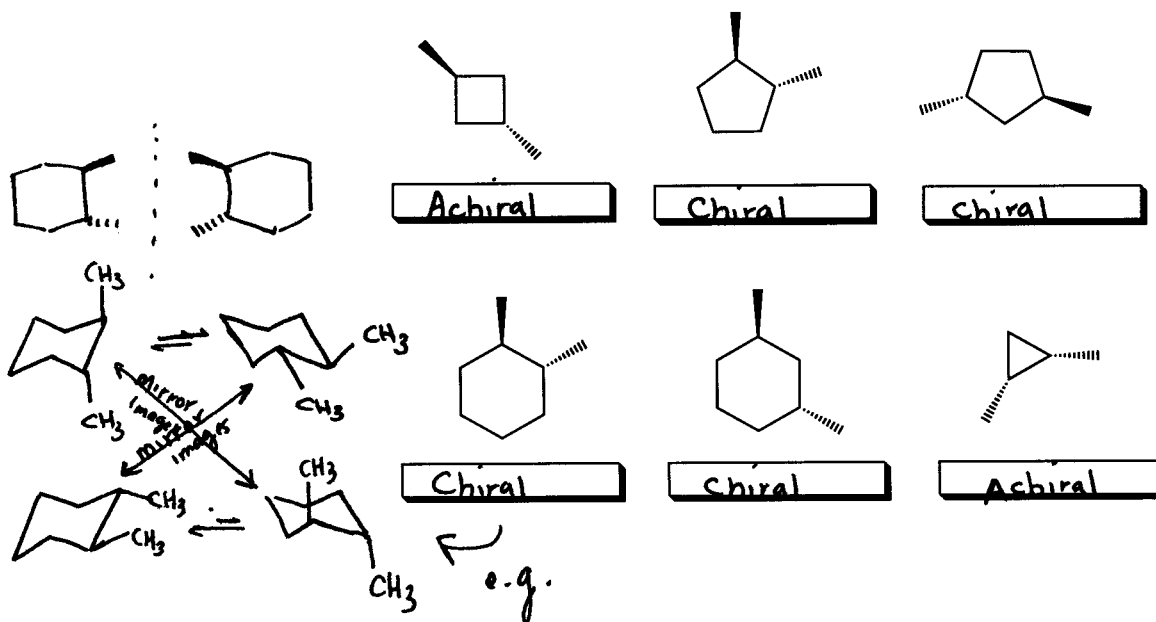
ii) Draw this portion of Kendomycin its most stable conformation.



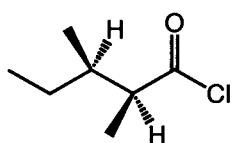
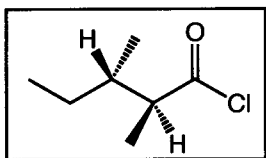
3) Designate each chiral center *R* or *S*.



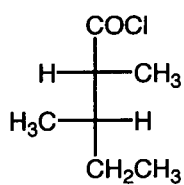
4) Designate each cycloalkane *chiral* or *achiral*.



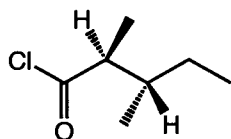
5. Label each structure compared to the one in the box as *same*, *enantiomer*, *diastereomer* or *structural isomer*.



Diastereomer



Diastereomer



Same