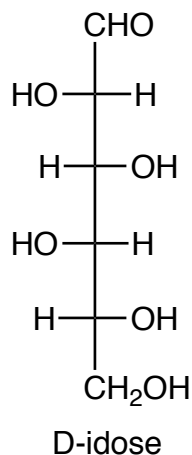
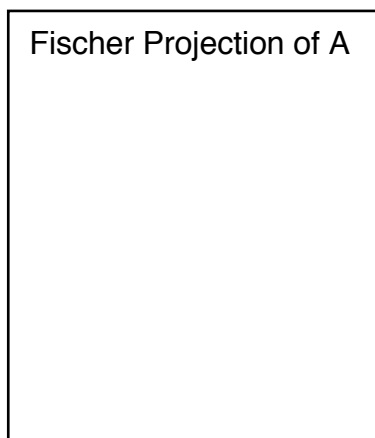


7. (20 points) A compound A, known to be a monomethyl ether of D-idose, can be oxidized to a carboxylic acid B with bromine. When A is subjected to the Wohl degradation, another aldose monomethyl ether is obtained that can be oxidized with bromine. When A is subjected to the Kiliani-Fischer synthesis, two new mono methyl ethers are obtained. Both are optically active, and one can be oxidized with nitric acid to an optically inactive compound. Suggest a structure for A including its stereochemistry. Show your reasoning using Fischer projections to work the problem.



8. (21 points) Draw a molecular orbital energy level diagram for the cycloheptatrienyl cation (C_7H_7^+). Show orbital occupancy. Is the cation aromatic, non-aromatic, or anti-aromatic and why? Based upon resonance structures, what fraction of a positive charge exists at each carbon?

