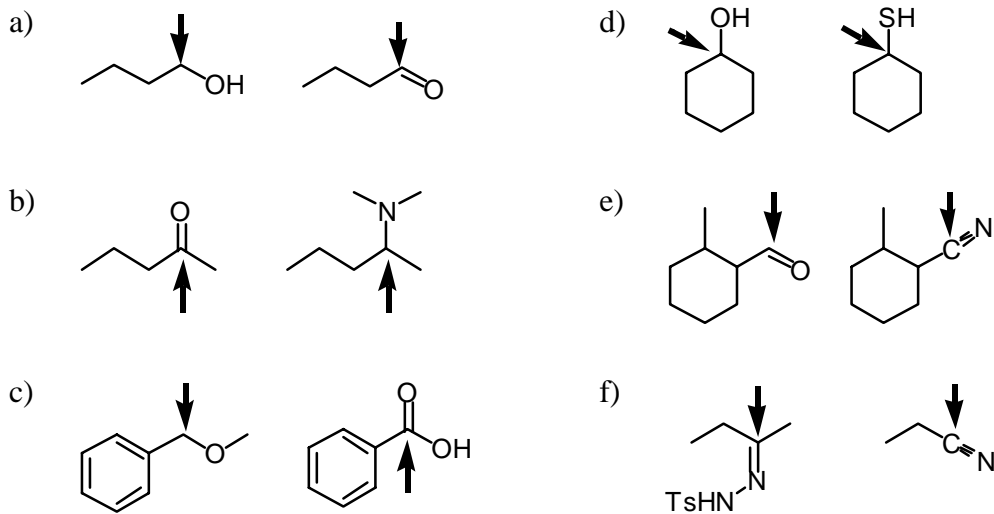


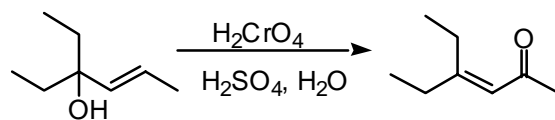
Intensive Organic Chemistry for Freshmen
Problem Set 4

Due: Feb.23.2001

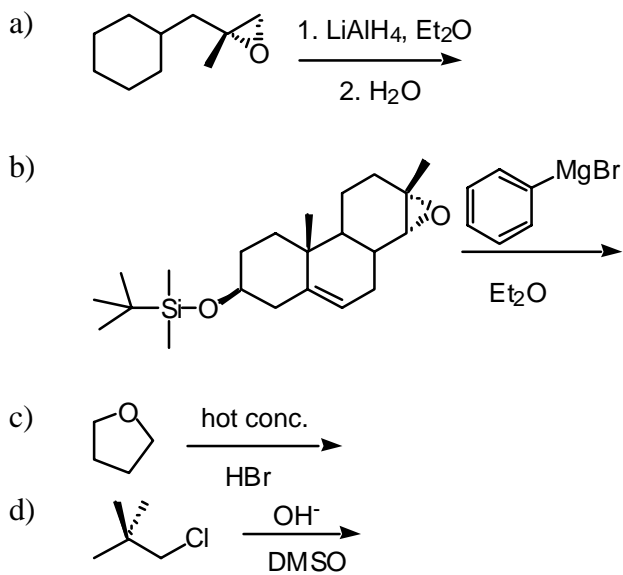
1. For each pair of compounds indicate which is the more oxidized at the carbon atom indicated by the arrow.



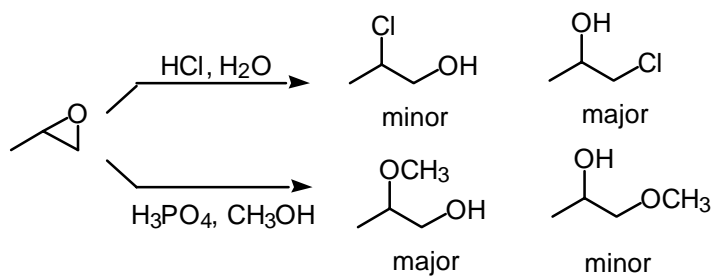
2. Propose a reasonable mechanism for the following reaction.



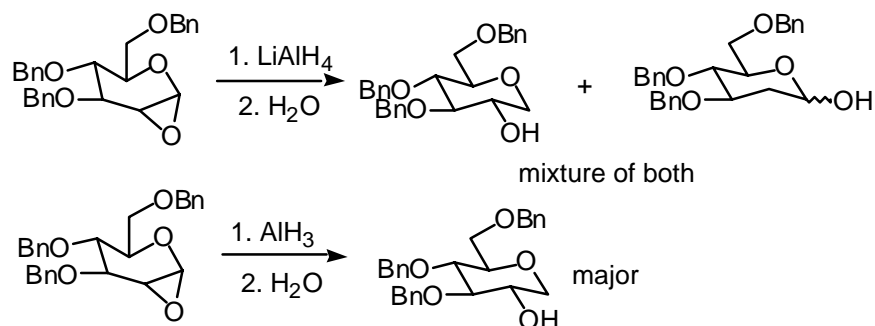
3. What are the products of the following reactions) Explain.



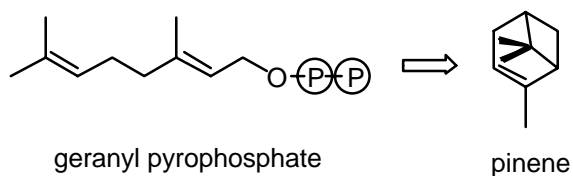
4. Explain the following observations.



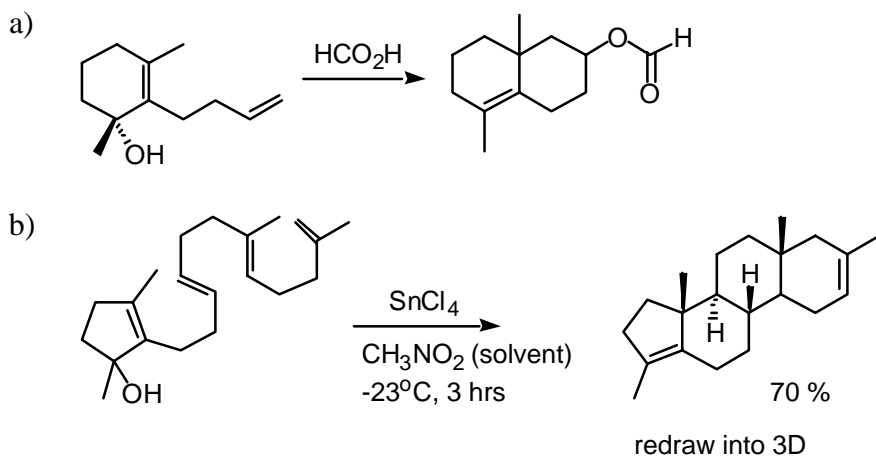
5. Explain the following observation.



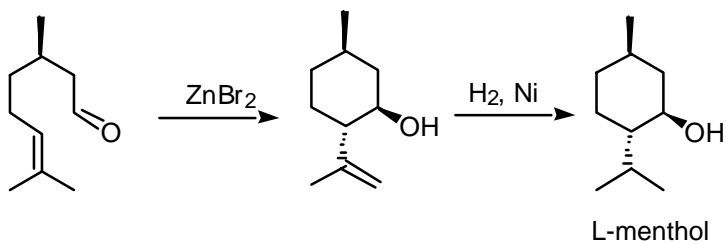
6. Propose a biosynthetic pathway for α -pinene from geranyl pyrophosphate. Explain all crucial steps.



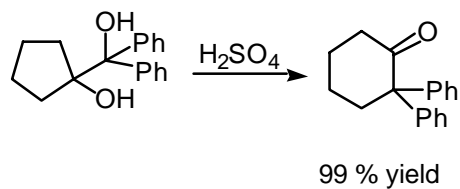
7. Provide a mechanism for the following cyclizations.



c) The last step of the Takasago industrial synthesis of L-menthol;



8. Explain why the given product was formed.



9. In problem 6, one of the geranylpyrophosphate double bonds must be isomerized from E to Z. Propose a reasonable mechanism for this enzyme-catalyzed reaction. Clearly indicate the role of the enzyme (catalyst).