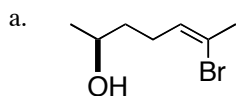
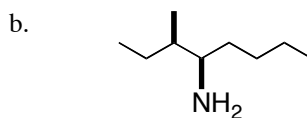


This is an open-book, open notes exam. Please show your work in detail.

1. (10 points) Give the proper IUPAC name for each of the following:



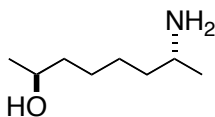
(2S)-(5Z)-6-bromo-5-hepten-2-ol



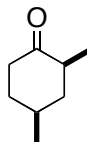
(1R)-1-((1R)-1-methylpropyl)pentanamine

2. (10 points) Draw each of the following structures.

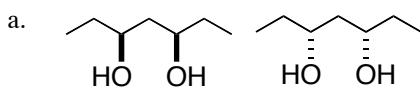
a. (2S, 7R)-7-amino-2-octanol



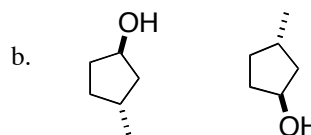
b. (2S, 4S)-2,4-dimethylcyclohexanone



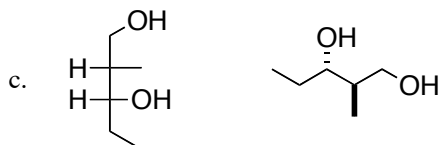
3. (20 points) For each pair of structures, indicate whether they are the same, enantiomers or diastereomers.



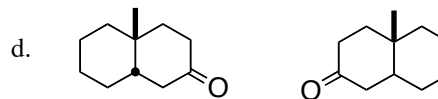
same



enantiomers

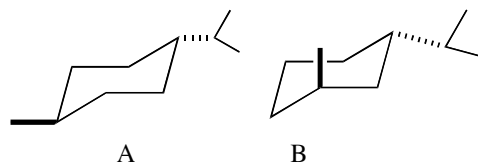
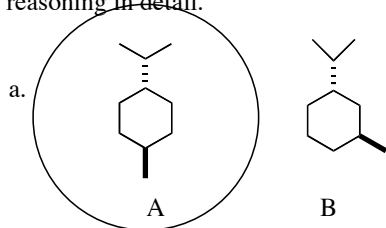


enantiomers

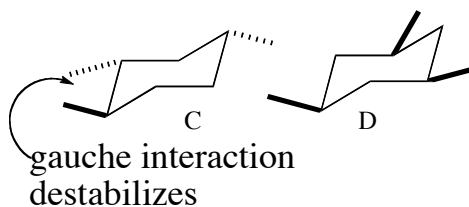
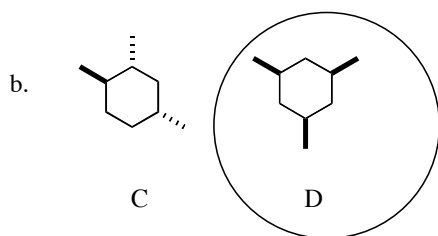


diastereomers

4. (20 points) For each pair of cyclohexanes, indicate which is the more stable. For each, explain your reasoning in detail.

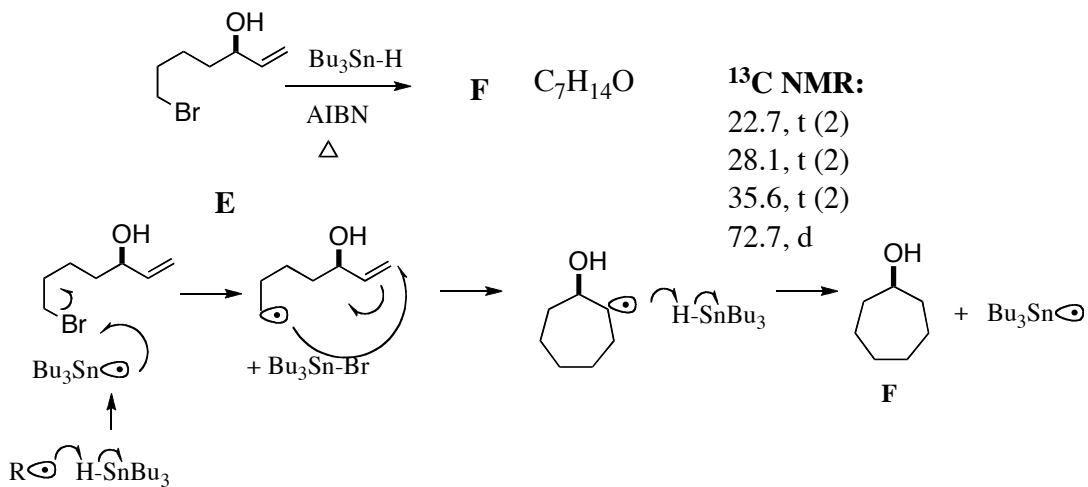


In the more stable chair forms of A and B, the isopropyl group is equatorial. That makes the methyl group axial in B, equatorial in A, so A is the more stable.

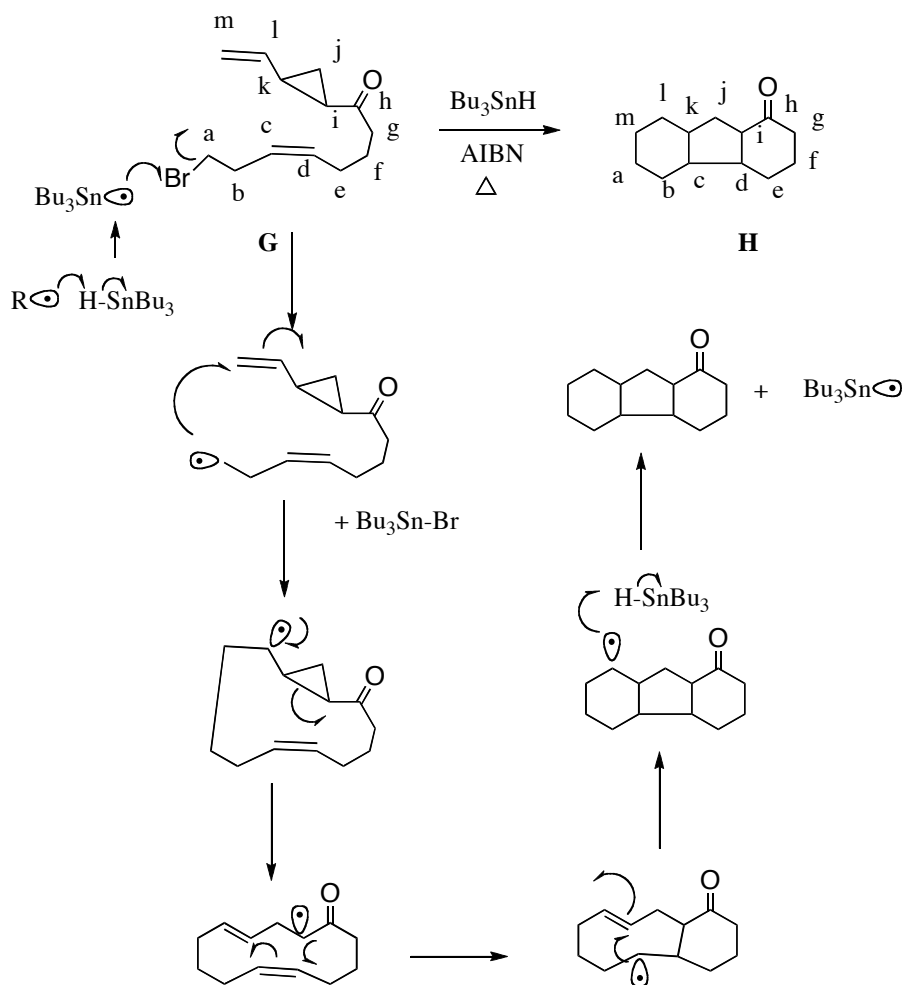


In both C and D, all substituents are equatorial in the more stable chair forms, but C has a destabilizing gauche interaction, so D is more stable.

5. (20 points) Deduce the structure of **F**, and draw a detailed arrow-pushing mechanism for the transformation of **E** to **F**.



6. (20 points) Draw a detailed arrow-pushing mechanism for the transformation of **G** to **H**.



| bb   | bf    |
|------|-------|
| Sn-H | Sn-Br |
| l-m  | c-k   |
| c-d  | i-d   |
| i-k  | a-m   |
| a-Br | l-H   |