

Answer Key

Names of all students (please print) _____

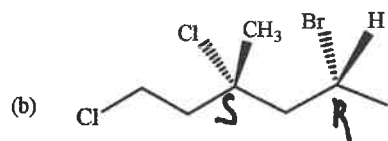
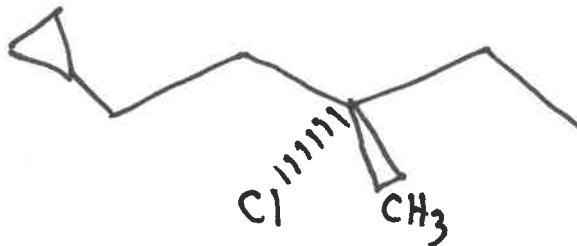
CHEM 243 Organic Chemistry I

Points _____ (10 max)

Worksheet #14: October 13, 2021. Complete the following worksheet by collaborating with a group of 3-4 students. You can use a text book or your lecture video notes. You must work together, with the names of all students included on **ONE** sheet and turned in for a group grade. **All the problems on this worksheet are Review Questions for Exam II.**

(1) Nomenclature and Stereoisomers. If a name is given, draw the correct chemical structure. If a structure is given, give the IUPAC name. **Don't forget to include the proper 3D configuration at each chiral center.**

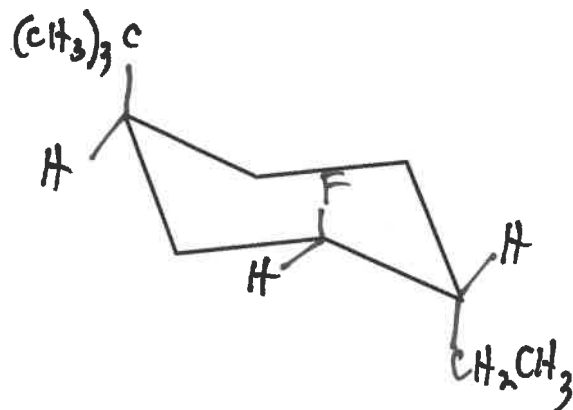
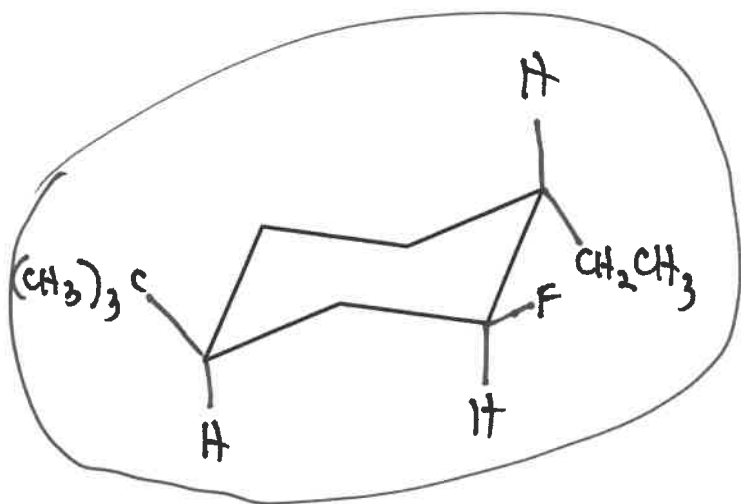
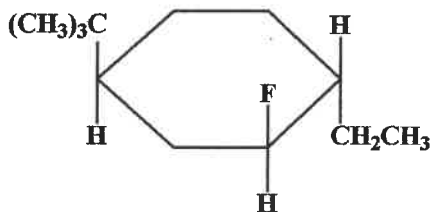
(a) (S)-3-chloro-1-cyclopropyl-3-methyl pentane



(3S, 5R) - 5-bromo-1,3-dichloro-3-methyl hexane

(2) Cyclohexane Conformations.

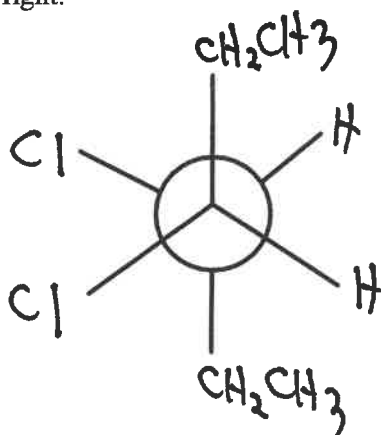
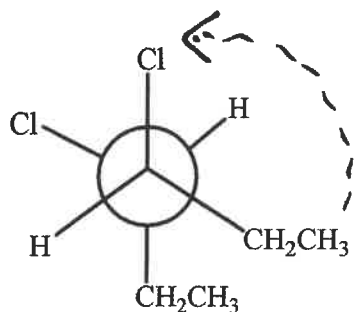
(a) Using the templates below, draw both chair conformers of the 2D molecule drawn to the right. Also include the H atoms.



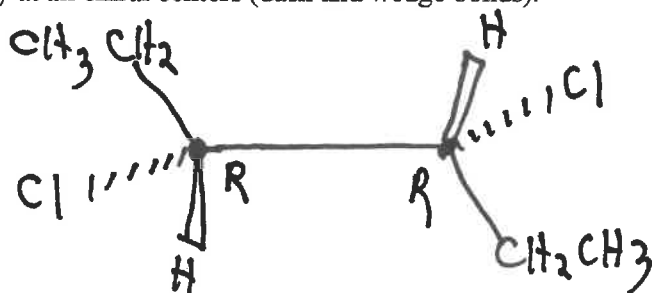
(b) **CIRCLE** the most stable conformer.

(3) Stereochemistry, Newman Projections, Meso Compounds.

(a) Consider the Newman Projection drawn below (on the left). Is this the most stable conformer? If not, then draw the most stable conformer using the Newman template on the right.



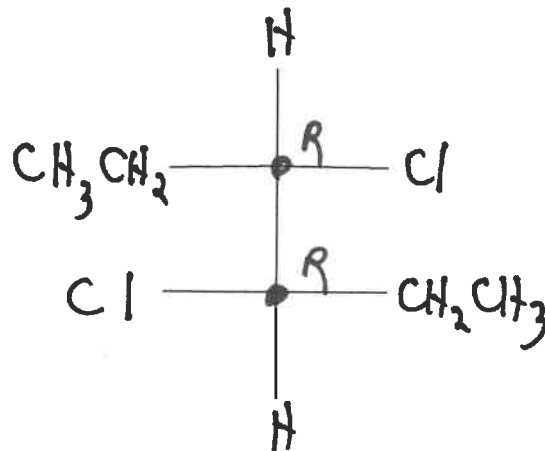
(b) Draw a zig-zag line structure for the compound shown in the Newman Projection above. Be sure to show the proper 3-D stereochemistry at all chiral centers (dash and wedge bonds).



(c) Give an IUPAC name for the structure you drew in part (b). Don't forget R/S designations.

(3R, 4R) - 3,4-dichlorohexane

(d) Now draw a Fisher Projection for this compound using the template at the right. You must place the lowest priority atoms or groups on the vertical axes.



(d) Is this a Meso Compound? CIRCLE: YES or **(NO)**

No plane of symmetry

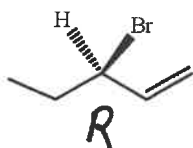
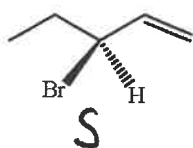
(4) Comparing Organic Structures. How are the following pairs of compounds related? Note the four choices below, and that "identical" is NOT a choice!

Constitutional Isomers

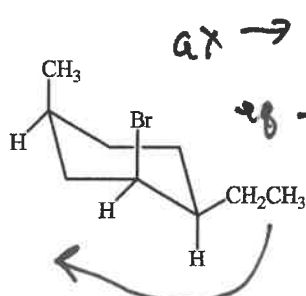
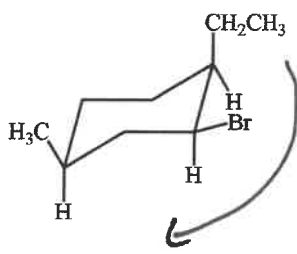
Conformers

Enantiomers

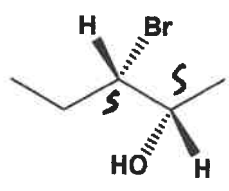
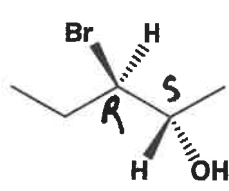
Diastereomers



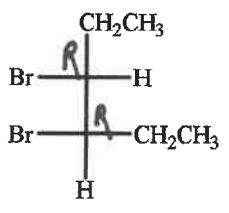
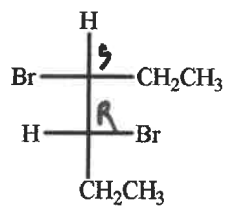
Enantiomers



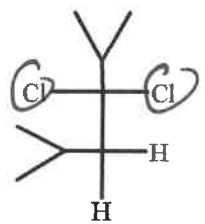
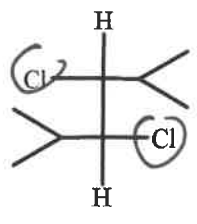
Conformers



Diastereomers



Diastereomers



Constitutional isomers