

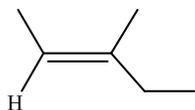
Names of all students (please print) _____

CHEM 243 Organic Chemistry I

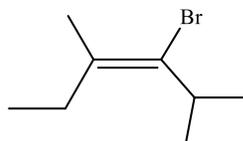
Points _____ (10 max)

Worksheet #22: November 8, 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 III.**

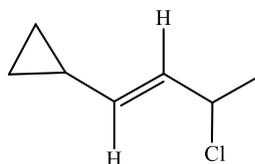
(1) Review: Alkene Geometry. For each alkene below CIRCLE if the geometry is **cis**, **trans**, **E** or **Z**. Then draw the structure of the opposite stereoisomer. **Do NOT name the alkenes.**



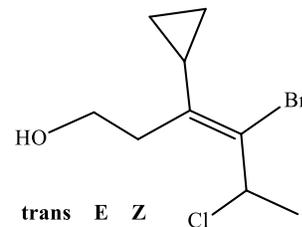
cis trans E Z



cis trans E Z



cis trans E Z

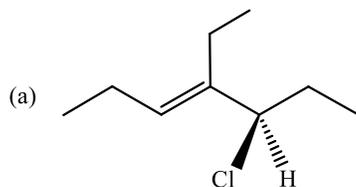


cis trans E Z

opposite stereoisomer:	opposite stereoisomer:	opposite stereoisomer:	opposite stereoisomer:

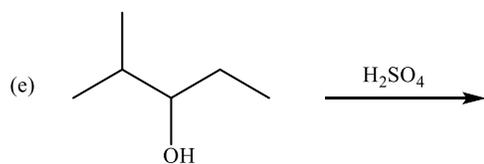
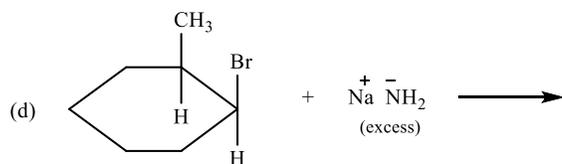
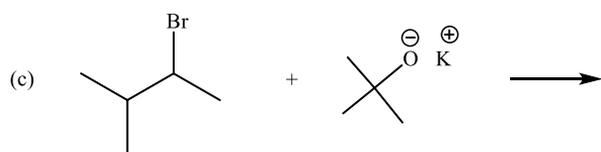
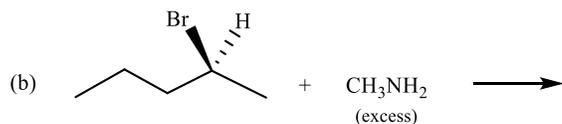
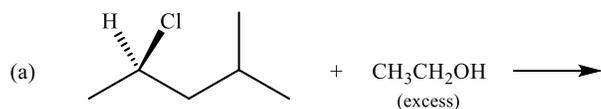
(2) Review: Nomenclature.

- If a name is given draw an accurate zig-zag structure (remember to use wedge and dash bonds for all chiral carbons, and draw the proper alkene geometry).
- If a structure is drawn, give an accurate IUPAC name (don't forget to assign configurations using the R/S prefix, and assign alkene geometry using the cis/trans or E/Z prefix).



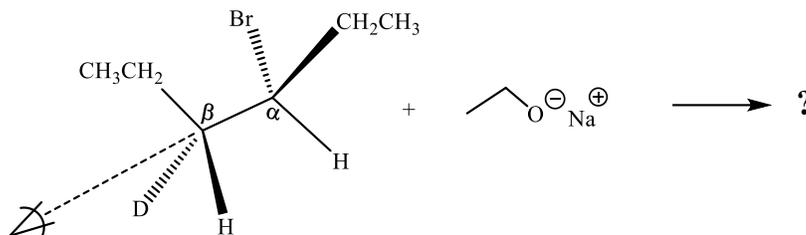
(b) (Z)-2-chloro-3-isopropyl-2-pentene

(3) Reactions. Complete the reactions shown below by drawing the structure of the **major, neutral organic products**. Draw the proper stereochemistry, if relevant. It is **NOT** necessary to balance these reactions or write the mechanisms. Remember, these reactions may produce ONE or TWO organic products: **SN1 & E1** or **SN2 & E2** or **SN2** or **E2**. **Use your Flow Chart!**

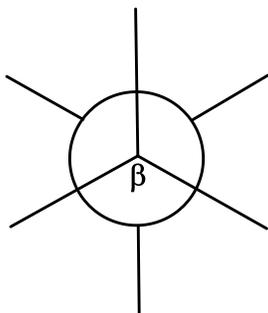


(5) Review: E2 Reaction Stereochemistry.

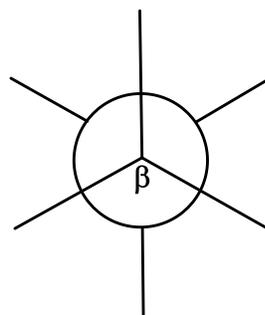
Consider the E2 elimination reaction occurring between the α and β carbons of this alkyl halide. "D" represents deuterium, an isotope of hydrogen.



(a) Draw a Newman Projection looking at the **β -carbon** (as shown):



(b) If necessary, re-draw your Newman projection to give the most stable conformer.



(c) Based on your **most stable Newman Projection**, draw the major E2 product expected from this reaction. Note that either the β -H or β -D will be eliminated with the leaving group.

(6) Mechanism: E2 Alcohol Dehydration (2 steps). Write a complete mechanism that explains the formation of all products in the balanced Net Equation for the reaction shown below. Your mechanism must consist of a series of individual, balanced chemical equations, and curved arrows to show electron pair movement.

