

Names of all students (please print) _____

CHEM 243 Organic Chemistry I

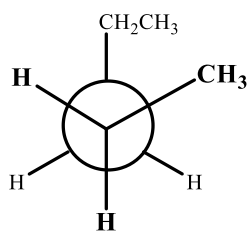
Points _____ (10 max)

Worksheet #8: September 27, 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.

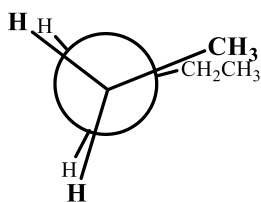
Note: As we get into the “nuts and bolts” of organic chemistry, you should expect to see more questions where I will ask you to explain your reasoning.

(1) **Conformations and Newman Projections.** Feel free to use the molecular models provided.

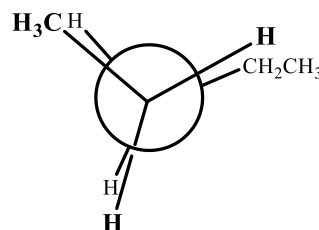
(a) Rank these Newman Projections (**A-D**) in order of relative stability (1 = least stable....4 = most stable).



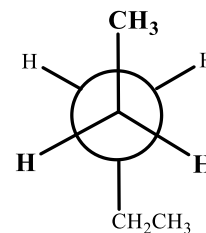
A



B



C



D

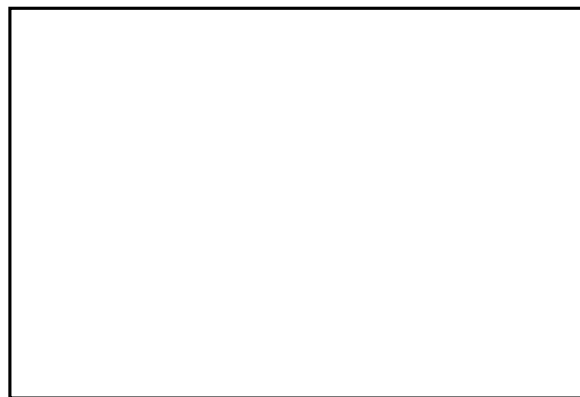
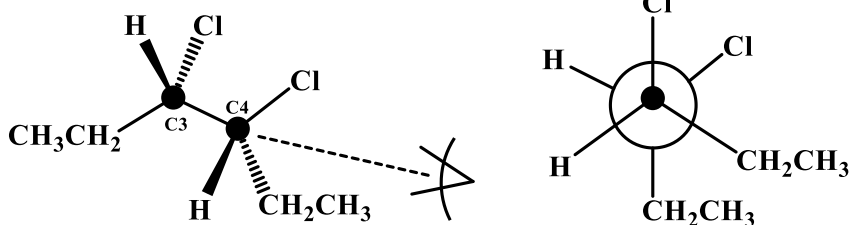
(b) **Explain** your reasoning in part (a).

(c) Which Newman Projection is “syn-eclipsed”? Circle one: **A** **B** **C** **D**

(d) Which Newman Projection is “anti-staggered”? Circle one: **A** **B** **C** **D**

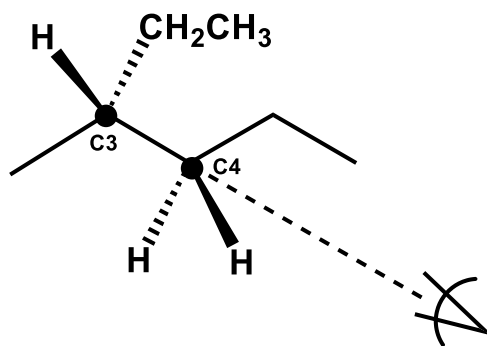
(e) In the space at the right, draw the **zig-zag line structure** for this alkane, and **give it an IUPAC name**. Note: All Newman Projections drawn above are for the same compound.

(2) Conformations and Newman Projections. Consider the zig-zag structure drawn below, the view looking at the C4-C3 bond, and the corresponding Newman Projection. **Feel free to use molecular models.**



- (a) Is this Newman Projection the most stable conformer? If not, draw the most stable conformer in the box.
- (b) Write the IUPAC name for the compound in 2(a) above:

(3) Alkane Conformations. Consider the molecule from video CH 4-4 drawn below, and the view looking at the C4-C3 bond. **Feel free to use the molecular models provided.**



- (a) Based on the structure above, draw a Newman Projection looking at C4 and down the C4 - C3 bond:

- (b) Now, rotate your Newman Projection to make the **more stable conformer** (largest groups anti to each other):

