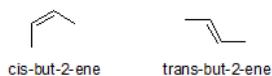


8.10: ADDITIONAL EXERCISES

PHYSICAL PROPERTIES OF ALKENES

8-1 Explain why *cis*-2-butene is less stable than *trans*-2-butene.

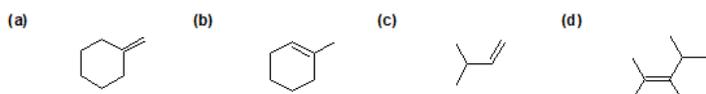


8-2 Order the following alkenes in increasing order of stability.

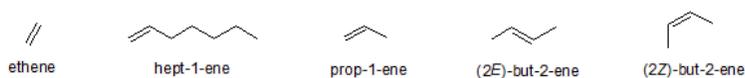


8-3 Why do more substituted alkenes experience more stability compared to less substituted alkenes?

8-4 Identify whether the following alkenes are mono-, di-, tri-, or tetra-substituted.



8-5 Place the following alkenes in order of increasing boiling points.



ELEMENTS OF UNSATURATION AND THE ORBITAL DESCRIPTION OF ALKENES

8-6 Using the following equation, calculate the degrees of unsaturation for the following compounds.

$$\text{Degrees of Unsaturation} = \frac{2C + 2 + N - H - X}{2}$$

(a) C_6H_6

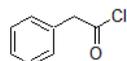
(b) C_3H_6O

(c) C_4H_6O

(d)



(e)



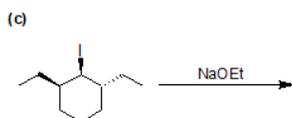
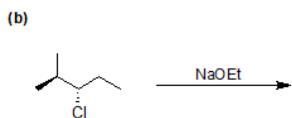
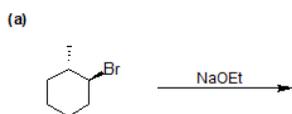
(f)



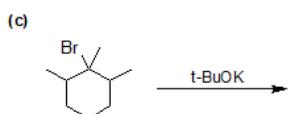
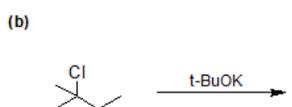
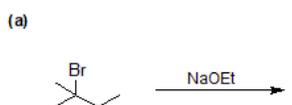
8-7 How many of each type of bonds (sigma/pi) make up a double bond?

ALKENE SYNTHESIS BY ELIMINATION OF ALKYL HALIDES

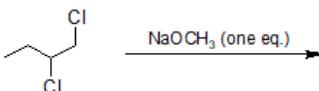
8-8 Identify the major product(s) of the following reactions. Include stereochemistry.



8-9 Identify the major products of the following reactions.



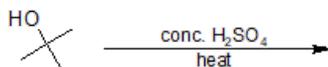
8-10 Give the product of the following reaction.



8-11 What is the IUPAC name of the product formed by the reaction in the previous problem (8-10)?

ALKENE SYNTHESIS BY DEHYDRATION OF ALCOHOLS

8-12 Identify the product of the following reaction.

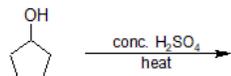


8-13 Draw the mechanism for the reaction in previous problem (8-12).

8-14 Draw the intermediate compounds for the following reaction.



8-15 Identify the product of the following reaction.



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