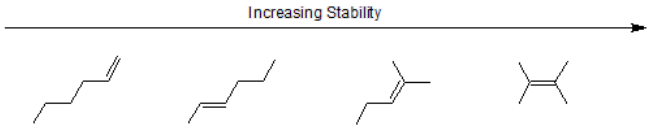
8.11: SOLUTIONS TO ADDITIONAL EXERCISES

PHYSICAL PROPERTIES OF ALKENES

8-1 When in the *cis* configuration, the methyl groups experience steric strain as they are in close proximity to each other. They avoid steric interactions when in the *trans* configuration as they are able to stay as far apart as possible.

8-2



8-3 Alkyl groups are able to stabilize their neighboring carbon atoms by donating electron density, which allows for the delocalization of electron density and an increase in stability.

8-4

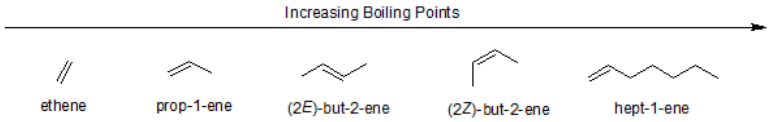
a) Disubstituted

b) Trisubstituted

c) Monosubstituted

d) Tetrasubstituted

8-5



ELEMENTS OF UNSATURATION AND THE ORBITAL DESCRIPTION OF ALKENES

8-6

a) 4

b) 1

c) 2

d) 2

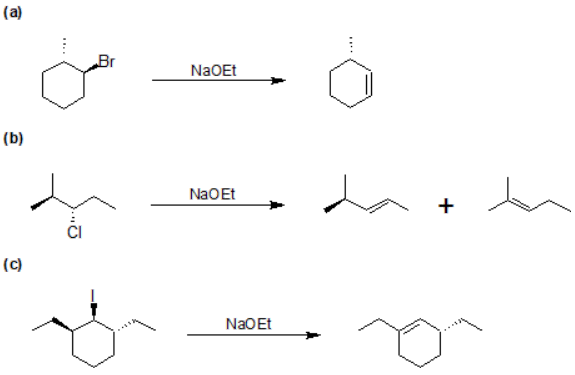
e) 5

f) 6

8-7 One sigma and one pi bond together make a double bond.

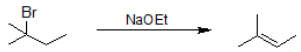
ALKENE SYNTHESIS BY ELIMINATION OF ALKYL HALIDES

8-8



8-9

(a)



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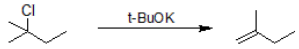

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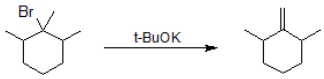
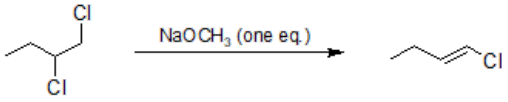


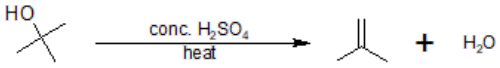
8-10



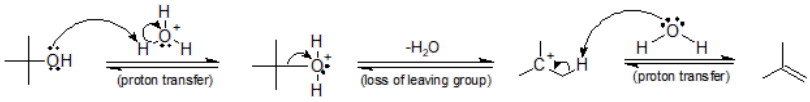
8-11 (1*E*)-1-chlorobut-1-ene

ALKENE SYNTHESIS BY DEHYDRATION OF ALCOHOLS

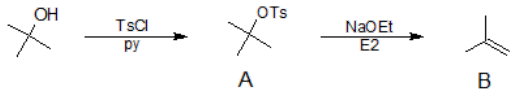
8-12



8-13



8-14



8-15