Session 15 - Alkenes, Alkynes, and Elimination Reactions

1) List the steps to name alkenes and alkynes.

1) For the parent chain, choose the longest carbon chain that contains the multiple bond.
2) Start #'ing from the end closest to the multiple bond.
3) # & name any other substituents
4) Compounds w/ a double bond end in -ene & ones w/ a triple bond end in -yne.
5) # the multiple bond.

2) Explain the difference between E and Z conformations in alkenes.

- The E conformation has the highest priority groups on opposite sides of the double bond.
- The Z conformation has the highest priority groups on the same side of the double bond.

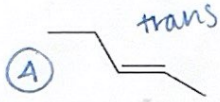
3) Why are trans alkenes more stable than cis alkenes?

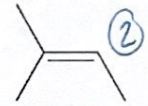
Cis alkenes have steric hindrance (less space to reduce electron repulsion & dispersion forces).

cis   trans

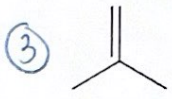
4) Order the following alkenes in order of most stable to least stable.

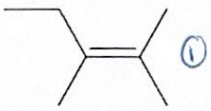
tetra > tri > di > mono > un

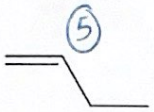




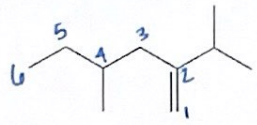
geminal > trans > cis





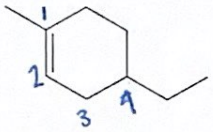


5) Name the following alkenes and alkynes.

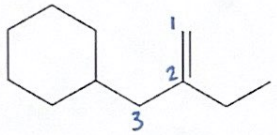
a) 

2-isopropyl-4-methyl-1-hexene

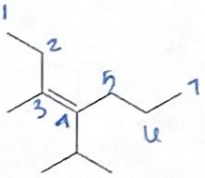
OR 2-isopropyl-4-methylhex-1-ene

b) 

4-ethyl-1-methyl-1-cyclohexene

c) 

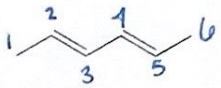
3-cyclohexyl-2-ethyl-1-propene

d) 

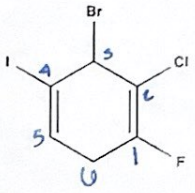
4-isopropyl-3-methyl-3-heptene

e) 

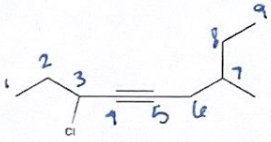
2-methylpropene

f) 

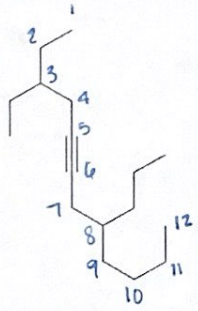
2,4-hexa-di-ene

g) 

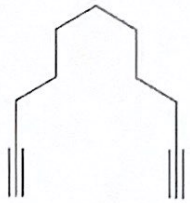
3-bromo-2-chloro-1-fluoro-4-iodo-1,4-cyclohexa-di-ene

h) 

3-Chloro-7-methyl-4-nonyne

i) 

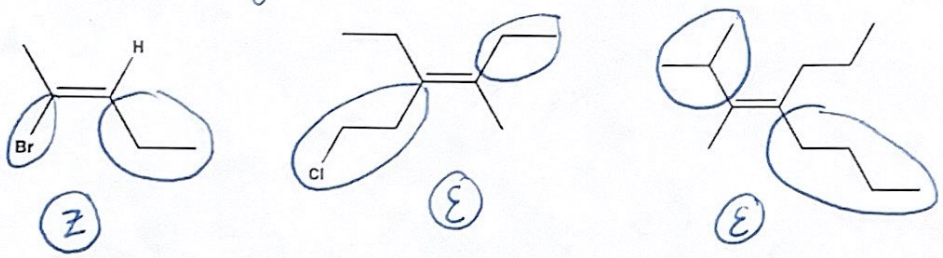
3-ethyl-8-propyl-5-dodecyne

j) 

1,10-undeca-di-yne

6) Determine the E or Z configuration of the following alkenes. Choose one and name it.

↳ "zame"



(Z)-2-bromo-2-pentene

7) On a separate paper/document, start a running list of reactions that can be added to throughout the end of the semester.

* located on website & will be updated regularly *

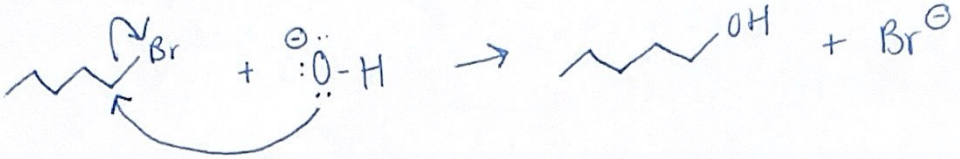
8) Explain how elimination reactions are different from substitution reactions.

- Substitution reactions involved "substituting" our LG for the nucleophile.

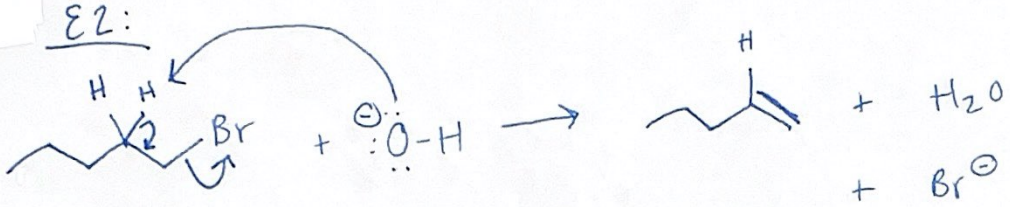
- Elimination reactions involve "eliminating" 2 substituents (typically a H & a LG) from 2 neighboring carbons & forming a double bond in b/w those 2 carbons

9) Show how the S_N2 and E2 reaction mechanisms differ from one another.

S_N2:

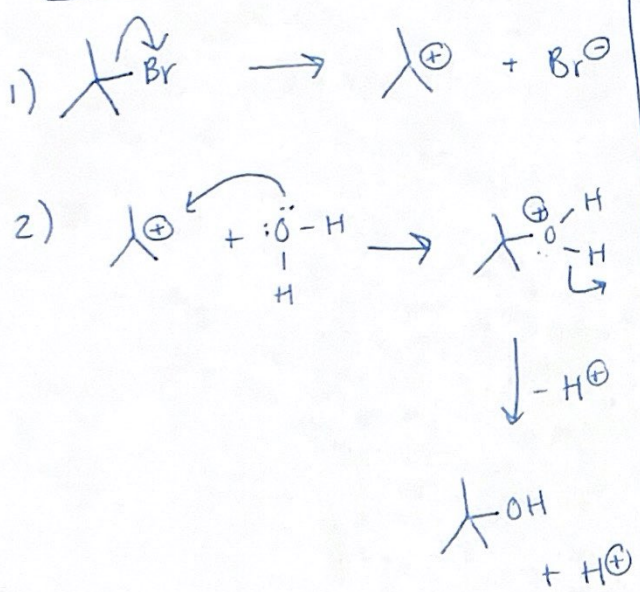


E2:



10) Show how the S_N1 and E1 reactions mechanisms differ from one another.

S_N1:



E1: