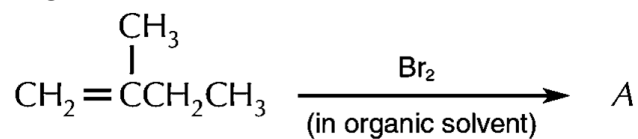
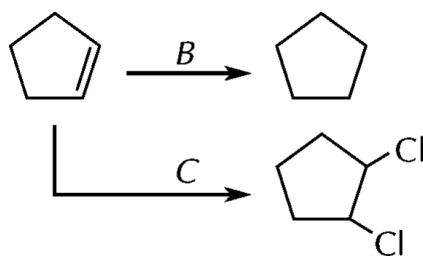


Quiz (Alkenes)

1. Consider the following reaction:

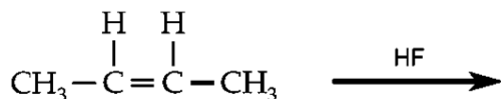


- (a) Give the systematic name of compound A.
- (b) State the expected observation of the reaction.
- (c) Compound A has a pair of enantiomers. Draw the three-dimensional structures of the two enantiomers.
2. State the reagents and conditions required for the following reactions of cyclopentene.

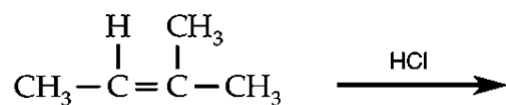


For each of the following reactions of alkenes with hydrogen halides, give the structural formula of the major product formed.

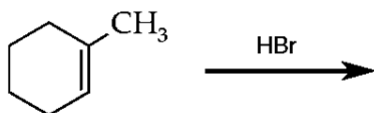
3. (a)



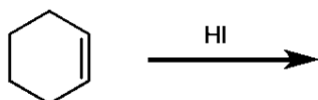
- (b)



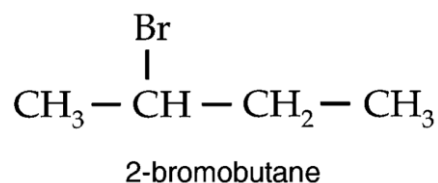
- (c)



- (d)

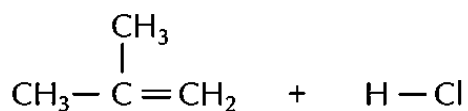


4. Both but-1-ene and but-2-ene can be used for preparing the following compound:

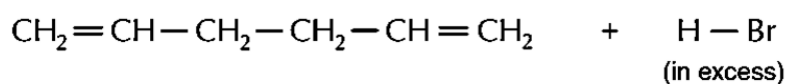


- (a) What reagent should be used for converting the alkenes to the target compound?
- (b) Which alkene, but-1-ene or but-2-ene, would be a better starting material? Explain your answer.
5. Give all possible products formed in the following reactions. In each case, point out the major product.

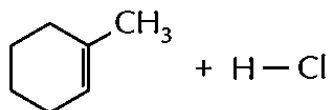
(a)



(b)



(c)



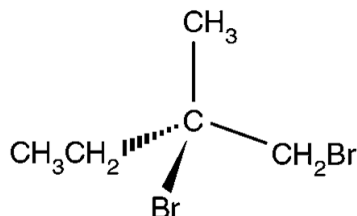
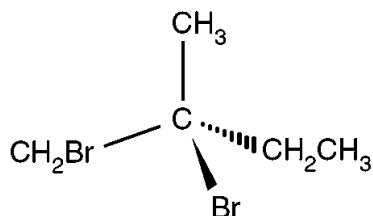
6. Compound *W* is straight-chain alkene with a molecular formula of C₄H₈. *W* does not show *cis-trans* isomerism. *W* reacts readily with chlorine (dissolved in an organic solvent) to give compound *X*. *W* also reacts with hydrogen chloride to give compound *Y* as the major product. Write structural formulae for compounds *W*, *X* and *Y*.

Suggested Answer

1. (a) 1,2-dibromo-2-methylbutane

(b) The red-orange bromine solution is decolorized.

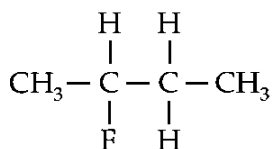
(c)



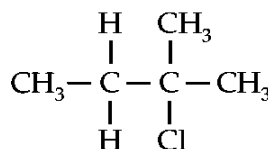
2. B: H₂, Pt

C: Cl₂ (in organic solvent)

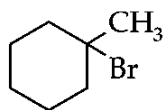
3. (a)



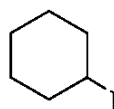
(b)



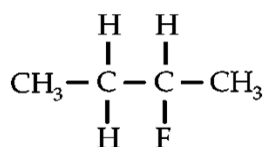
(c)



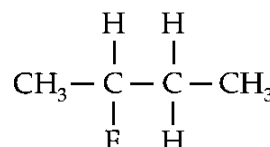
(d)



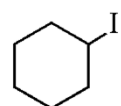
(Note: in (a),



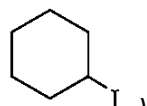
is identical to



and in (d),



is identical to



.)

4. (a) Hydrogen bromide.

(b) But-2-ene is better because the addition of HBr to it will result in only one compound — 2-bromobutane. However, the addition of HBr to but-1-ene gives 2-bromobutane (major) and 1-bromobutane (minor) as the products.

