

CHAPTER REVIEW

Organic Compounds

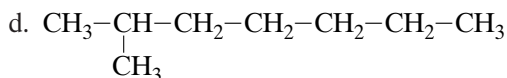
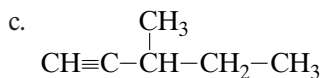
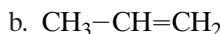
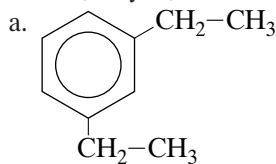
SECTION 1 REVIEW

1. a. What is catenation?
b. How does catenation contribute to the diversity of organic compounds?
2. a. What information about a compound is provided by a structural formula?
b. How are structural formulas used in organic chemistry?
3. Can molecules with the molecular formulas C_4H_{10} and $C_4H_{10}O$ be structural isomers of one another? Why or why not?
4. Can molecules with only single bonds (and no rings) have geometric isomers? Why or why not?

Hydrocarbons

SECTION 2 REVIEW

5. What are hydrocarbons, and what is their importance?
6. a. What do the terms *saturated* and *unsaturated* mean when applied to hydrocarbons?
b. What other meanings do these terms have in chemistry?
c. Classify alkenes, alkanes, alkynes, and aromatic hydrocarbons as either saturated or unsaturated.
7. Classify each of the following as an alkane, alkene, alkyne, or aromatic hydrocarbon.



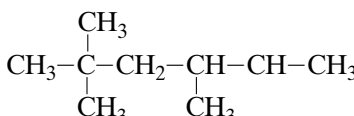
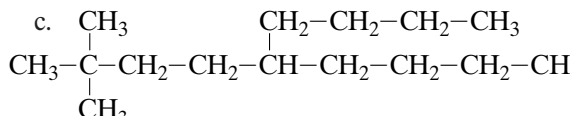
8. Give the general formula for the members of the following:
a. alkane series

b. alkene series

c. alkyne series

9. a. What is a homologous series?
b. By what method are straight-chain hydrocarbons named?
c. Name the straight-chain alkane with the molecular formula $C_{10}H_{22}$
10. What are cycloalkanes?
11. a. What trend occurs in the boiling points of alkanes?
b. How would you explain this trend?
c. How is the trend in alkane boiling points used in petroleum fractional distillation?
12. Give examples of ethene's commercial uses.
13. Give one use for ethyne.
14. What is the name of the parent hydrocarbon of simple aromatic hydrocarbons?

PRACTICE PROBLEMS

15. Name the following molecules. (Hint: See Sample Problem A.)
a. $CH_3-CH_2-CH_2-CH_2-CH_2-CH_2-CH_3$
b. 
c. 
16. Give the complete, uncondensed, structural formula for each of the following alkanes. (Hint: See Sample Problem A.)
a. decane
b. 3,3-dimethylpentane
17. Give the condensed structural formula for 2,2,4,4-tetramethylpentane.
18. For each of the following, determine whether the alkane is named correctly. If it is not, give the correct name.
a. 1-methylpropane
b. nonane
c. 4-methylhexane
d. 4-ethyl-2-methylhexane