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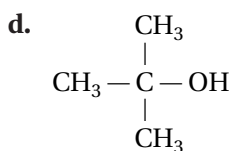
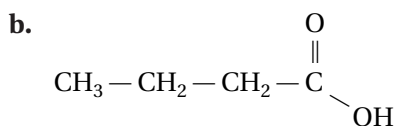
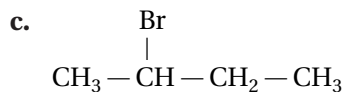
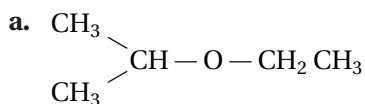
FUNCTIONAL GROUPS AND ORGANIC REACTIONS

Practice Problems

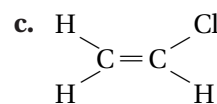
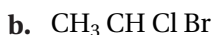
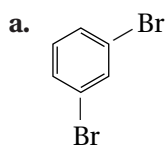
In your notebook, solve the following problems.

SECTION 23.1 INTRODUCTION TO FUNCTIONAL GROUPS

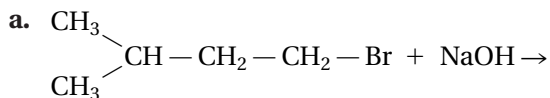
1. Identify the functional group in each of the following compounds.



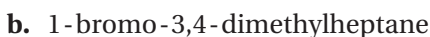
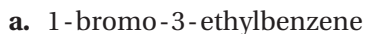
2. What class of organic compounds do each of the following substances belong to? Write IUPAC names for each structure.



3. Write the formulas of the expected products for the following reactions.

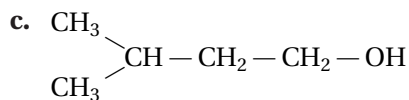
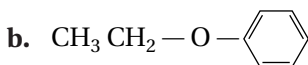
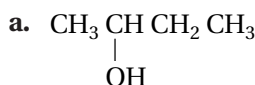


4. Give the structural formula for each of the following compounds.



SECTION 23.2 ALCOHOLS AND ETHERS

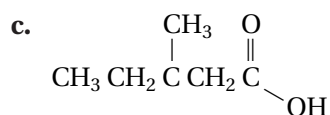
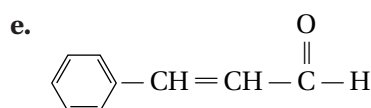
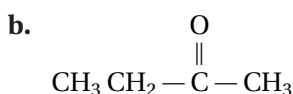
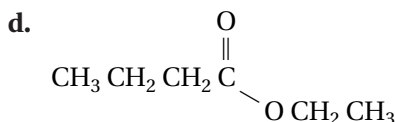
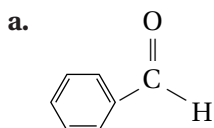
1. Write the IUPAC names for each of the following compounds. Classify each alcohol as primary, secondary, or tertiary.



- Write the structural formulas for dipropyl ether, 2-methyl-1-butanol, and 2,3-butanediol. Which of these compounds is expected to be most soluble in water?
- Write an equation for the synthesis of
 - 2-chlorobutane from 1-butene and hydrogen chloride
 - bromobenzene from benzene and bromine
- Classify each of the reactions in problem 3 as an addition or substitution reaction.

SECTION 23.3 CARBONYL COMPOUNDS

- Write IUPAC names for each of the following compounds.



- Write the IUPAC name of the expected product for the reduction of each of the following compounds.
 - ethanoic acid
 - propene
 - butanal
- Write the IUPAC name of the expected product(s) for the oxidation of each of the following compounds.
 - 2-pentanol
 - octanal
 - butane
- Write an equation for the synthesis of
 - isopropyl butanoate from isopropanol and butanoic acid
 - butanoic acid from 1-butanol
- Classify each of the reactions in problem 4 as an oxidation-reduction, substitution, addition, or esterification reaction.

SECTION 23.4 POLYMERIZATION

- Draw the structures of propene (propylene) and tetrafluoroethene. Draw the basic repeating units when each of these compounds polymerizes. Describe some practical uses of each polymer.
- Draw the basic repeating unit of polyethylene terephthalate (PET). Classify PET as a polyamide or polyester. Is PET a condensation or addition polymer? Explain.