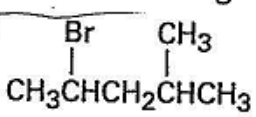
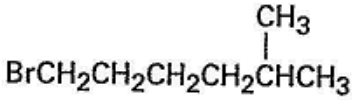
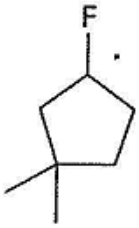
Problem 10.8

How would you prepare the following alkyl halides from the corresponding alcohols?

(a) 

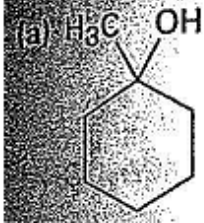
(b) 

(c) 

(d) 

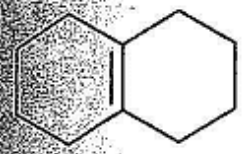
Problem 10.21(a,b,d)

Predict the product(s) of the following reactions:

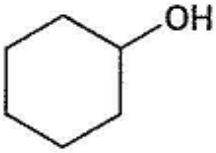
(a) 

$\xrightarrow[\text{Ether}]{HBr}$?

(b) $CH_3CH_2CH_2CH_2OH \xrightarrow{SOCl_2}$?

(c) 

$\xrightarrow[h\nu,\ CCl_4]{NBS}$?

(d) 

$\xrightarrow[\text{Ether}]{PBr_3}$?

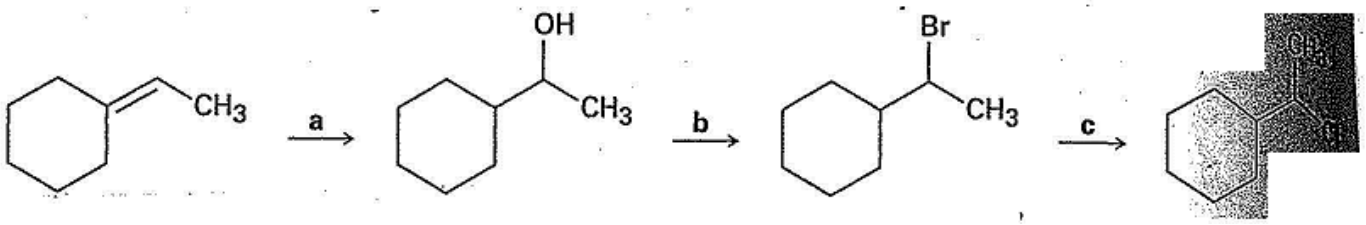
(e) $CH_3CH_2CHBrCH_3 \xrightarrow[\text{Ether}]{Mg}$ A? $\xrightarrow{H_2O}$ B?

(f) $CH_3CH_2CH_2CH_2Br \xrightarrow[\text{Pentane}]{Li}$ A? $\xrightarrow{CuI}$ B?

(g) $CH_3CH_2CH_2CH_2Br + (CH_3)_2CuLi \xrightarrow{\text{Ether}}$?

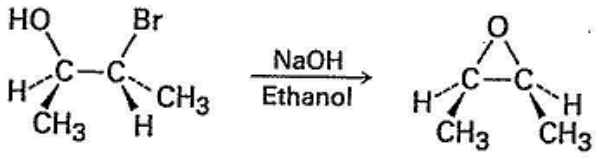
Problem 10.39

Identify the reagents a–c in the following scheme:



Problem 11.45

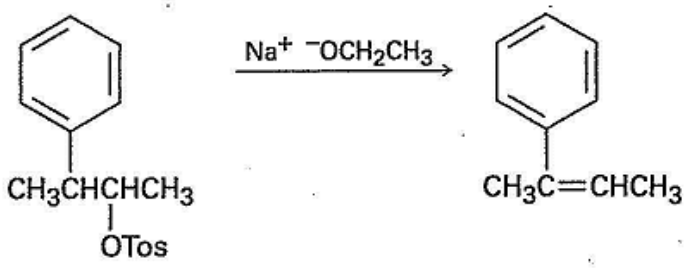
We saw in Section 8.7 that bromohydrins are converted into epoxides when treated with base. Propose a mechanism, using curved arrows to show the electron flow.



Problem 11.51

11.50

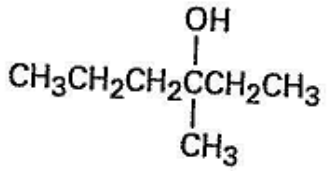
The tosylate of (2*R*,3*S*)-3-phenyl-2-butanol undergoes E2 elimination on treatment with sodium ethoxide to yield (*Z*)-2-phenyl-2-butene. Explain using Newman projections.



In light of your answer to Problem 11.50, which alkene, *E* or *Z*, would you expect from an E2 reaction on the tosylate of (2*R*,3*R*)-3-phenyl-2-butanol? Which alkene would result from E2 reaction on the (2*S*,3*R*) and (2*S*,3*S*) tosylates? Explain.

Problem 11.58

Reaction of HBr with (*R*)-3-methyl-3-hexanol leads to racemic 3-bromo-3-methylhexane. Explain.



3-Methyl-3-hexanol

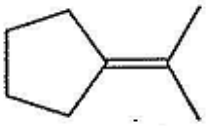
Problem 17.34 (a,b)

What products would you obtain from reaction of 1-pentanol with the following reagents?

(a) PBr_3
(b) $SOCl_2$
(c) CrO_3, H_2O, H_2SO_4
(d) Dess–Martin periodinane

Problem 17.40

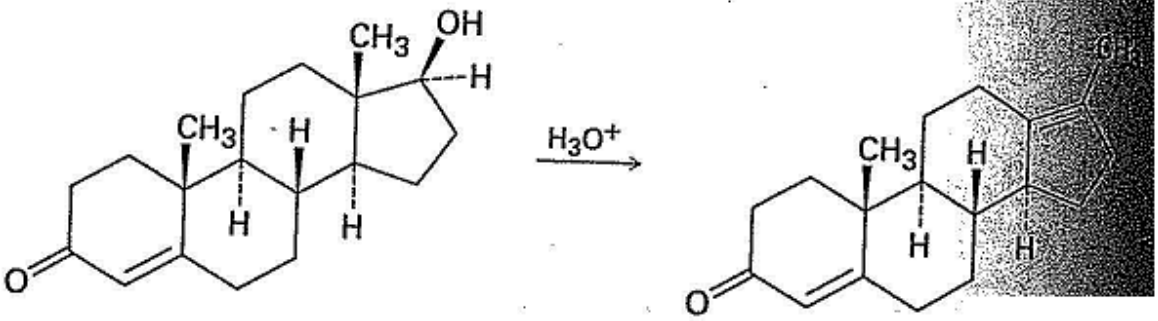
Acid-catalyzed dehydration of 2,2-dimethylcyclohexanol yields a mixture of 1,2-dimethylcyclohexene and isopropylidenecyclopentane. Propose a mechanism to account for the formation of both products.



Isopropylidenecyclopentane

Problem 17.55

Testosterone is one of the most important male steroid hormones. In acid, testosterone is dehydrated by treatment with acid, rearrangement occurs, and the alkene yield the product shown. Propose a mechanism to account for this reaction.



Testosterone

Problem 17.65

Identify the reagents **a–f** in the following scheme: