8.2 Halogenation of Alkenes: Addition of X_2
Predict the outcome of halogenation reactions
Describe how the intermediate control the stereochemical outcome of the reaction
Explain why carbocation rearrangements do not occur in halogen initiated electrophilic addition reactions

8.3 Halohydrins from Alkenes: Addition of HO-X
Predict the outcome of hydrohalogenation reactions
Explain why the added nucleophile can outcompete the halide ions produced during the reaction's first step
Describe how the intermediate control the stereochemical outcome of the reaction

8.4 Hydration of Alkenes: Addition of H_2O by Oxymercuration
Predict the outcome of oxymercuration demercuration reactions
Describe the negative aspects of the reaction with respect to ecological concerns
Explain why carbocation rearrangements do not occur in Hg^{2+} initiated electrophilic addition reactions

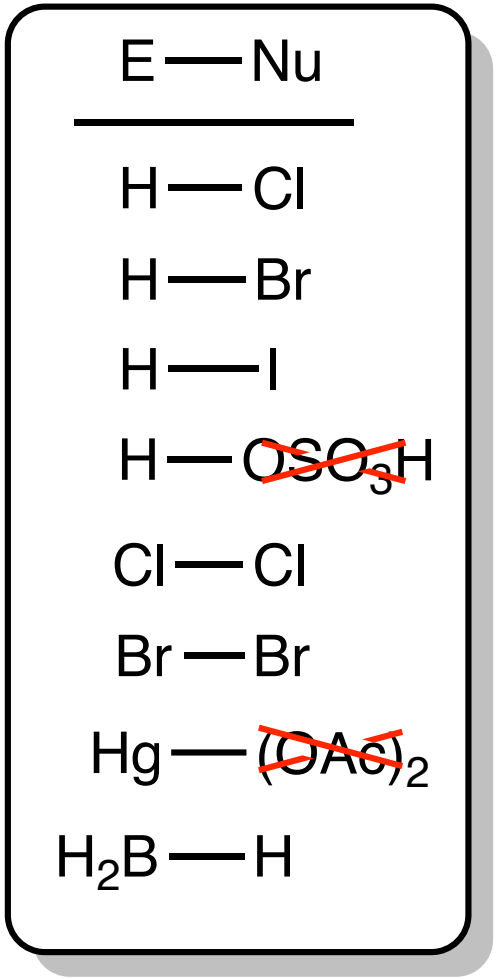
8.5 Hydration of Alkenes: Addition of H_2O by Hydroboration
Predict the outcome of hydroboration-oxidation reactions
Explain the "anti-Markovnikov" regiochemistry of the reaction
Explain why the hydroboration reaction occurs as a syn addition

8.6 Reduction of Alkenes: Hydrogenation
Explain why the reactions occur via syn addition

8.12 and 13: Stereochemical outcome
Predict hte stereo chemistry of products and determine whether some product may be formed preferentially over other products

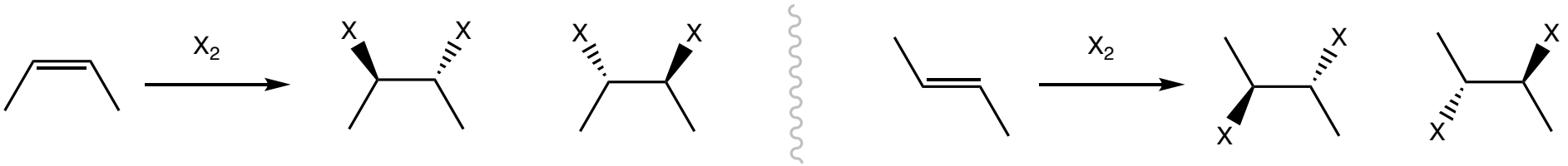
8.1 will be discussed in Chap 11. Skipping 8-7 - 8.11

Electophiles from Chap 7 and 8

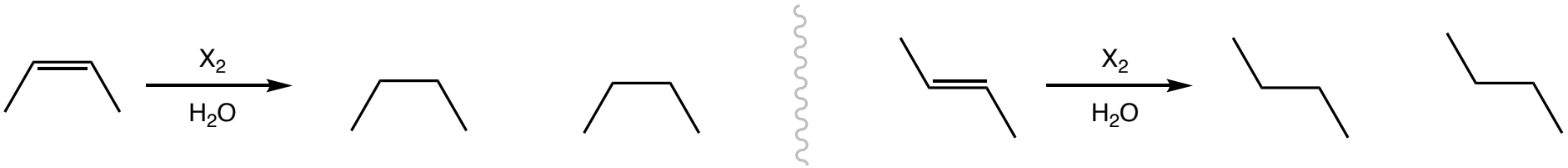


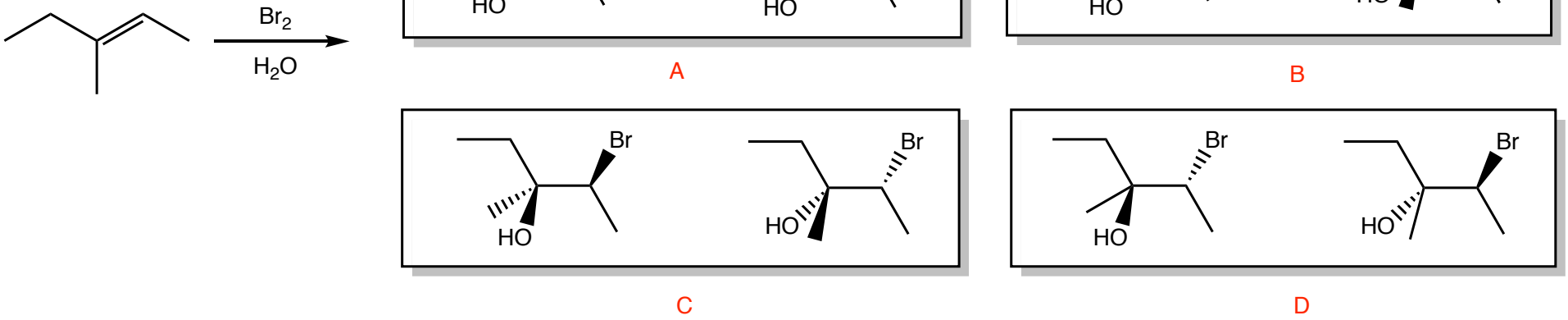
Addition of bromine and chlorine occur by an anti addition

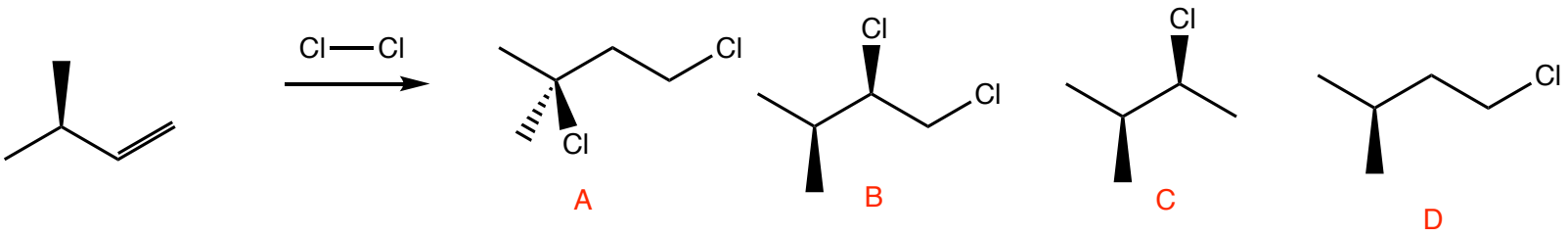
Section 8.2

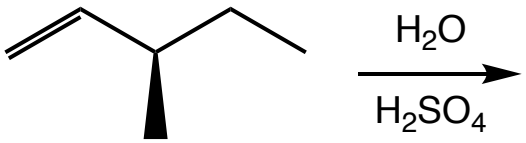


Addition of bromine and chlorine occur by an anti addition

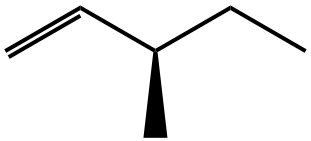



Br2
H2O
Br
HO
A
B
C
D

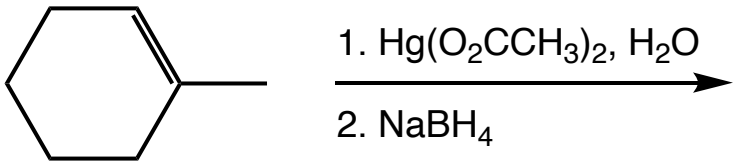

Cl—Cl
Cl
Cl
A
Cl
Cl
B
Cl
C
Cl
D



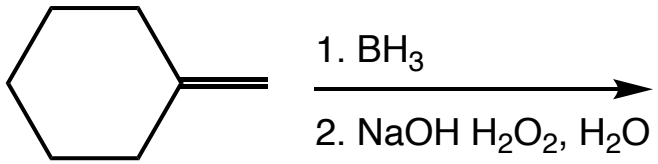
$$\xrightarrow[H_2SO_4]{H_2O}$$

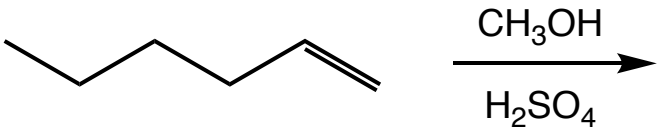


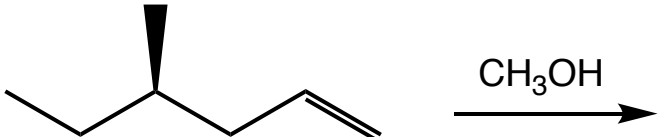
$$\xrightarrow[H_2O]{Hg(O_2CCH_3)_2}$$

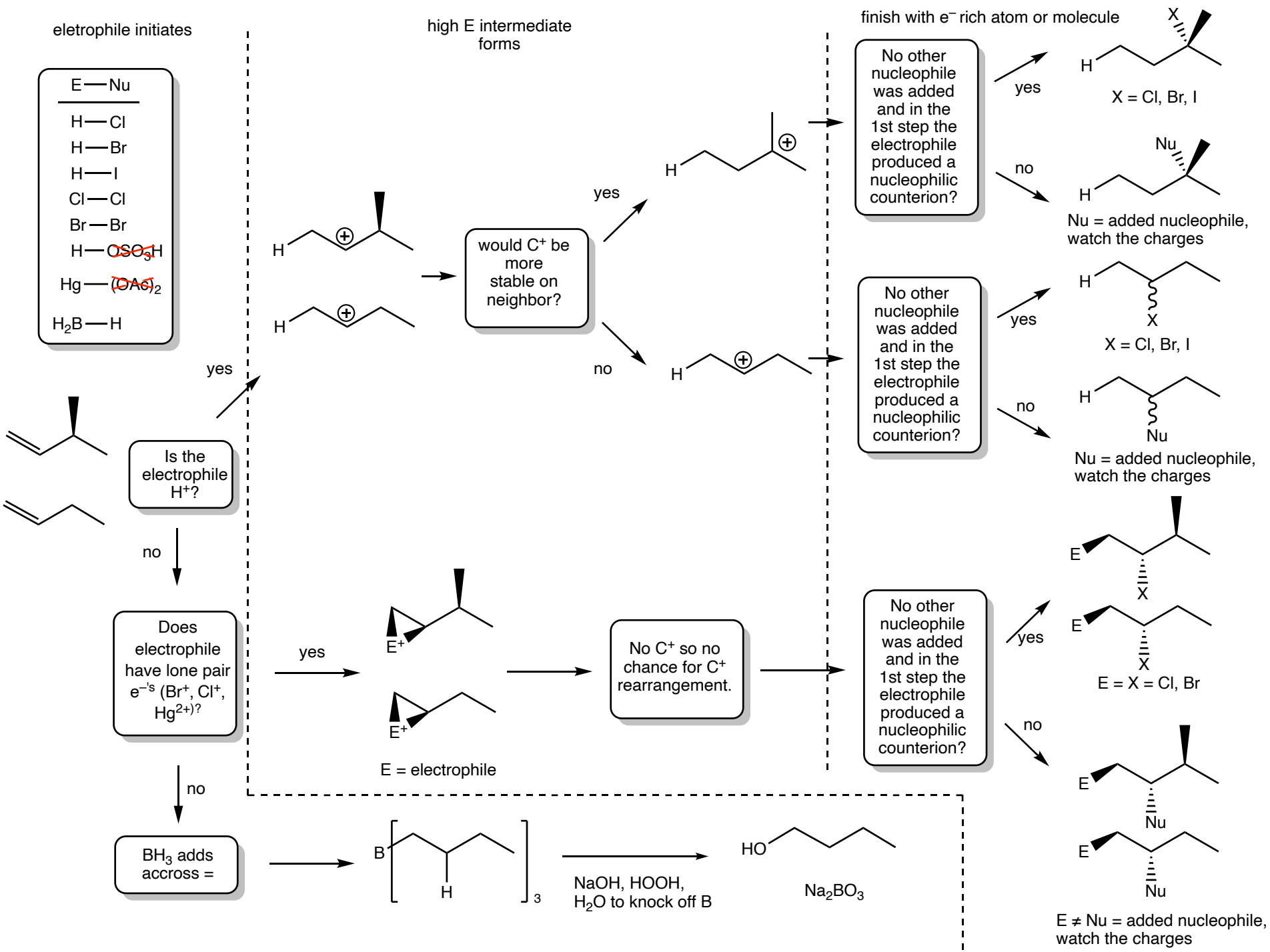


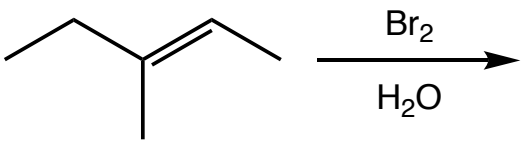
96.17 g/mol 200.59 g/mol

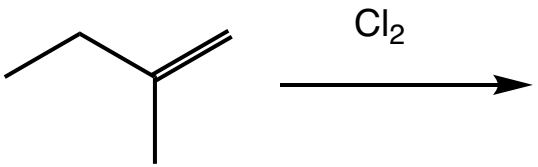

1. BH_3
2. NaOH H_2O_2, H_2O

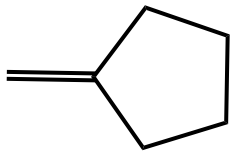

CH_3OH
H_2SO_4


CH_3OH
H_2SO_4

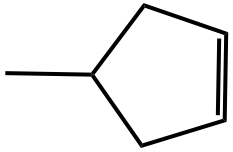

eletrophile initiates
E—Nu
H—Cl
H—Br
H—I
Cl—Cl
Br—Br
H—OSO3H
Hg—(OAc)2
H2B—H
Is the electrophile H+?
yes
no
Does electrophile have lone pair e–'s (Br+, Cl+, Hg2+)?
yes
no
BH3 adds accross =
high E intermediate forms
would C+ be more stable on neighbor?
yes
no
E+
E = electrophile
No C+ so no chance for C+ rearrangement.
NaOH, HOOH, H2O to knock off B
Na2BO3
finish with e– rich atom or molecule
No other nucleophile was added and in the 1st step the electrophile produced a nucleophilic counterion?
yes
no
X = Cl, Br, I
Nu = added nucleophile, watch the charges
E = X = Cl, Br
E ≠ Nu = added nucleophile, watch the charges


Br_2
H_2O


Cl_2

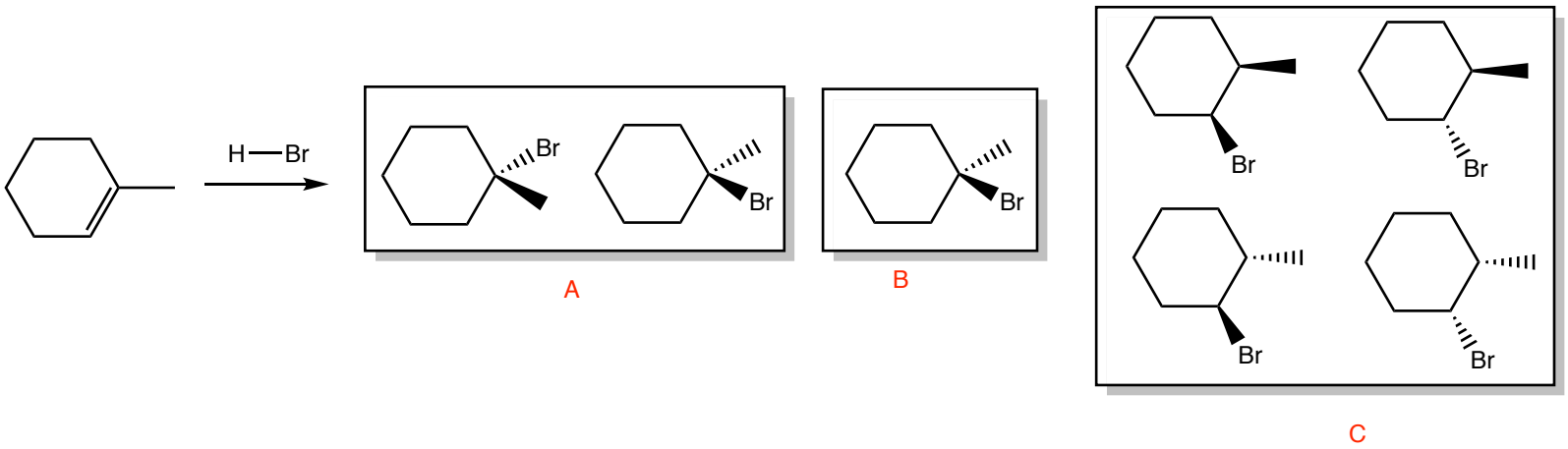


1. $Hg(OAc)_2$, H_2O
2. $NaBH_4$

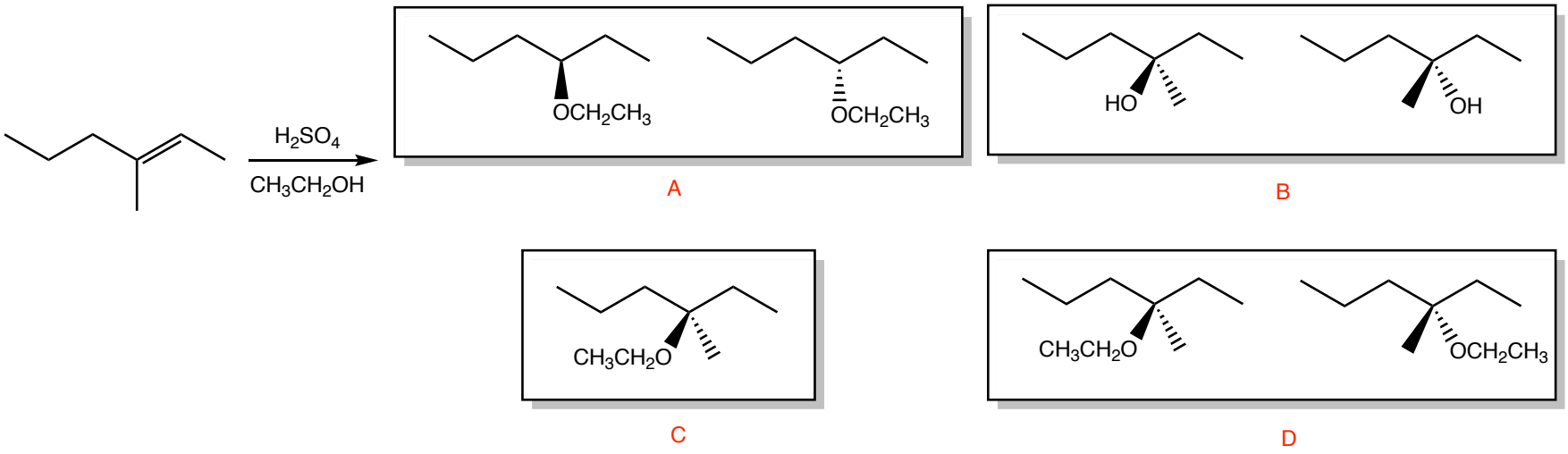


1. $Hg(OAc)_2$, H_2O
2. $NaBH_4$

Reactions (predict major products): : Remember to indicate stereochemistry

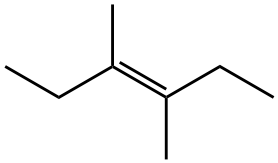


A B C



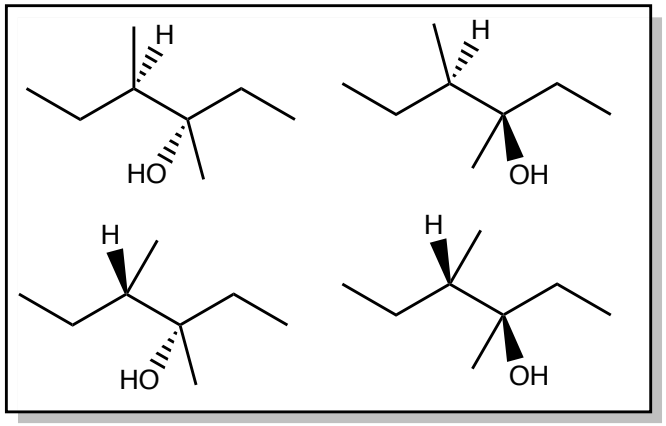
A B C D

Reactions (predict major products): Remember to indicate stereochemistry

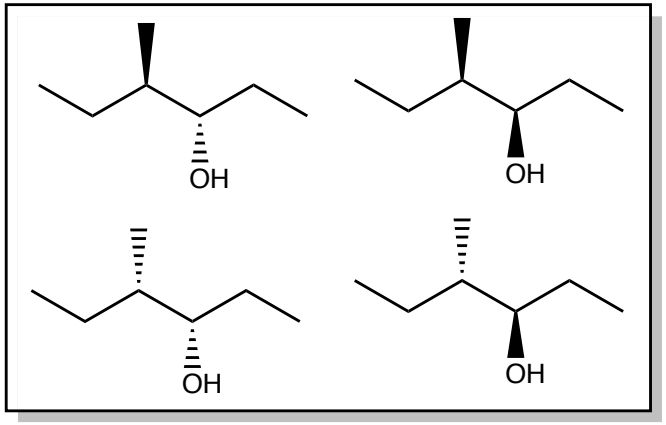


H_2SO_4

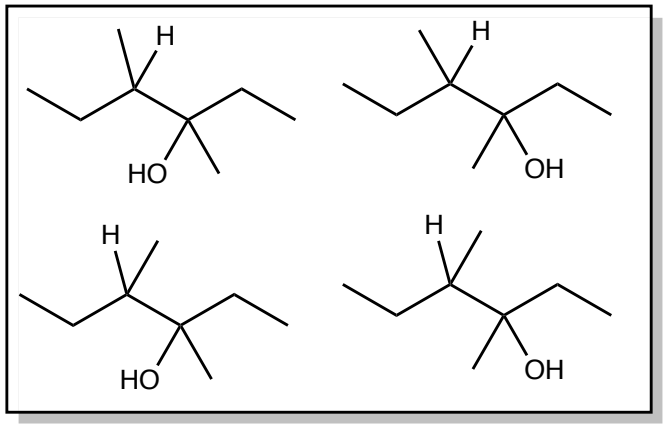
H_2O



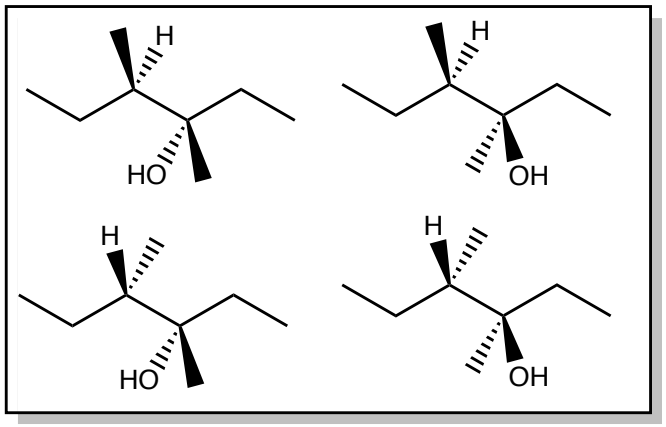
A



B

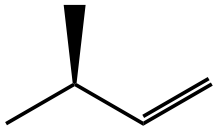


C



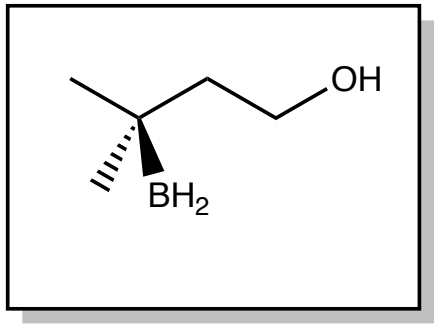
D

Reactions (predict major products): Remember to indicate stereochemistry

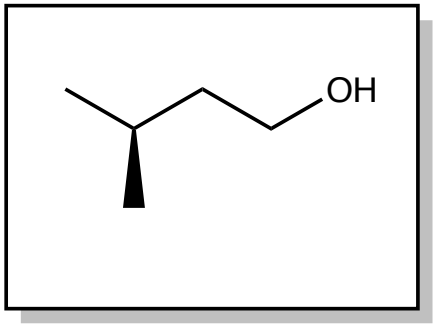


1. BH_3

2. NaOH H_2O_2, H_2O



A



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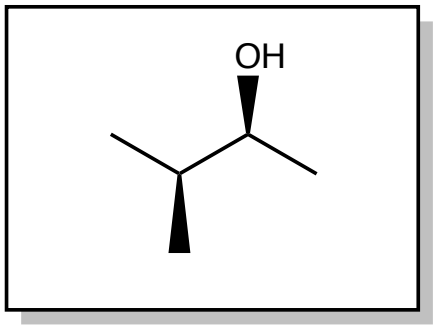
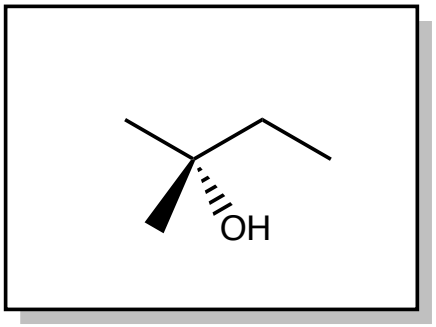


C



D