

Figure 11.03a

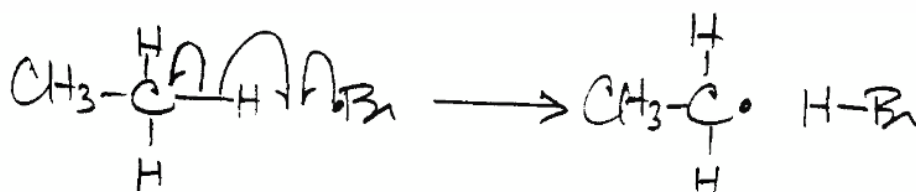
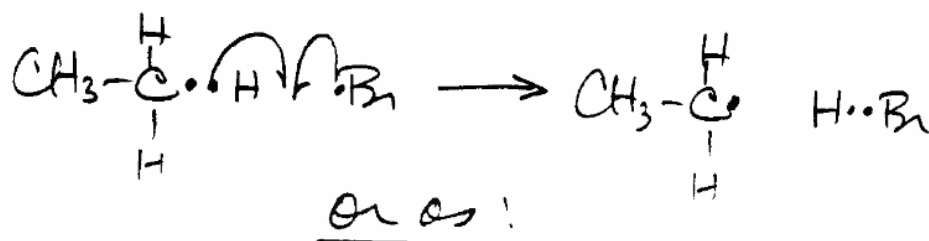
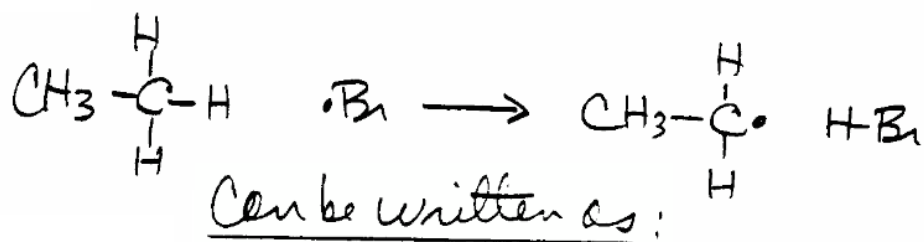
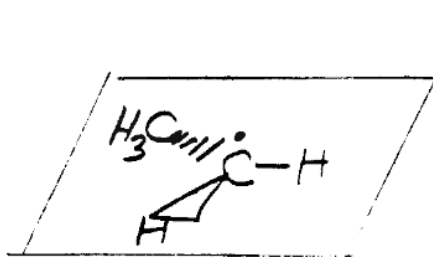
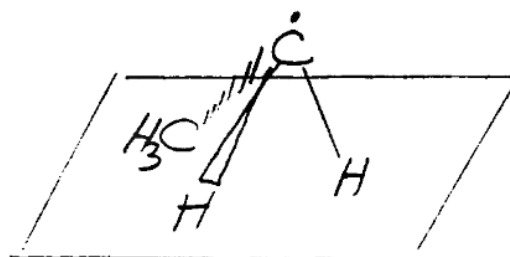


Figure 11.03b Planar and Pyramidal Shapes of the Ethyl Radical.



Planar
Radical



Pyramidal
Radical

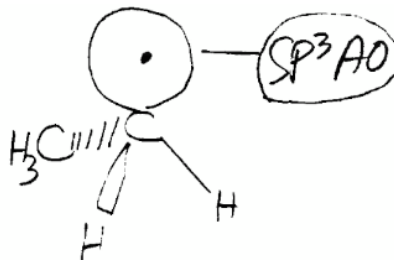
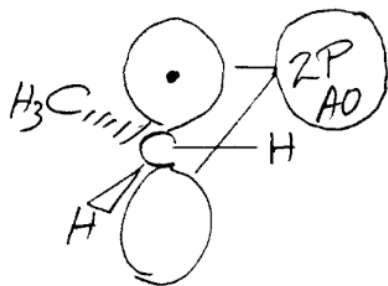
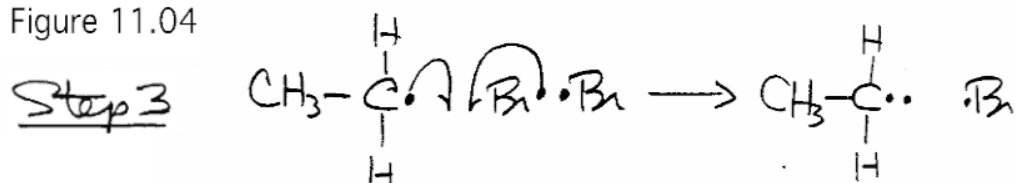


Figure 11.04



Can also be written as:

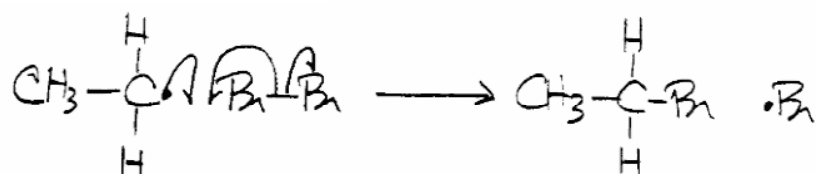


Figure 11.05

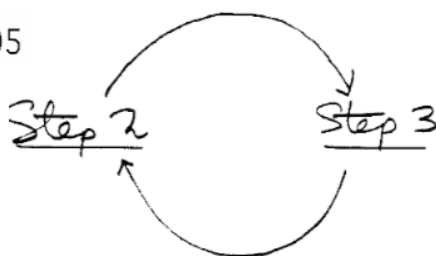
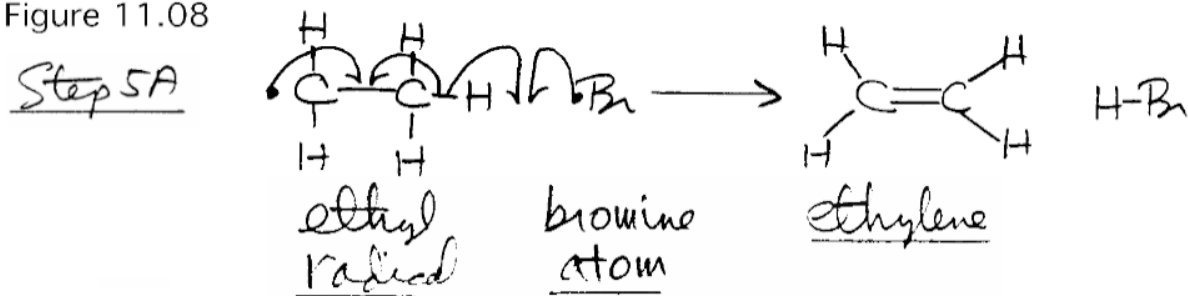


Figure 11.08



Step 6A

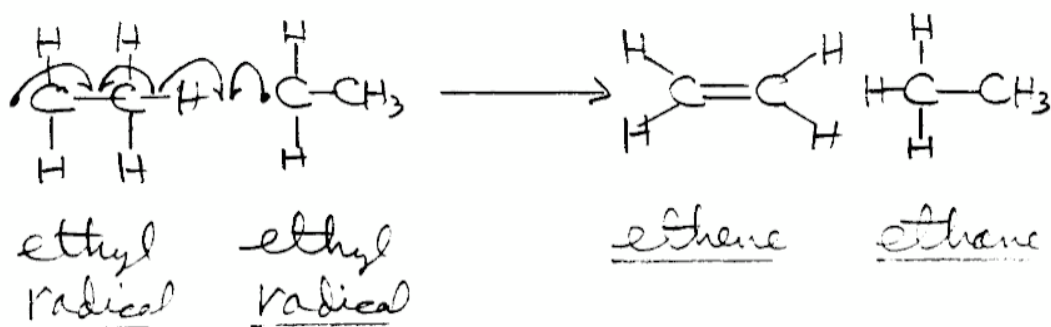
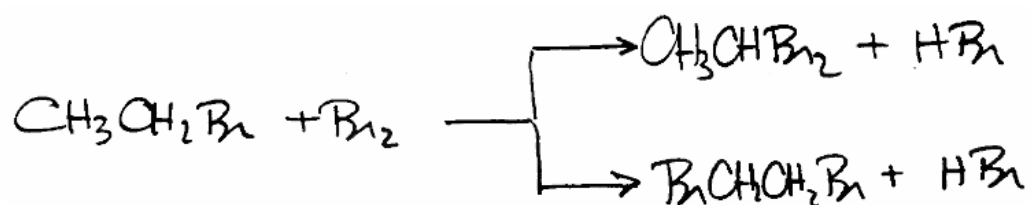
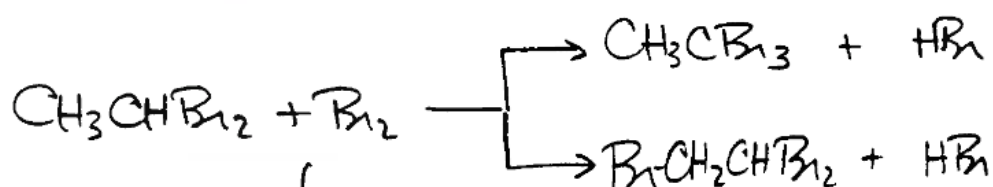


Figure 11.09

Formation of Dibromomethanes



Formation of Tribromomethanes



and

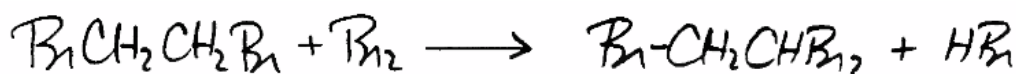


Figure 11.11 Formation of 1-Propyl and 1-Methylethyl Radicals from Propane.

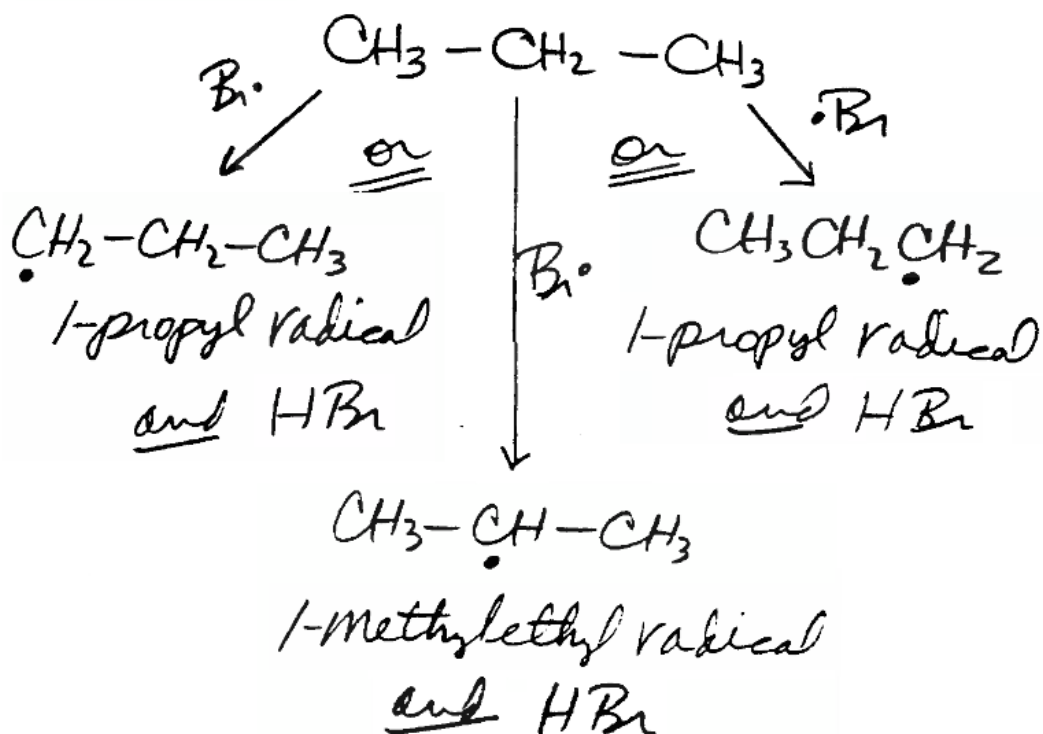
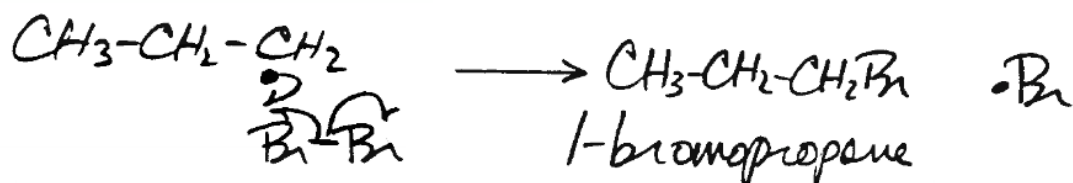


Figure 11.12 Formation of Bromopropene Products from 1-Propyl and 1-Methylethyl Radicals.

1-Propyl Radical



1-Methylethyl Radical

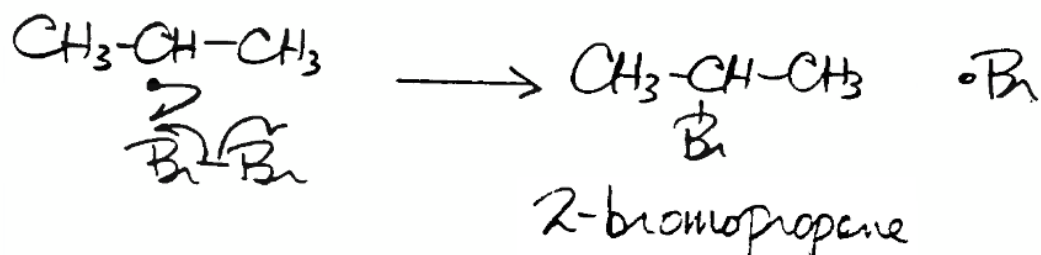


Figure 11.13 Termination Reactions Between Propyl Radicals and Br·.

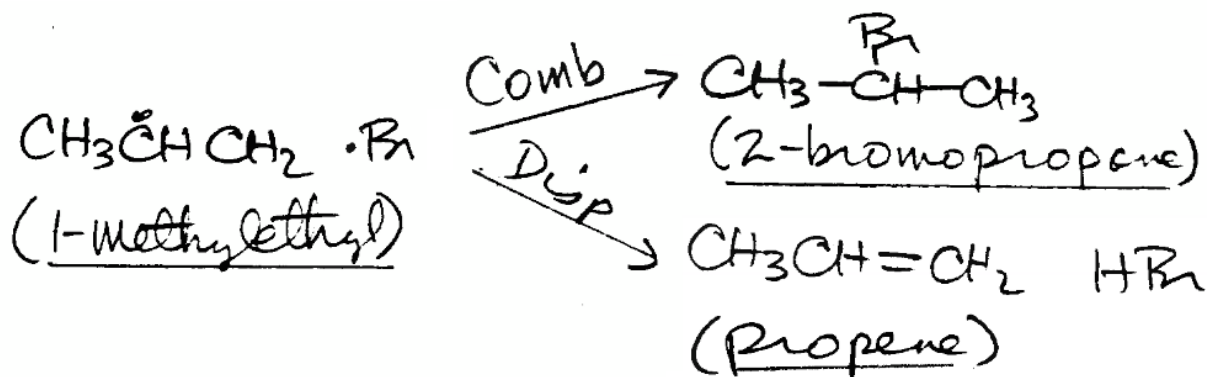
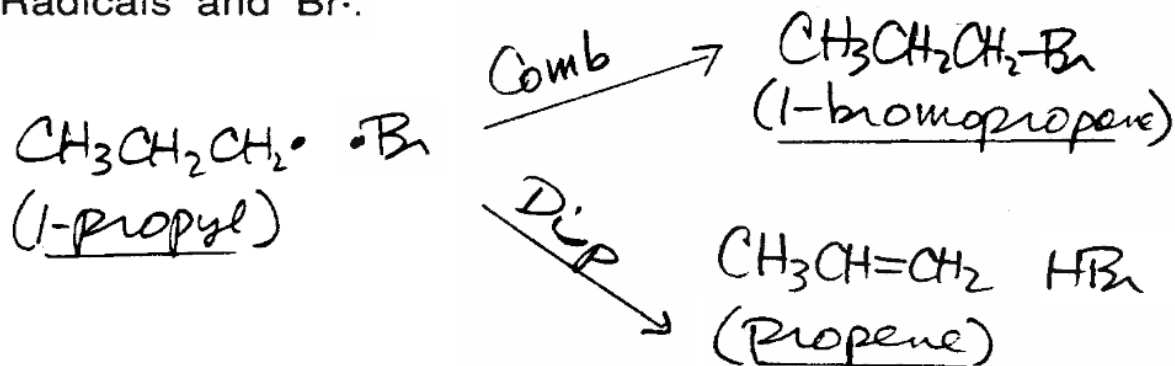


Figure 11.14

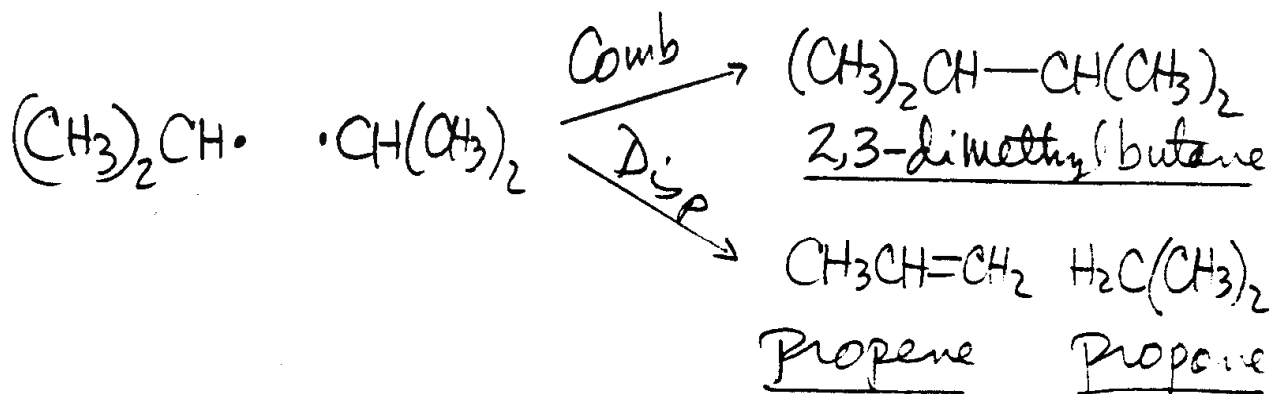
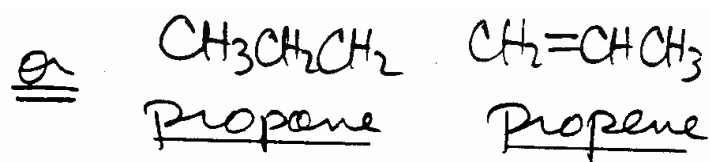
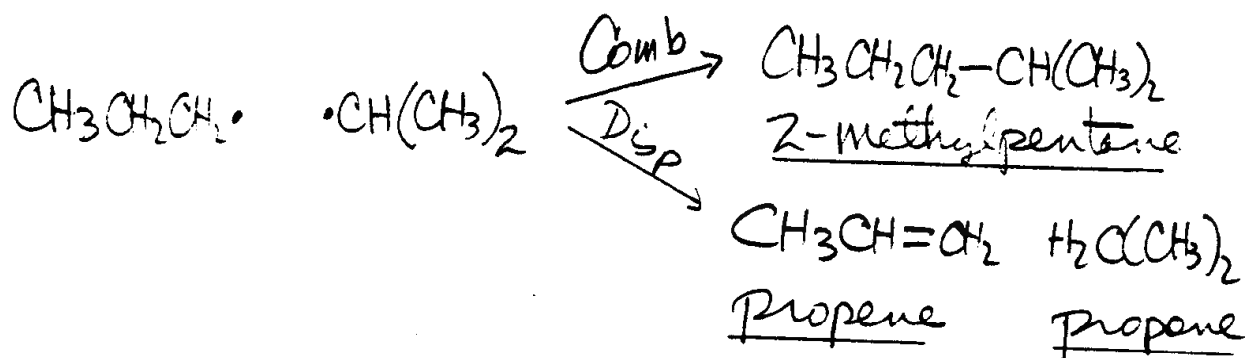
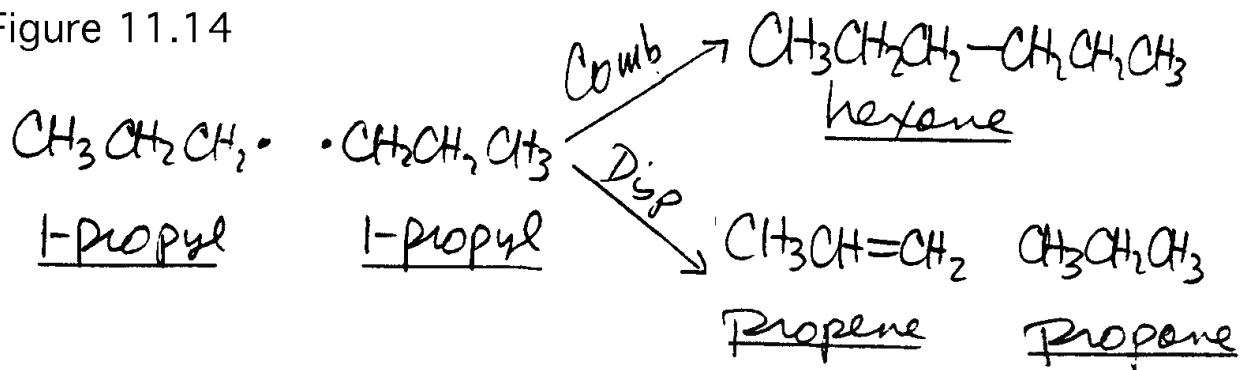


Figure 11.15 Different Ways to Make 1-Bromopropane and 2-Bromopropane by Bromination of Propane.

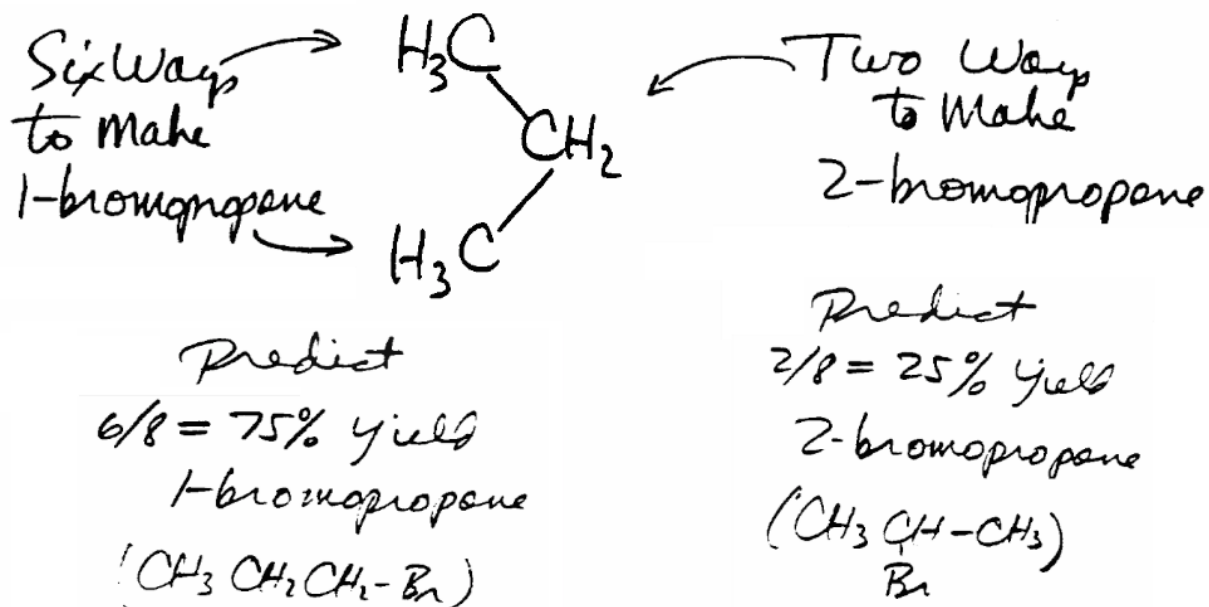


Figure 11.17 Energy Diagrams Showing the Relative Energies of 1-Propyl and 1-Methylethyl Radicals Formed from Propane.

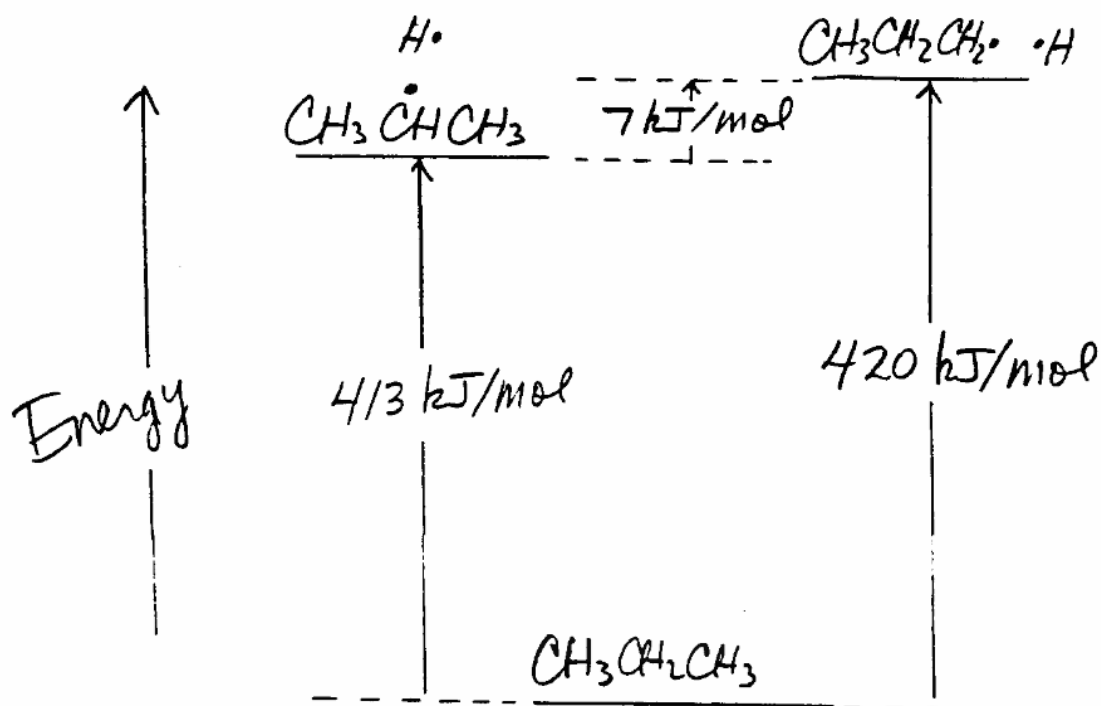
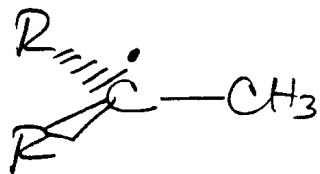
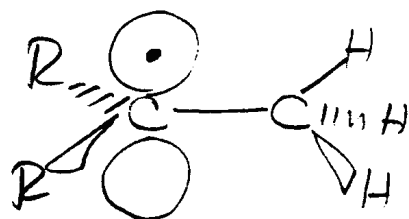


Figure 11.18 Stabilization of $R_2\dot{C}CH_3$ Radical by Adjacent C-H Bonds.



Can be written as:



2p AO with electron on
receives electron density
from adjacent C-H bond

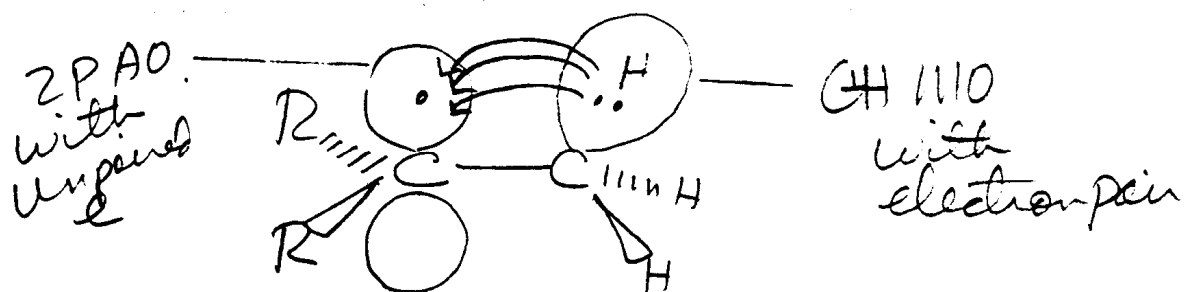


Figure 11.19

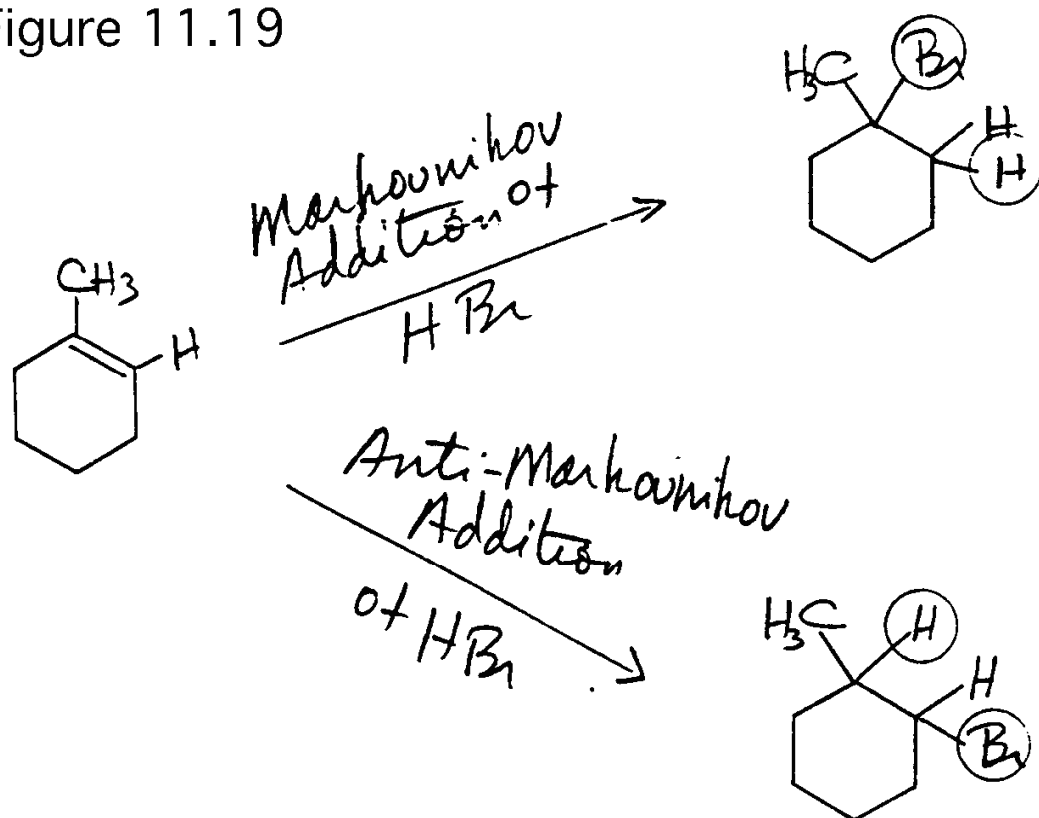


Figure 11.21

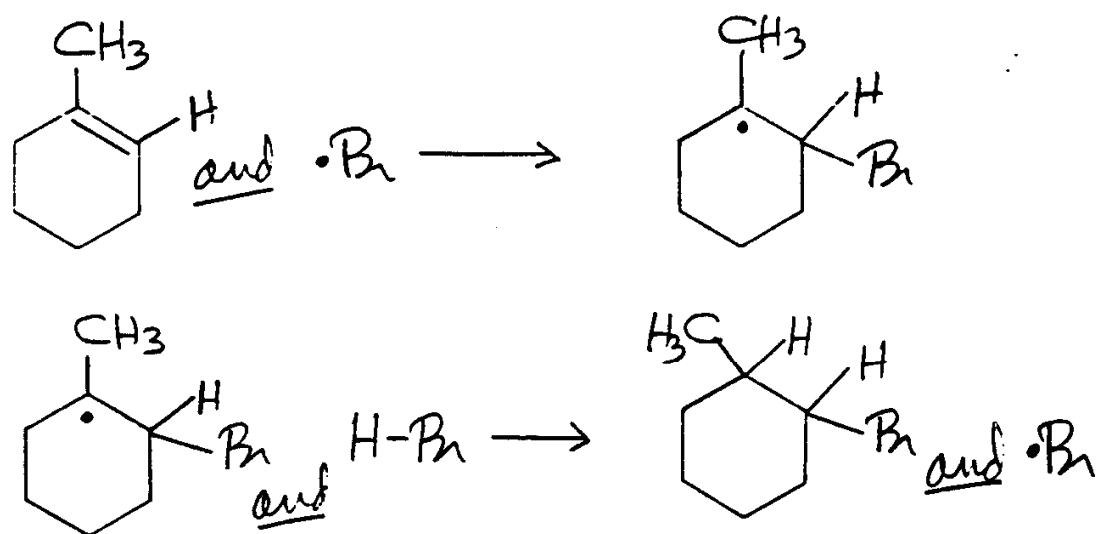


Figure 11.22

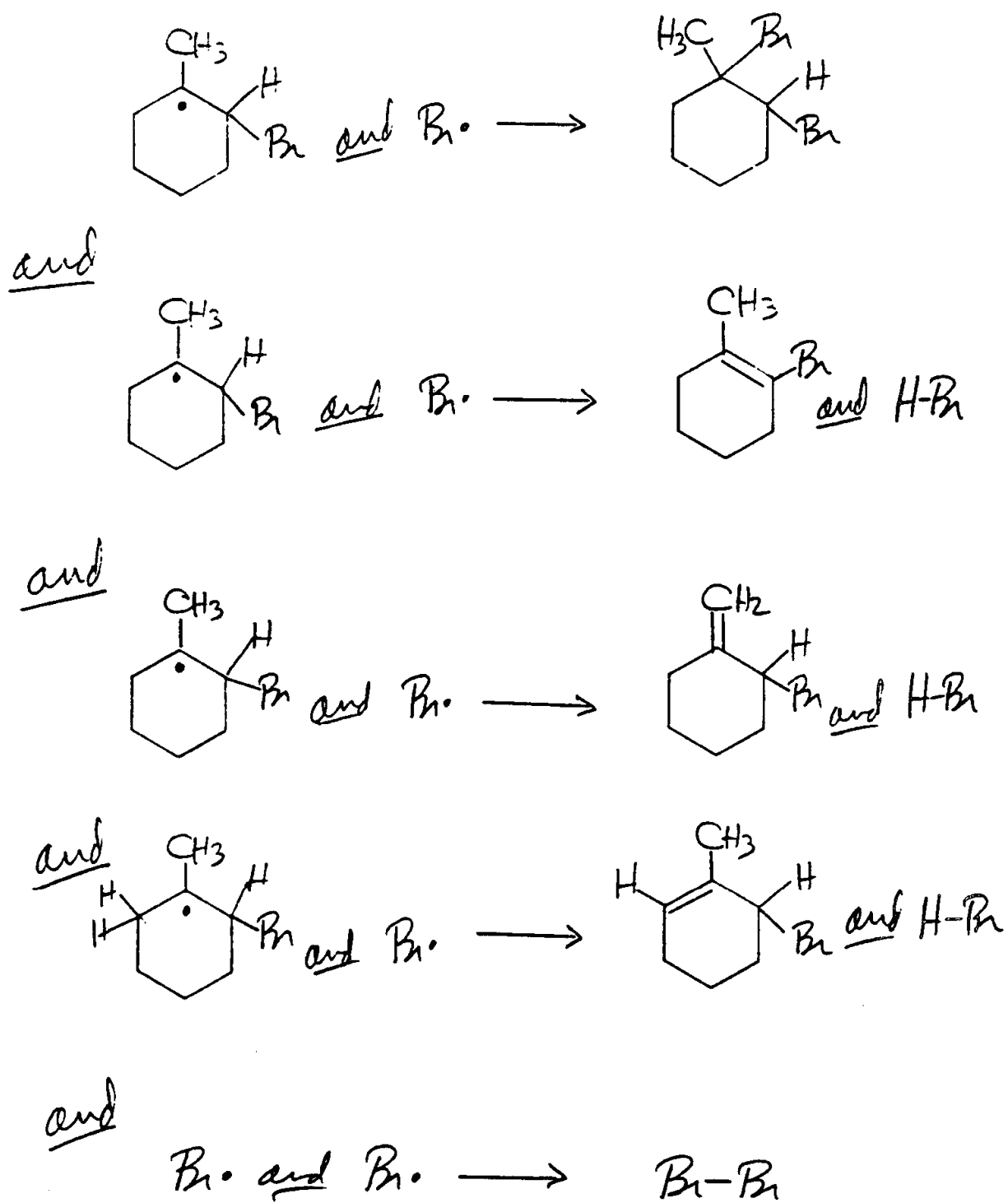


Figure 11.24

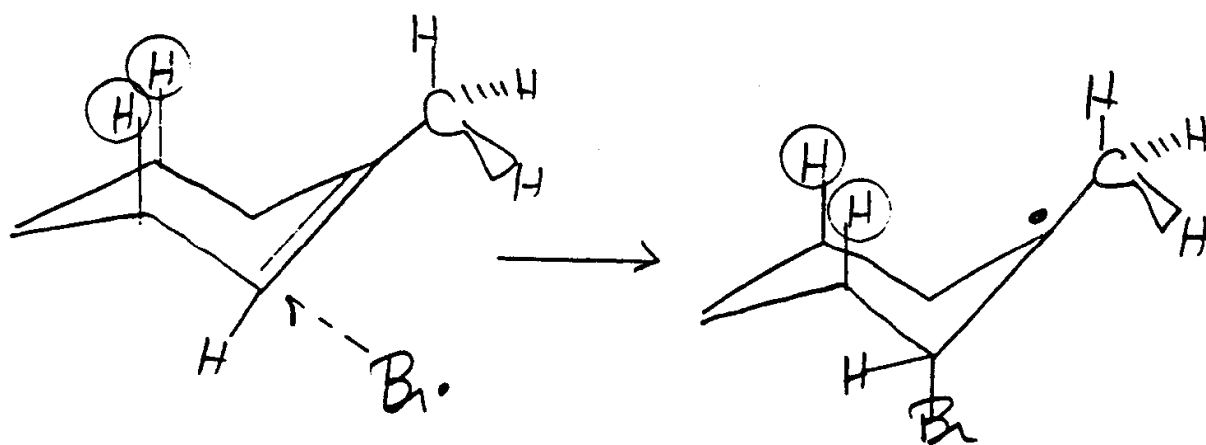
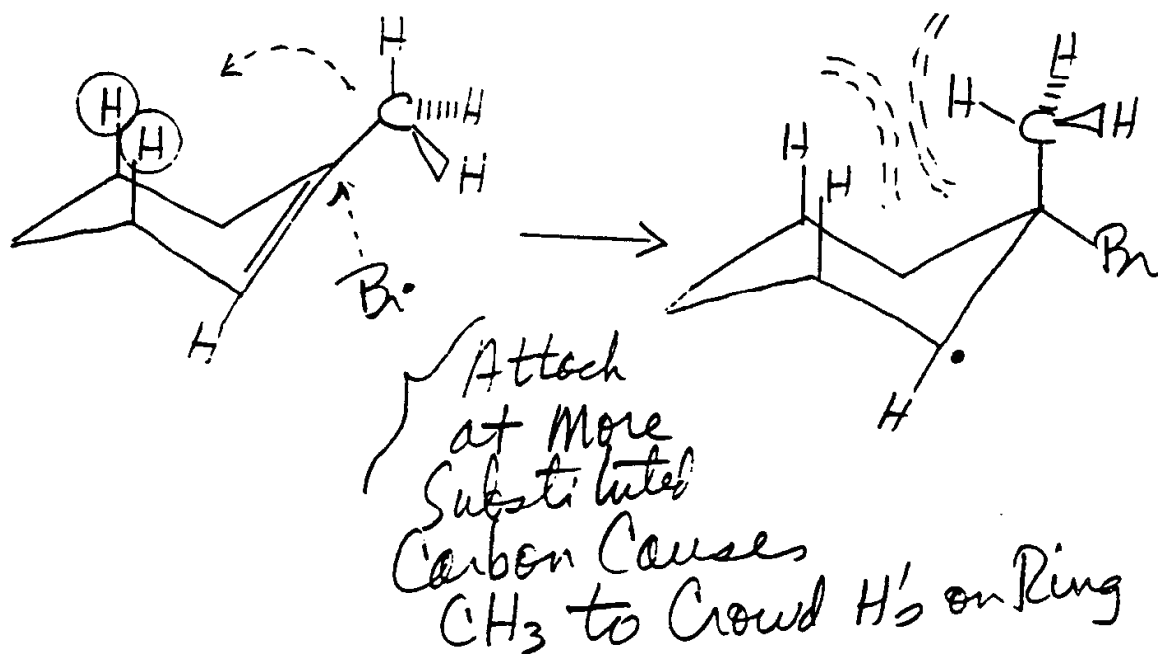


Figure 11.25

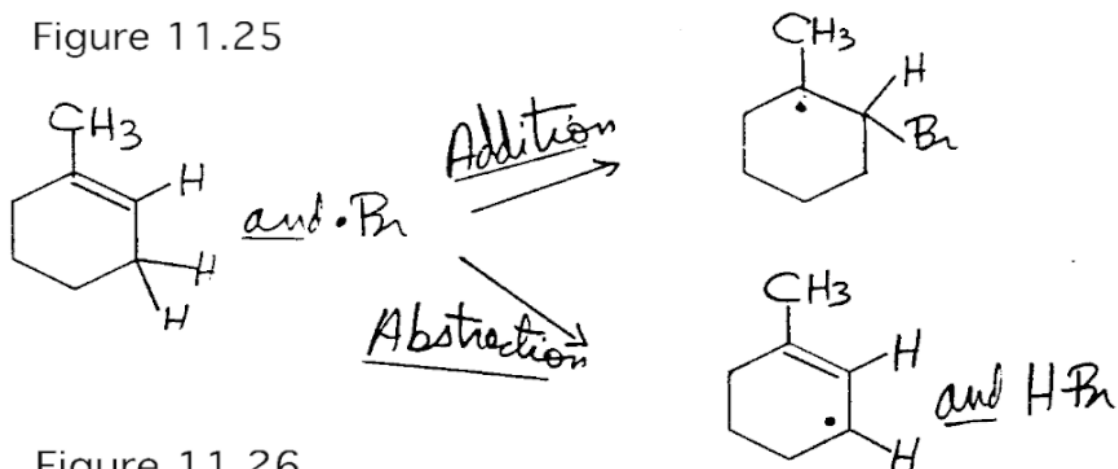


Figure 11.26

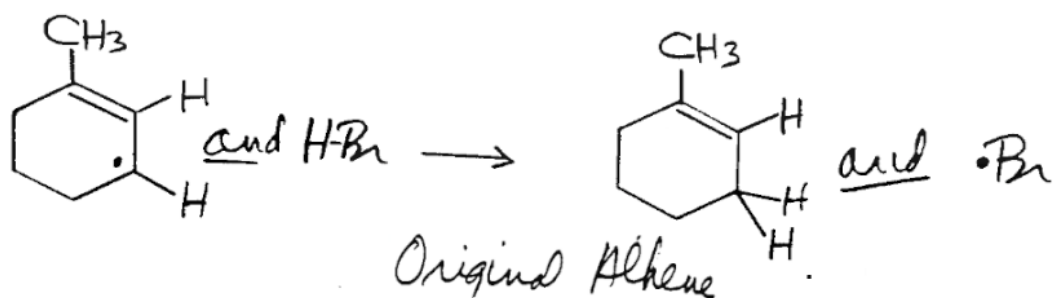


Figure 11.27

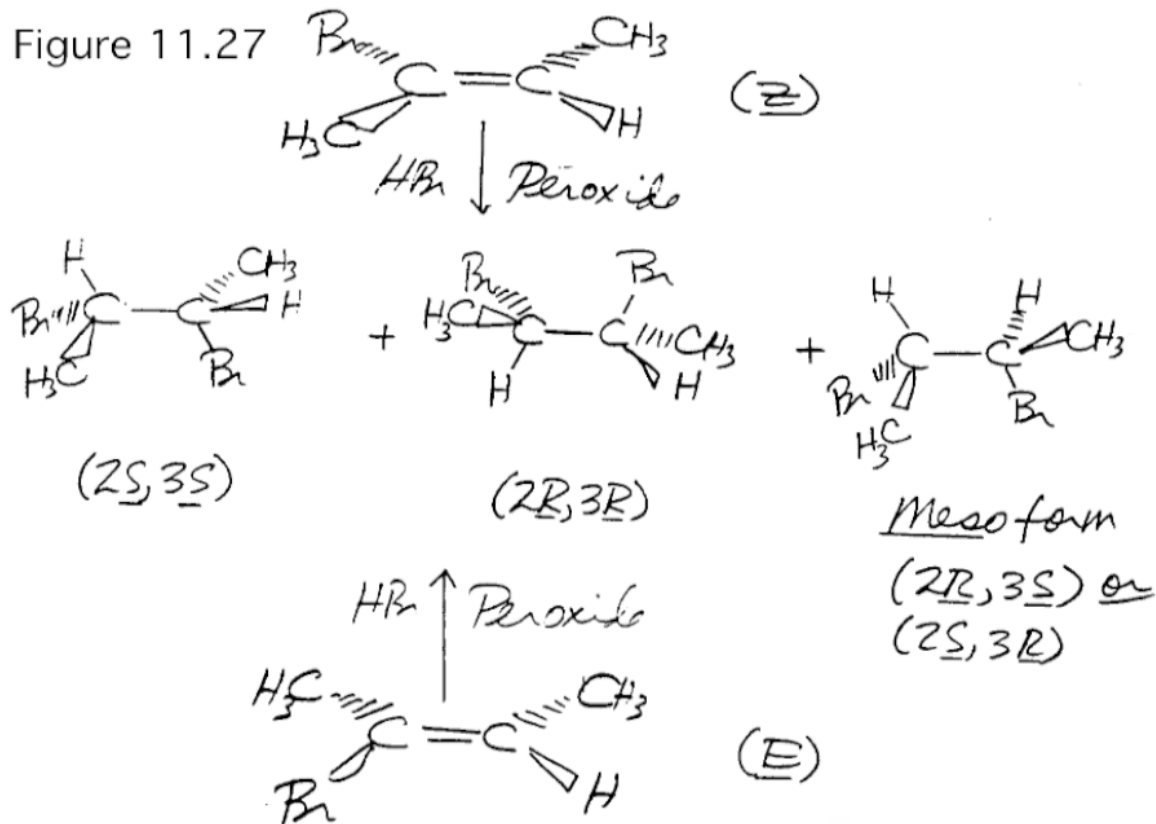


Figure 11.28

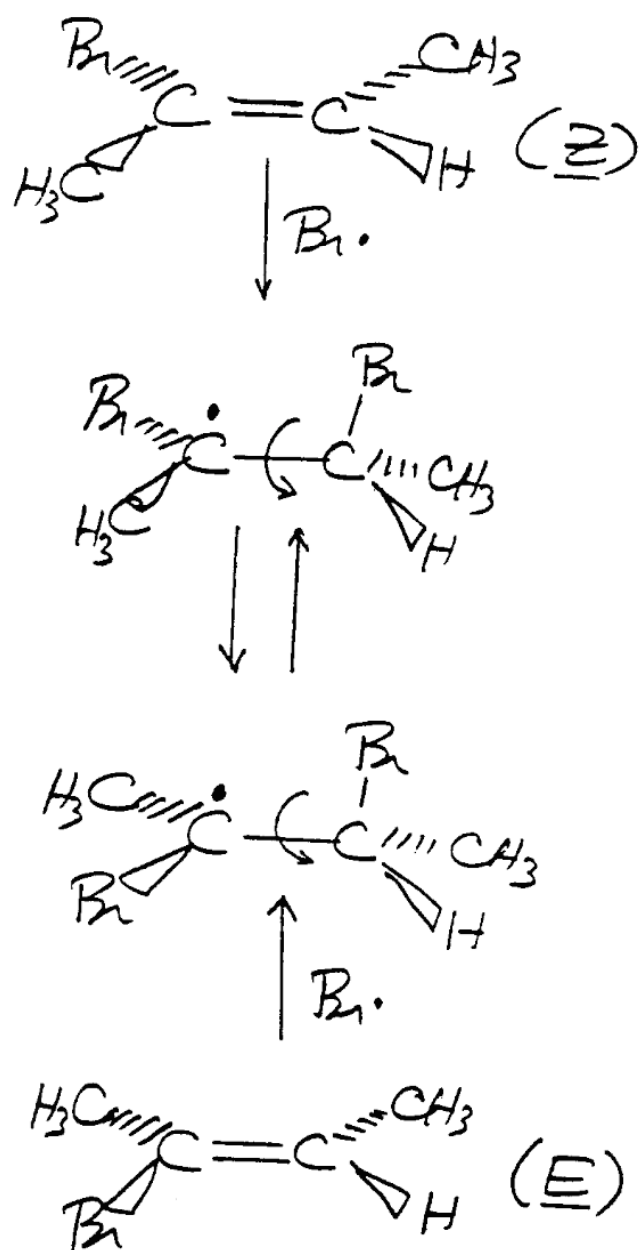


Figure 11.29

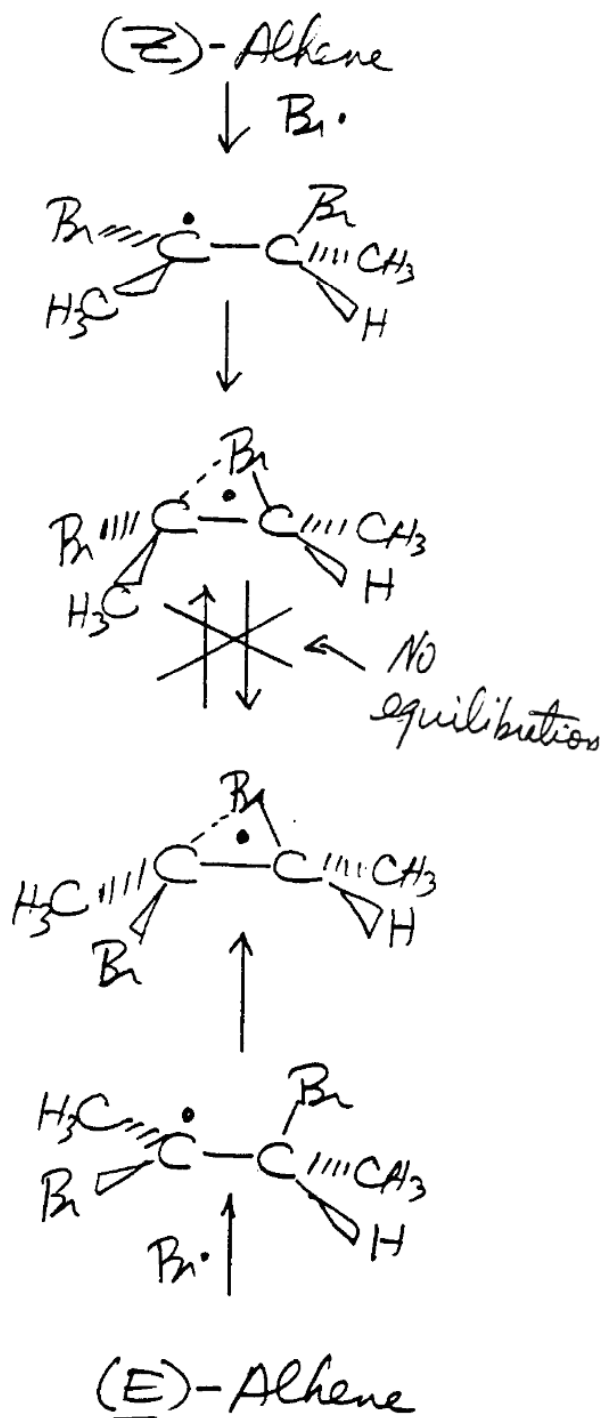


Figure 11.30

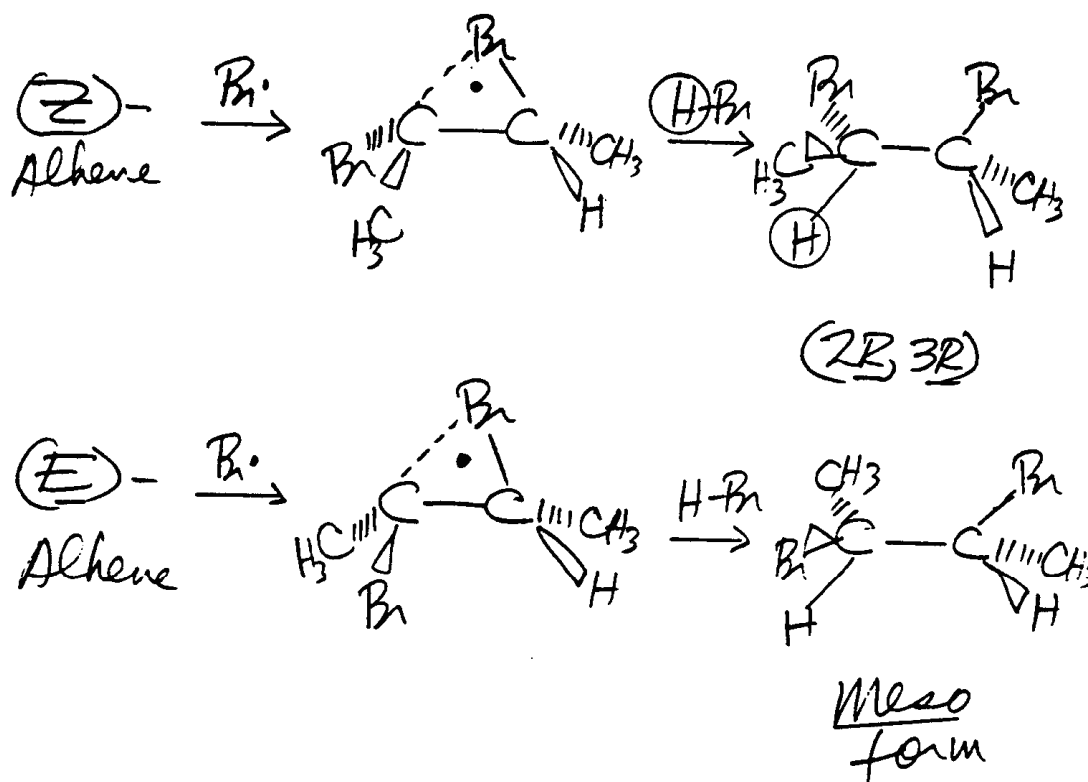


Figure 11.31

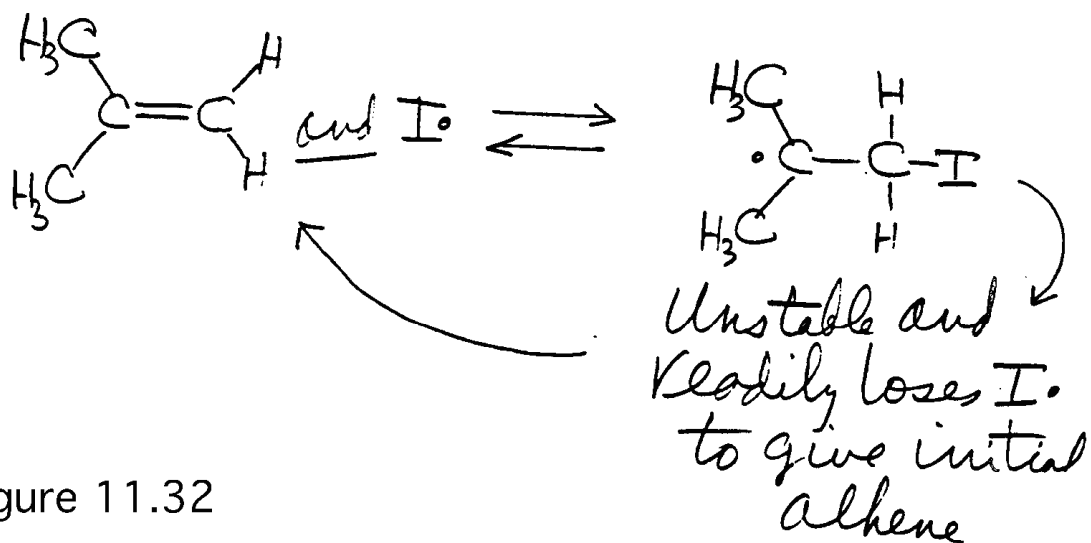


Figure 11.32

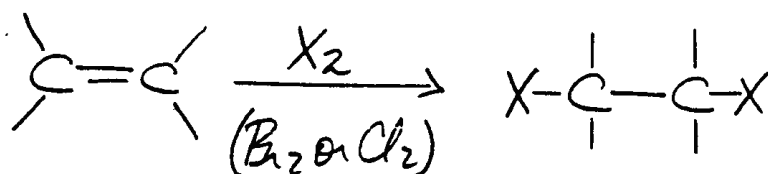


Figure 11.33

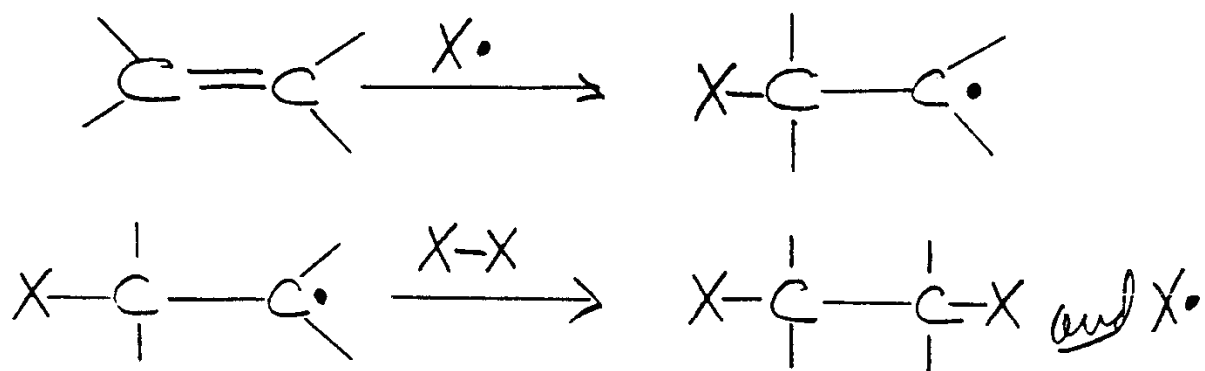


Figure 11.34

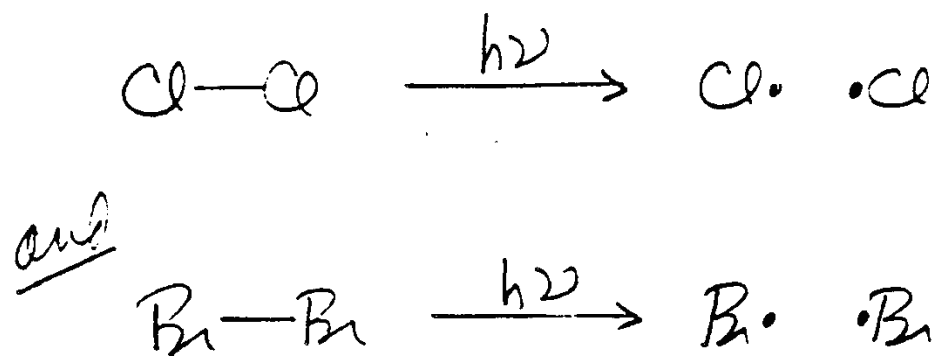


Figure 11.36

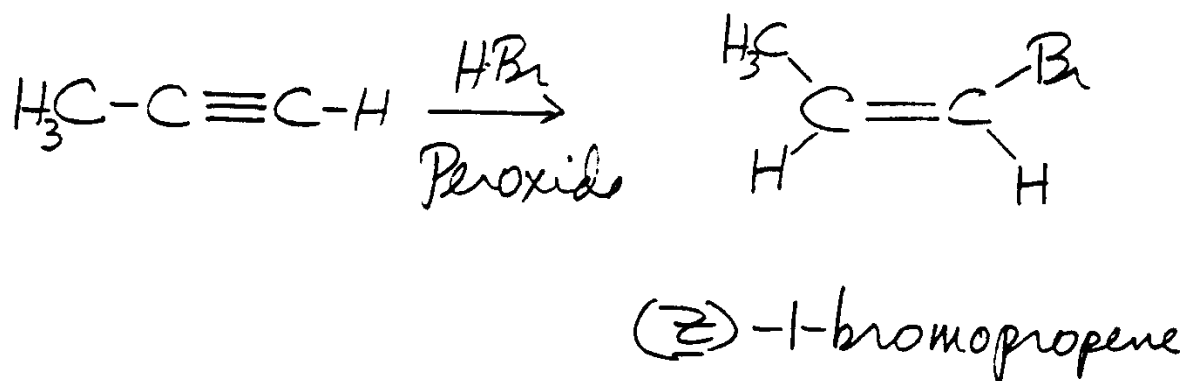
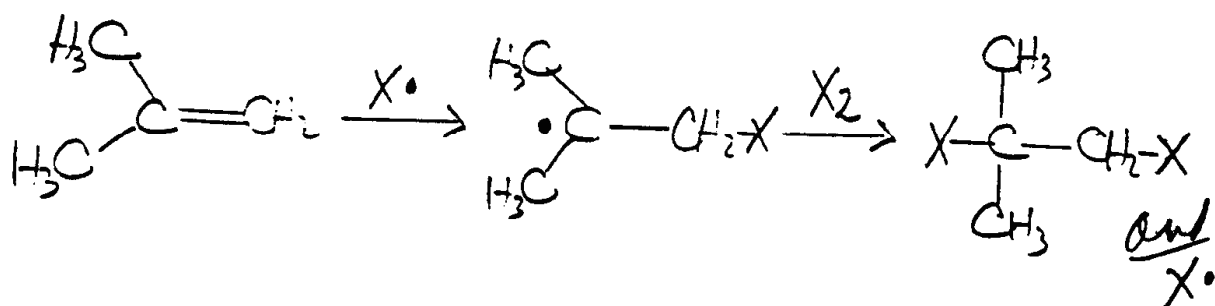
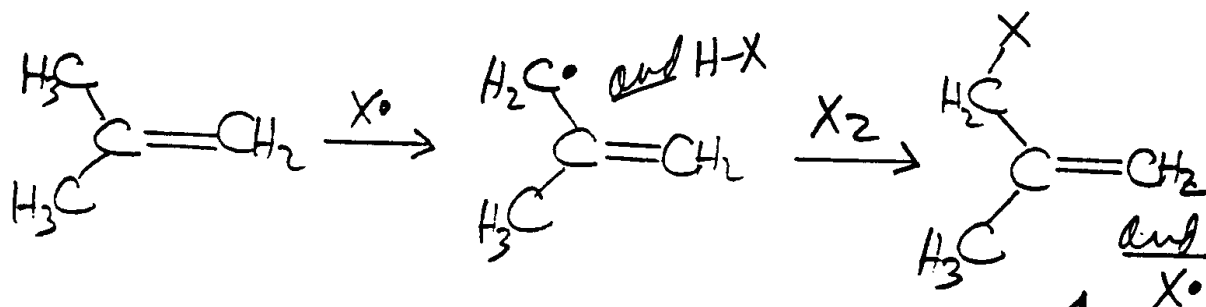


Figure 11.35

Addition of X_2 to an Alkene



Competitive H Abstraction



Not the original alkene and X_2 addition will give a different product than obtained in the reaction above.

Figure 11.38

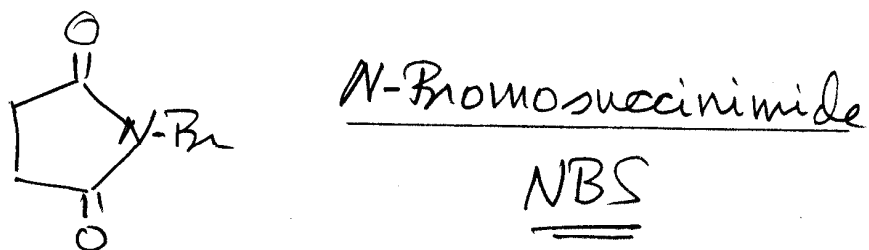


Figure 11.39

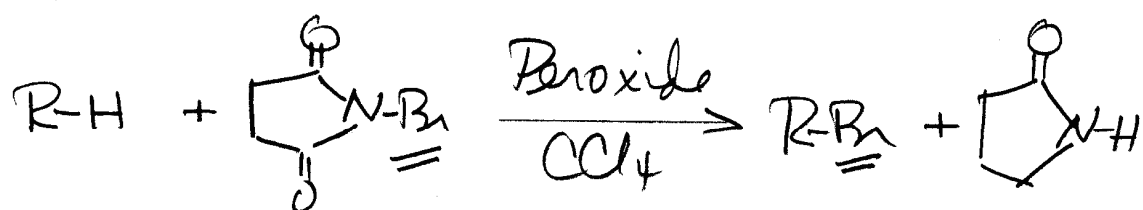
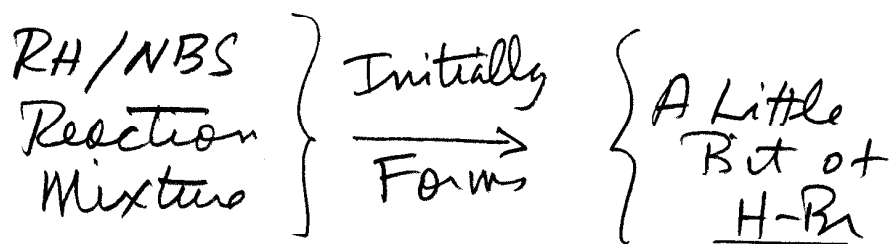
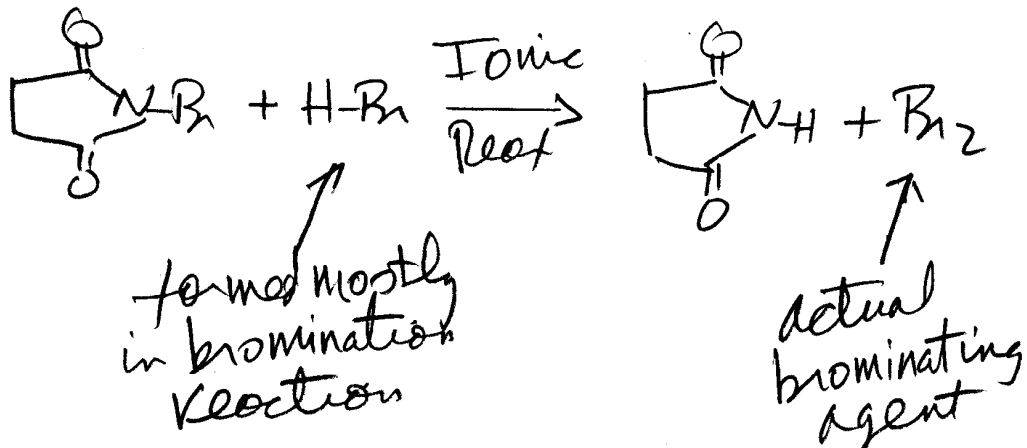


Figure 11.40



Then



Stages of C-H Breaking and H-X Formation in H Abstraction by $\cdot X$ in the $(CH_4 \cdots \cdot X)$ Complex.

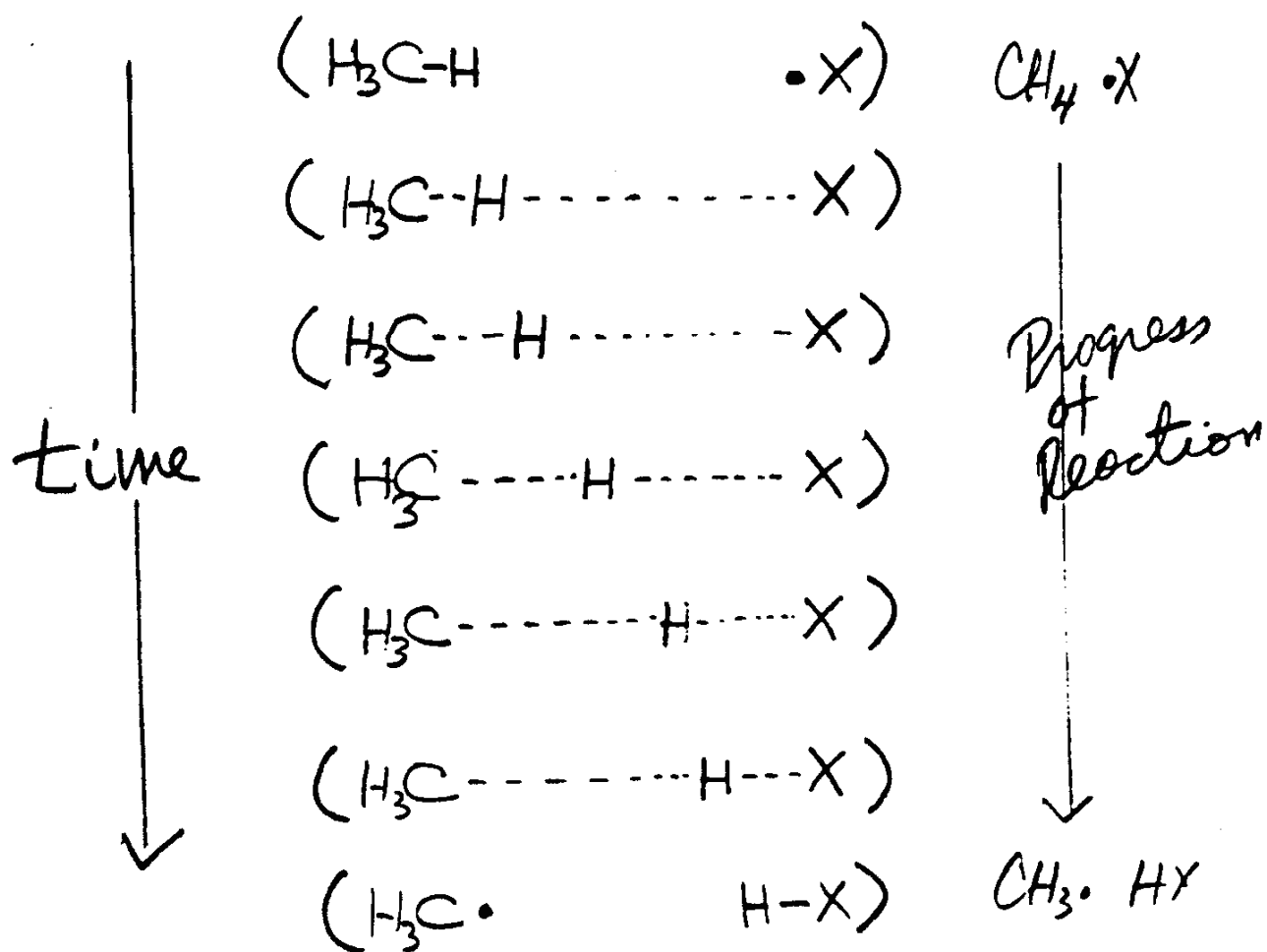


Figure 11.42 Energy Diagrams Showing the Overall Change in Energy for the Reaction $\text{CH}_4 + \text{X}\cdot \rightarrow \text{CH}_3\cdot + \text{HX}$.

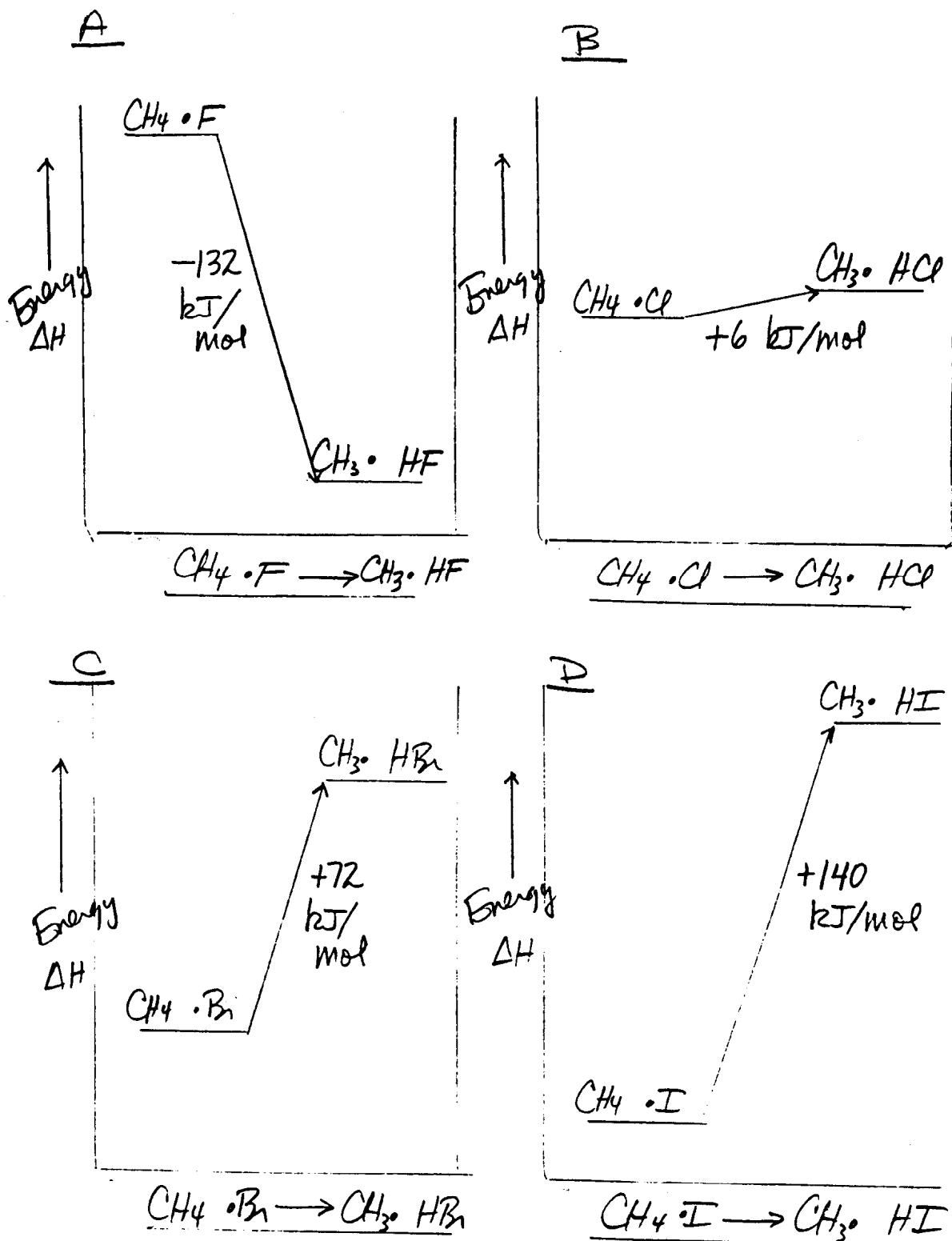


Figure 11.43 Energy Diagrams Showing the Overall Energy Changes as well as Transition State Energies and Positions for the Reaction $\text{CH}_4 + \text{X}\cdot \rightarrow \text{CH}_3\cdot + \text{HX}$.

