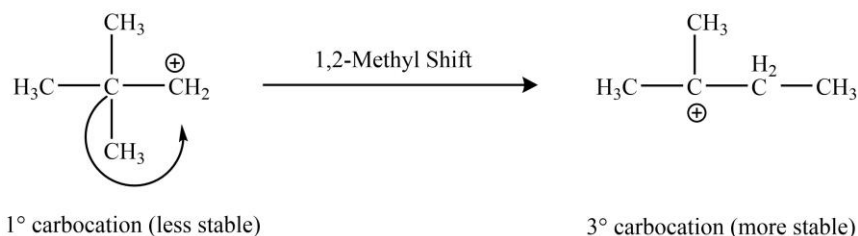
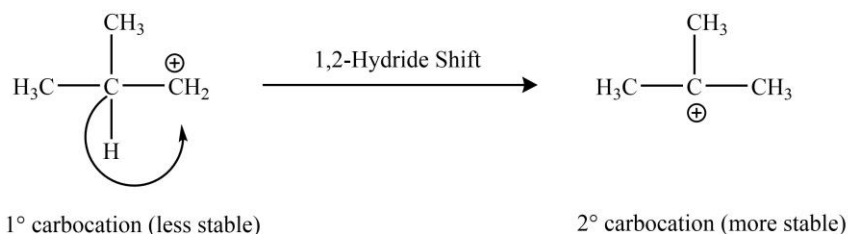


❖ Common Carbocation Rearrangements

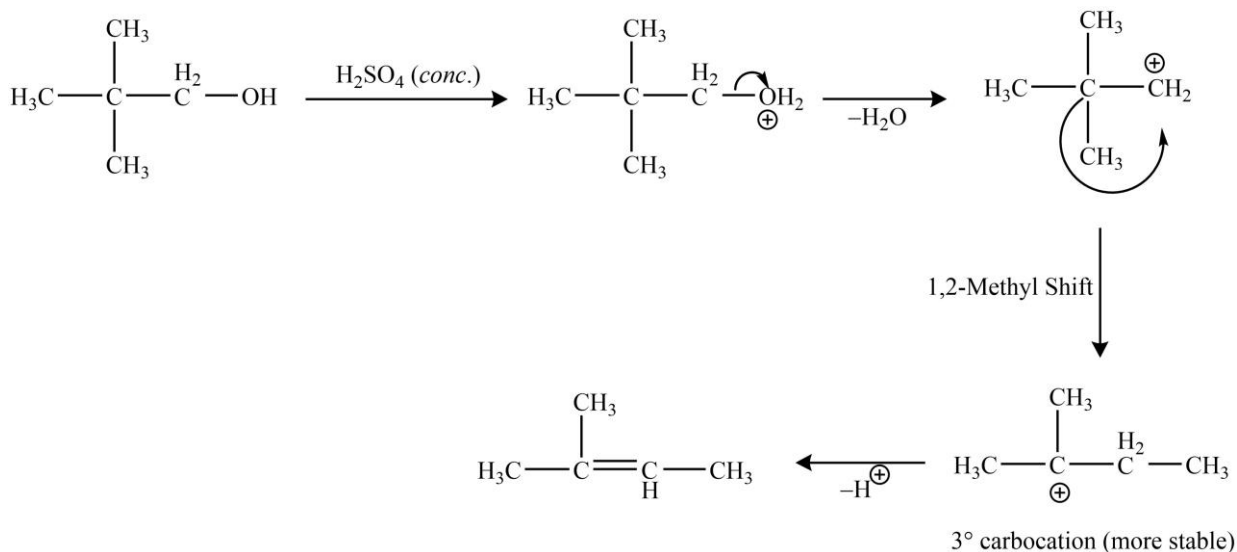
Carbocations may undergo rearrangements to yield their more stable counterparts, and this phenomenon is typically labeled as carbocationic rearrangement. In this section, we will discuss the carbocation rearrangement for classical and non-classical carbocations.

➤ *Rearrangement Reactions in Classical Carbocation:*

The 1-2 methyl shift or 1-2 hydride shifts are very common in carbocation chemistry to attain a more stable counterpart. For instance, a primary carbocation will prefer to rearrange itself into a more stable tertiary carbocation.

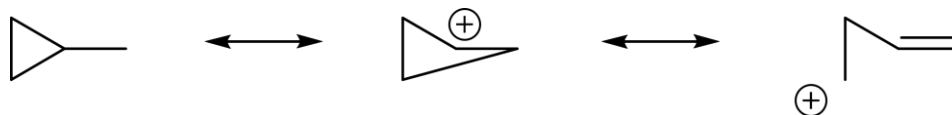


Some typical examples of methyl or hydride shift are given below.

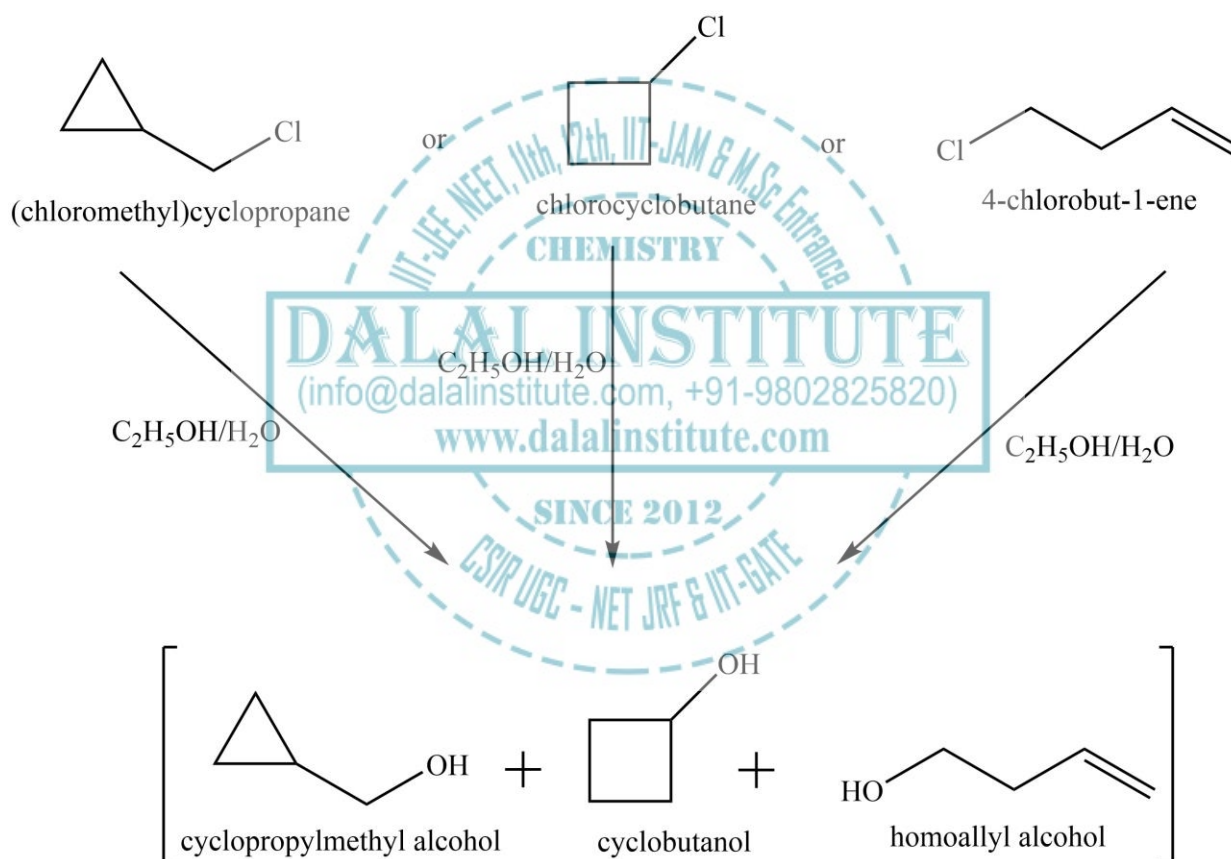


➤ **Rearrangement Reactions in Non-Classical Carbocation:**

The most common example of this type of rearrangement is the cyclopropylmethyl system in which three rearranged forms of the carbocation exist in equilibrium.



The treatment of cyclopropylmethyl chloride with dilute ethyl alcohol yields a mixture of 5% homoallyl alcohol, 47% cyclobutanol, and 48% cyclopropylmethyl alcohol. Similar results were obtained if we use cyclobutyl chloride or homoallyl chloride instead of cyclopropylmethyl chloride.



All this suggests that the carbocationic intermediate present in all three reactions must be the same, which in turn, is responsible for the same resulting products.

Furthermore, it is also worthy to note that the participation of σ -bond in the neighboring group mechanism to yield non-classical carbocations results in increased rates of a reaction than what we would have observed in normal $\text{S}_{\text{N}}2$; which is obviously due to anchimeric assistance.

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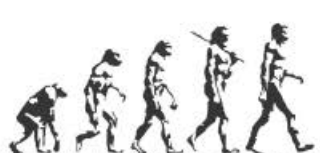
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A TEXTBOOK OF ORGANIC CHEMISTRY

Volume I

MANDEEP DALAL



First Edition

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