

ELIMINATION REACTION (Part-I)

By

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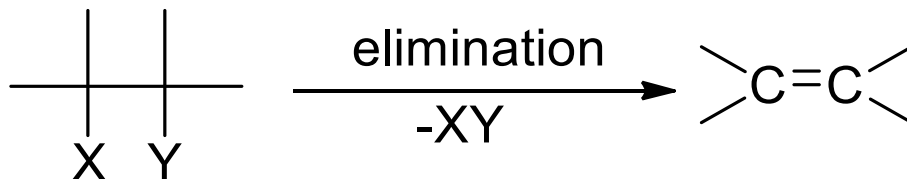


Patna Women's College

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Elimination reaction

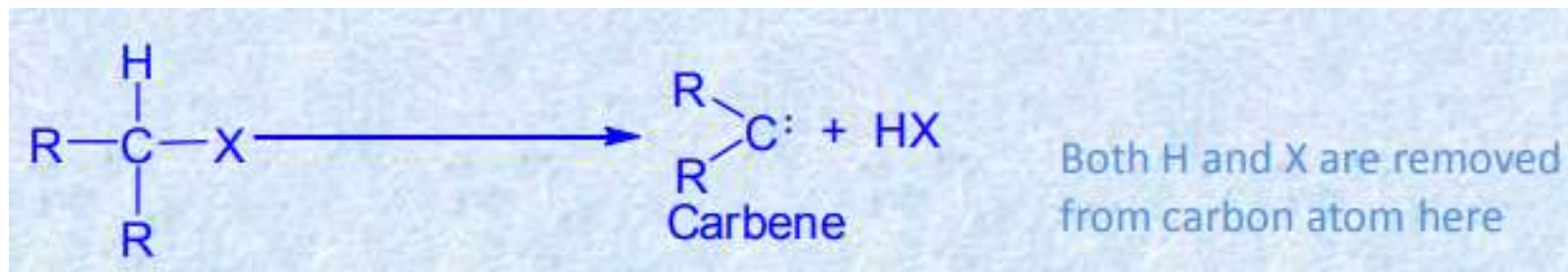
- ❑ Elimination reactions widely used for the generation of double and triple bonds in compounds from a saturated precursor molecule. The presence of a good leaving group is a prerequisite in most elimination reactions. Traditional classification of elimination reactions, in terms of the molecularity of the reaction is employed.
- ❑ Elimination reactions involve the loss of fragments or groups from a molecule to generate multiple bonds. A generalized equation is shown below for 1,2-elimination wherein the X and Y from two adjacent carbon atoms are removed.



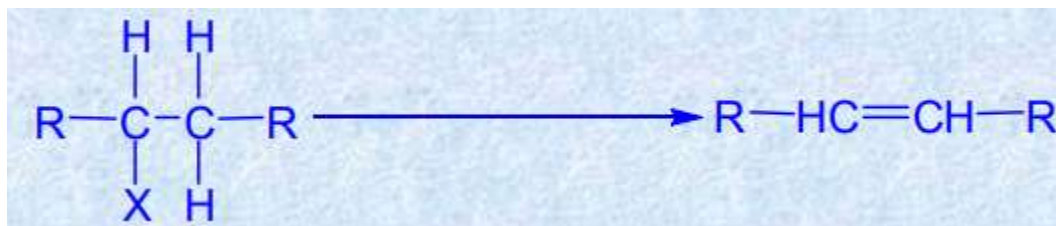
Types of Elimination Reactions

□ Three major types of elimination reactions are:

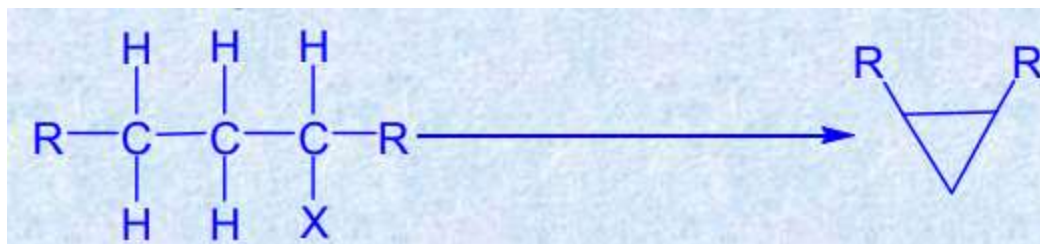
- **α -elimination**: two atoms or groups are removed from the same atom. It is also known as 1,1-elimination.



- **β -elimination**: loss of atoms or groups on adjacent atoms. It is also known as 1,2- elimination.

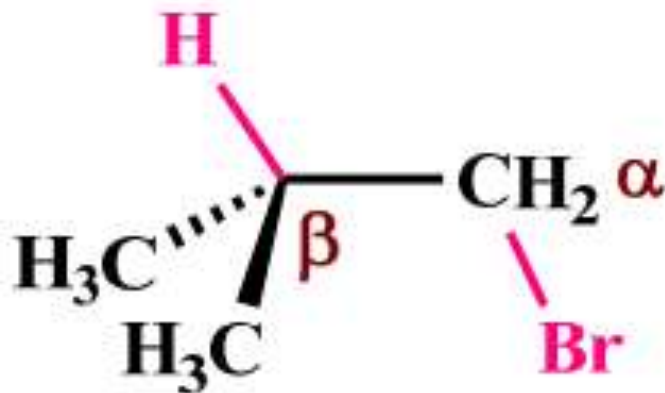


- **γ -elimination**: loss of atoms or groups from the 1st and 3rd positions as shown below. Generally such elimination reactions result in cyclic compounds.



β -eliminations

- Base removes a proton from the β -carbon atom, while the halogen atom leaves from the α -carbon resulting in the formation of a π -bond. Such eliminations are called β -elimination reactions.



Types of β -eliminations

- β -eliminations can be further subdivided into three categories depending upon the mechanistic pathway. The important aspect is to establish the number of molecules taking part in the elimination step (molecularity of the reaction).

- The types of β -eliminations are:
 - 1) E2 — bimolecular elimination
 - 2) E1 — unimolecular elimination
 - 3) E1cB — Elimination Unimolecular conjugate Base