

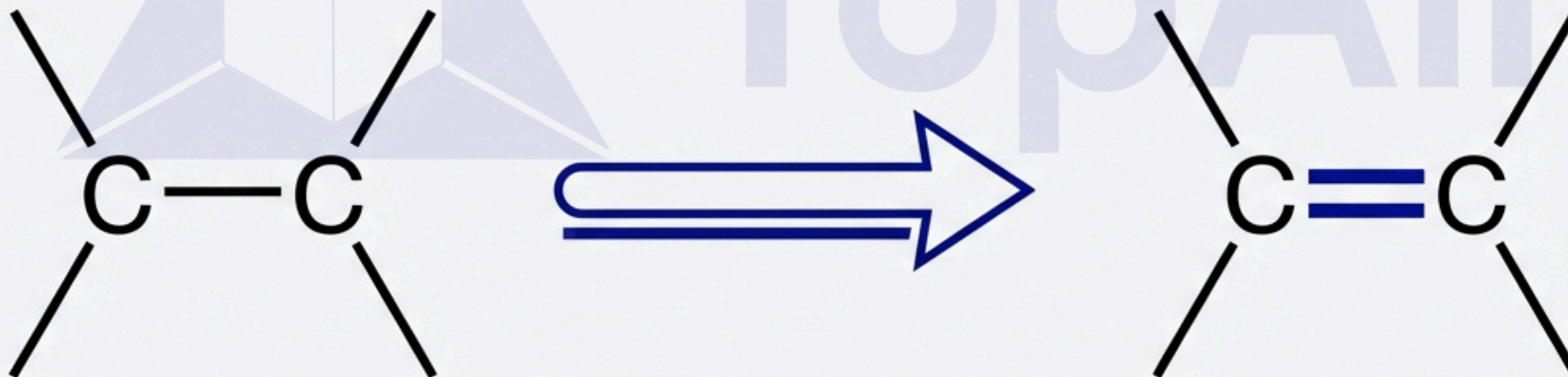
Preparation of Alkenes

Mastering the Three Core Elimination Routes

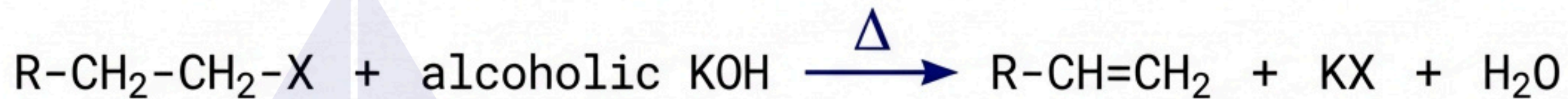
β -Elimination

Dehydrohalogenation

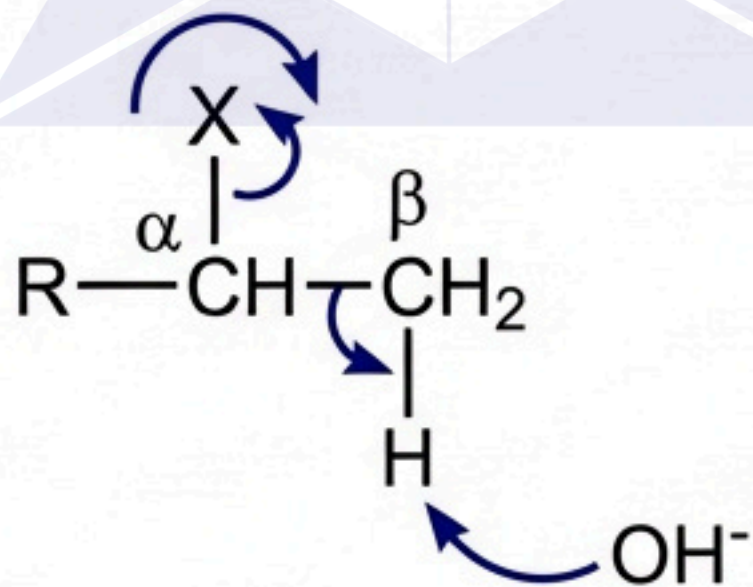
Dehydration



Dehydrohalogenation of Alkyl Halides



The Mechanism



Exam Rules

Alcoholic Potash (KOH)

Halogen Reactivity:

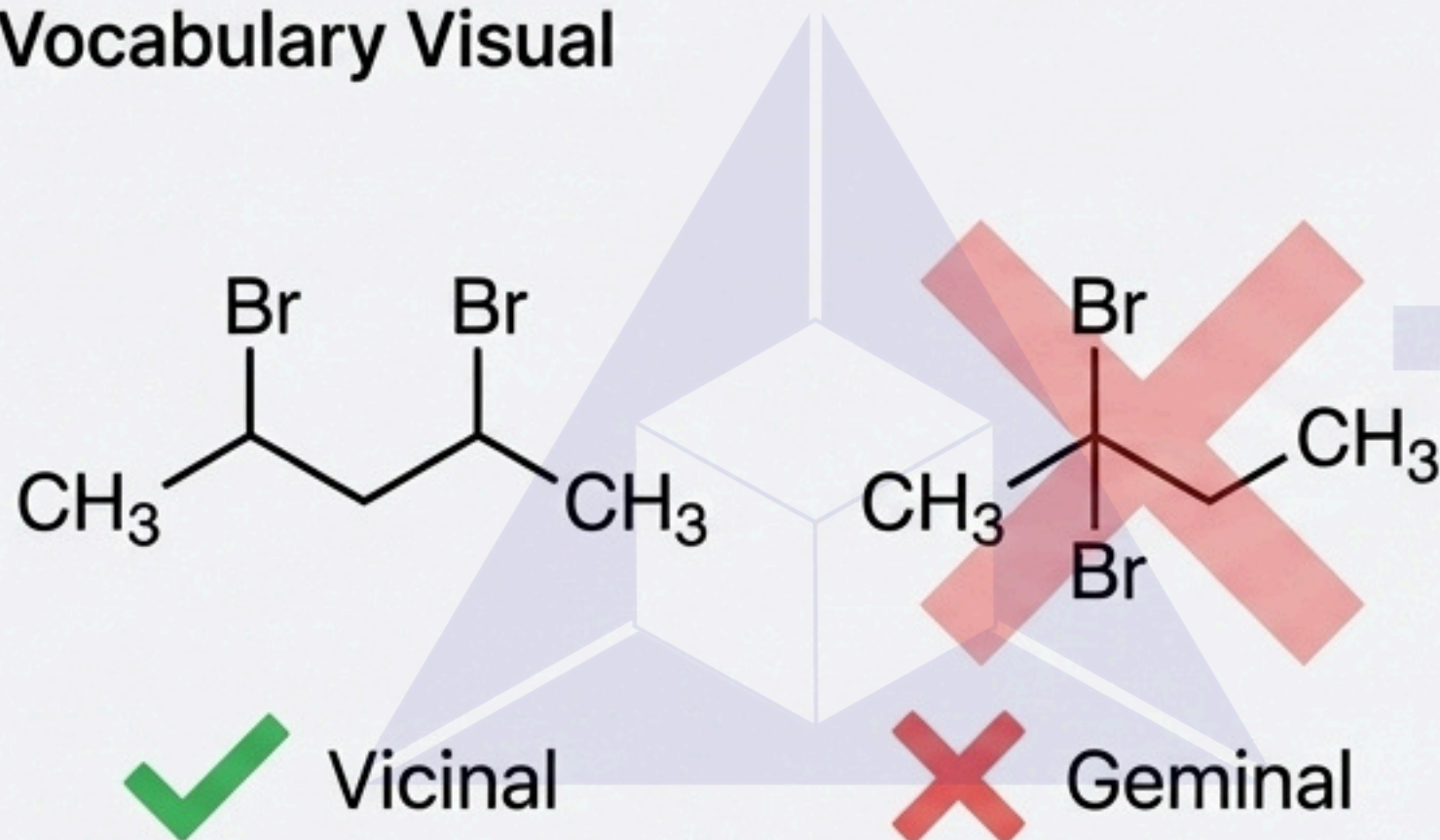
I > Br > Cl

Alkyl Reactivity:

Tertiary > Secondary > Primary

Dehalogenation From Vicinal Dihalides

Vocabulary Visual



Reaction Mechanics

Reaction Strip



Concept Box

Zinc-Mediated Dehalogenation

Zinc acts to strip the two adjacent halogen atoms, forcing the carbons to form a π -bond to satisfy carbon's tetravalency. $\longrightarrow$

Exam Recap

Starting Material: Vicinal Dihalide

Reagent: Zinc Dust (Zn) / Heat



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Let's Test Them Now.**

$$E=mc^2$$



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Key Highlights

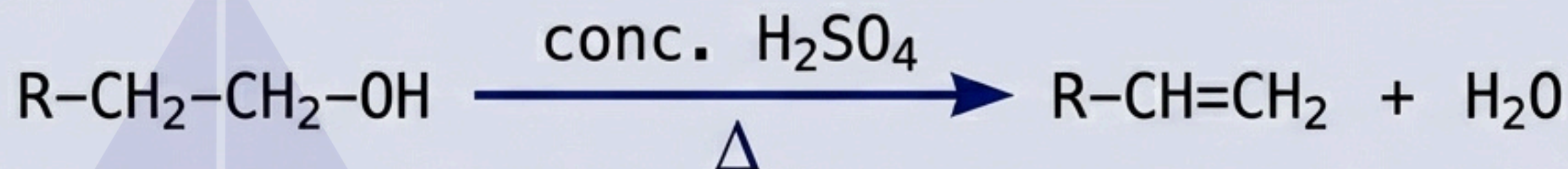
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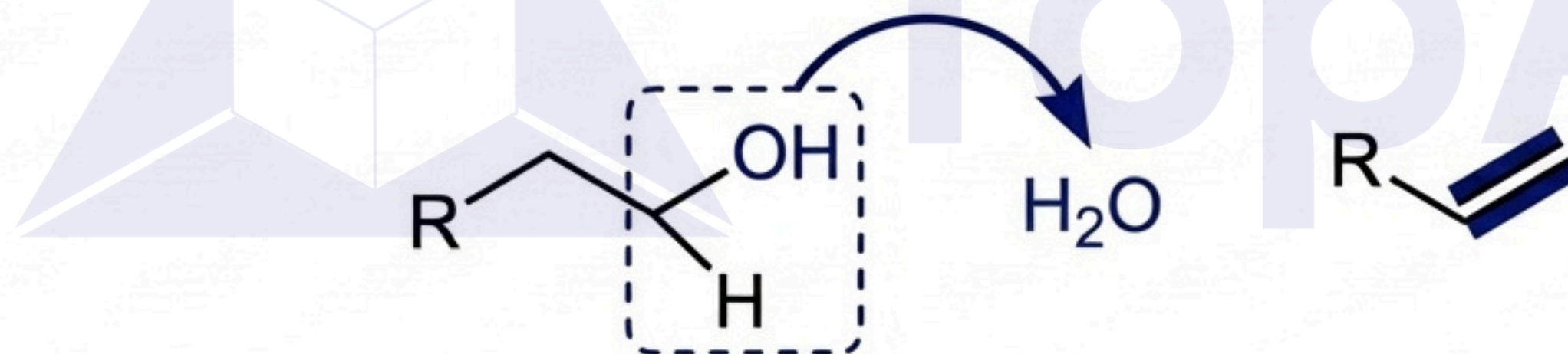
Acidic Dehydration of Alcohols

! Acidic Conditions Required

Reaction Strip



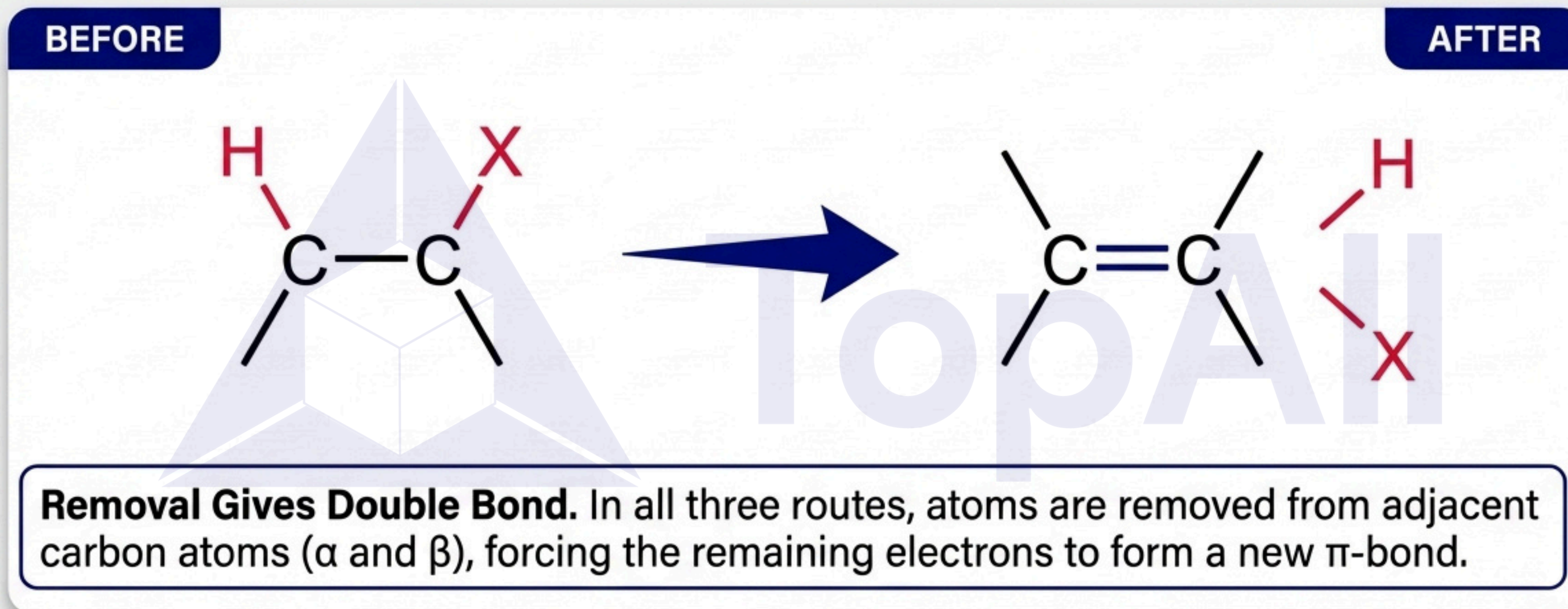
Concept Box



Exam Recap

- Reagent: **Conc. H₂SO₄** or **Heat**
- Classification: Another classic β -elimination reaction.

The Anatomy of an Elimination Reaction



Exam Recap

Rule of Thumb: Addition breaks double bonds $\leftrightarrow$ Elimination makes double bonds.

Reagent & Route Comparison

Starting Material	Reagent	Reaction Name	Outcome
Alkyl Halide	Alcoholic KOH	Dehydrohalogenation	Alkene
Vicinal Dihalide	Zn dust / Heat	Dehalogenation	Alkene
Alcohol	Conc. H ₂ SO ₄ / Heat	Acidic Dehydration	Alkene

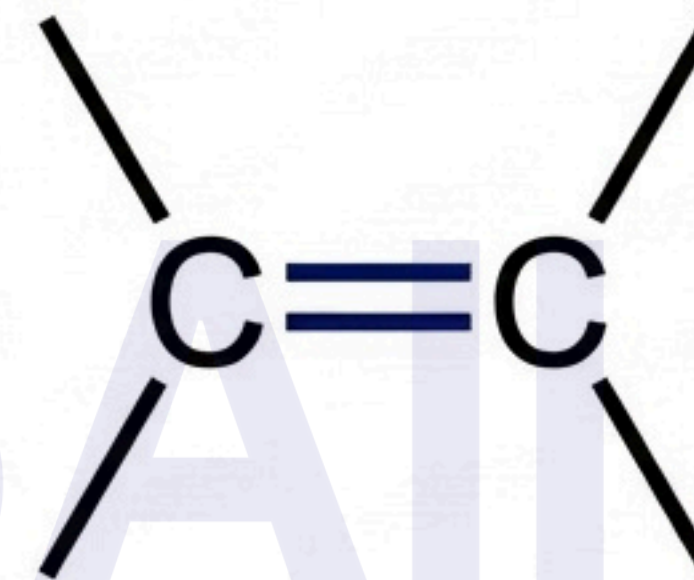
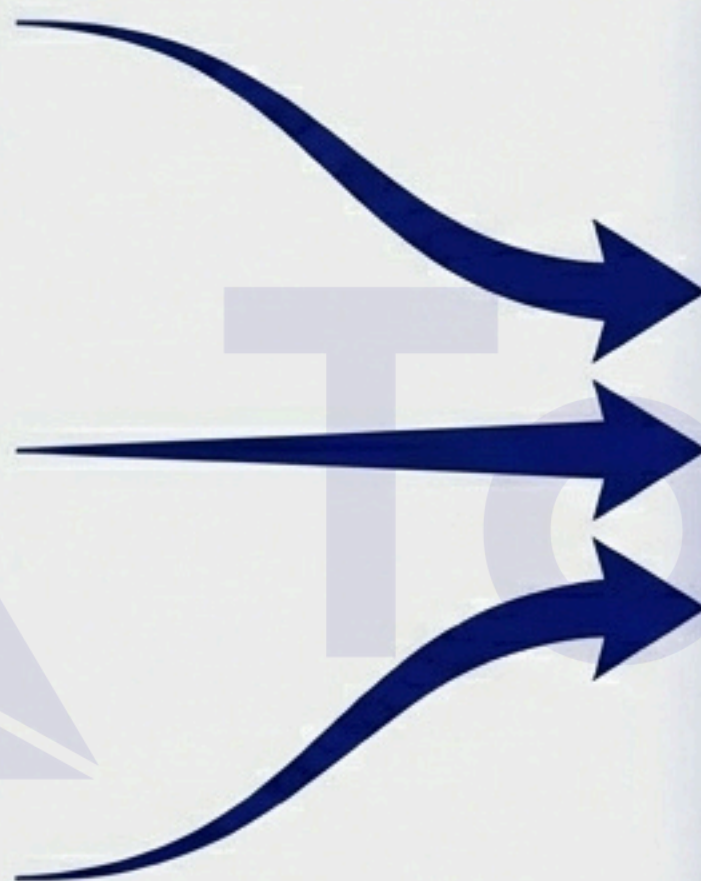
- **Reagent:** The specific reagent determines the route and type of elimination reaction, but the outcome is consistently an alkene in this context.

Three Routes, One Outcome

Alkyl Halide + Alc. KOH

Vicinal Dihalide + Zn

Alcohol + Conc. H_2SO_4



Alkene Formation

Exam Recap: Remember: Identify your starting material, choose the correct elimination reagent, and form the π -bond between the α and β carbons.



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