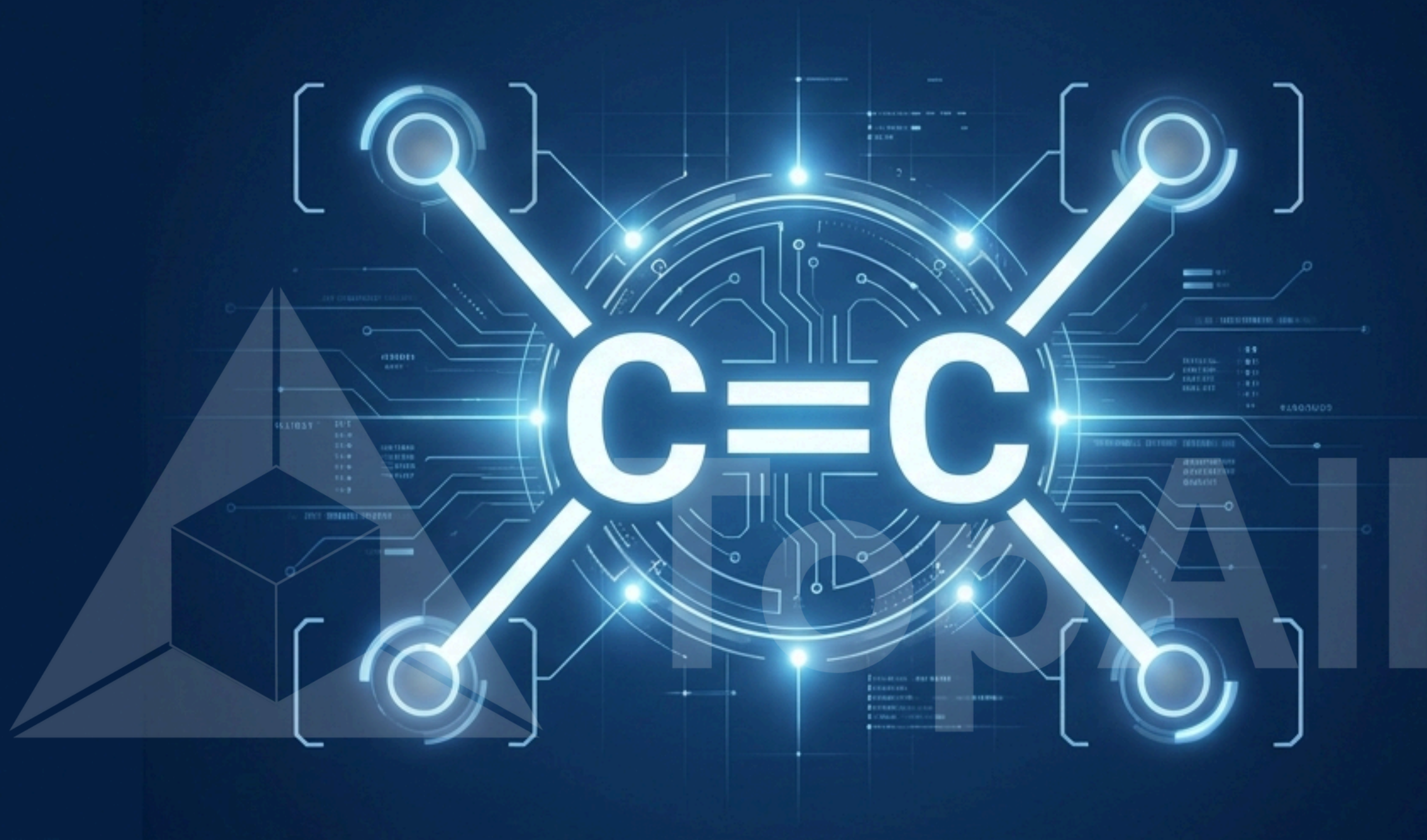


CONCEPT 10 – 9.3.3 ISOMERISM IN ALKENES

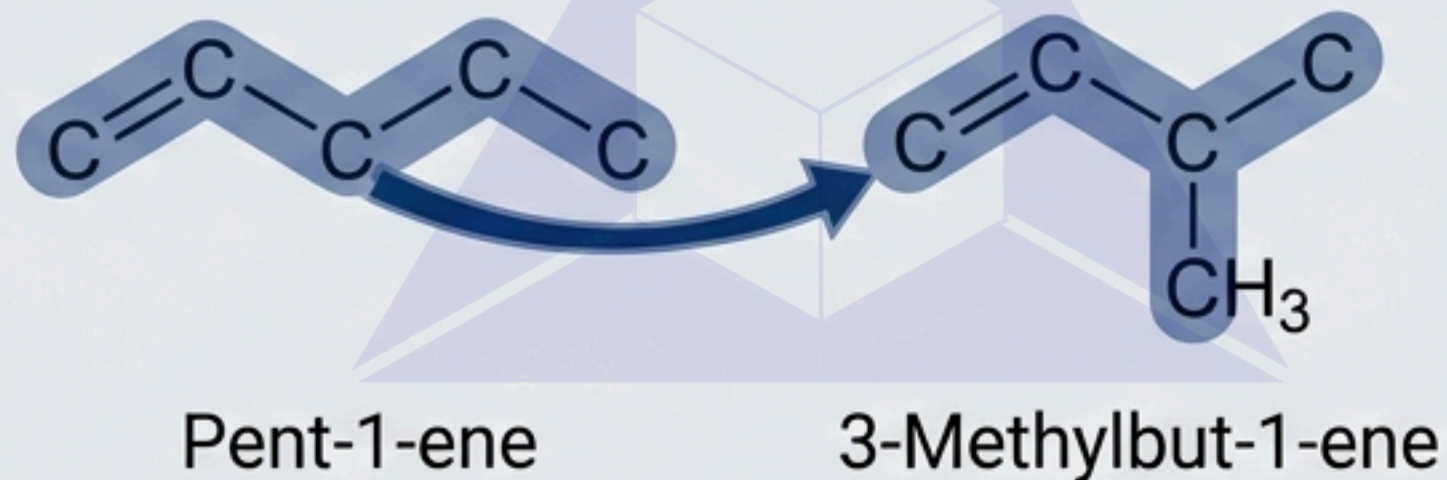


CAN THIS $C=C$ SHOW GEOMETRICAL ISOMERISM?

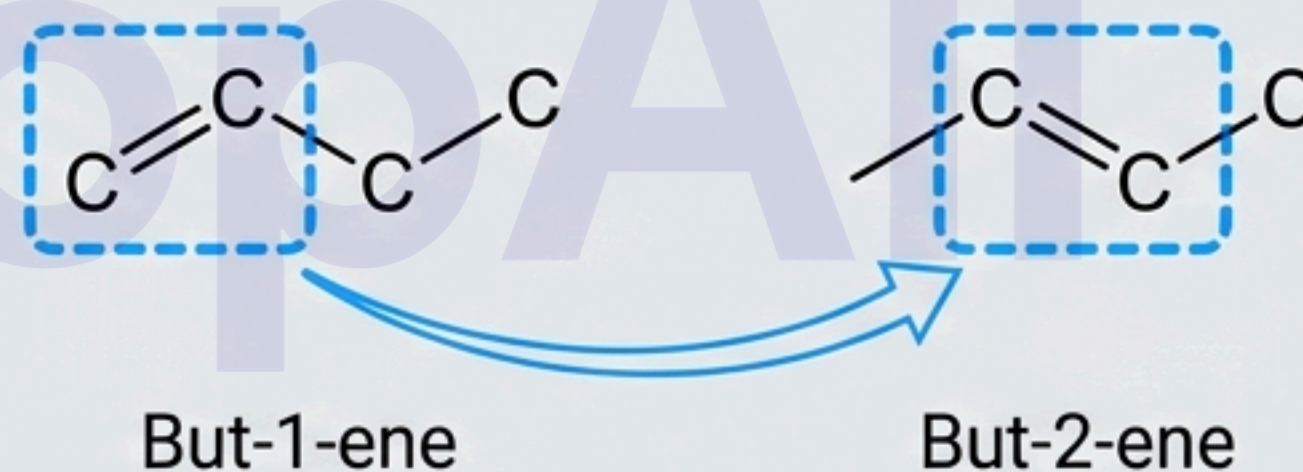
The definitive cis-trans test for JEE Main & Advanced.

Before Geometrical, Check Structural

Chain Isomerism



Position Isomerism

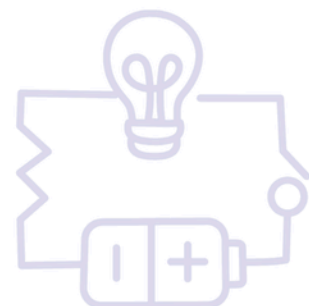


In structural isomers, the physical connectivity of atoms changes.
In geometrical isomers, connectivity stays exactly the same.



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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Practice Now



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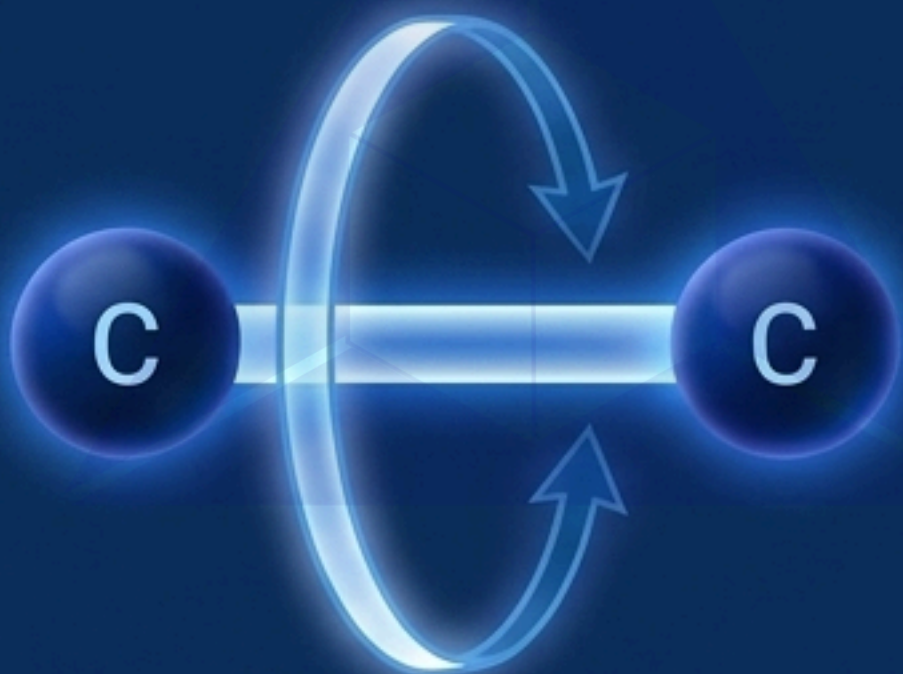
Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter

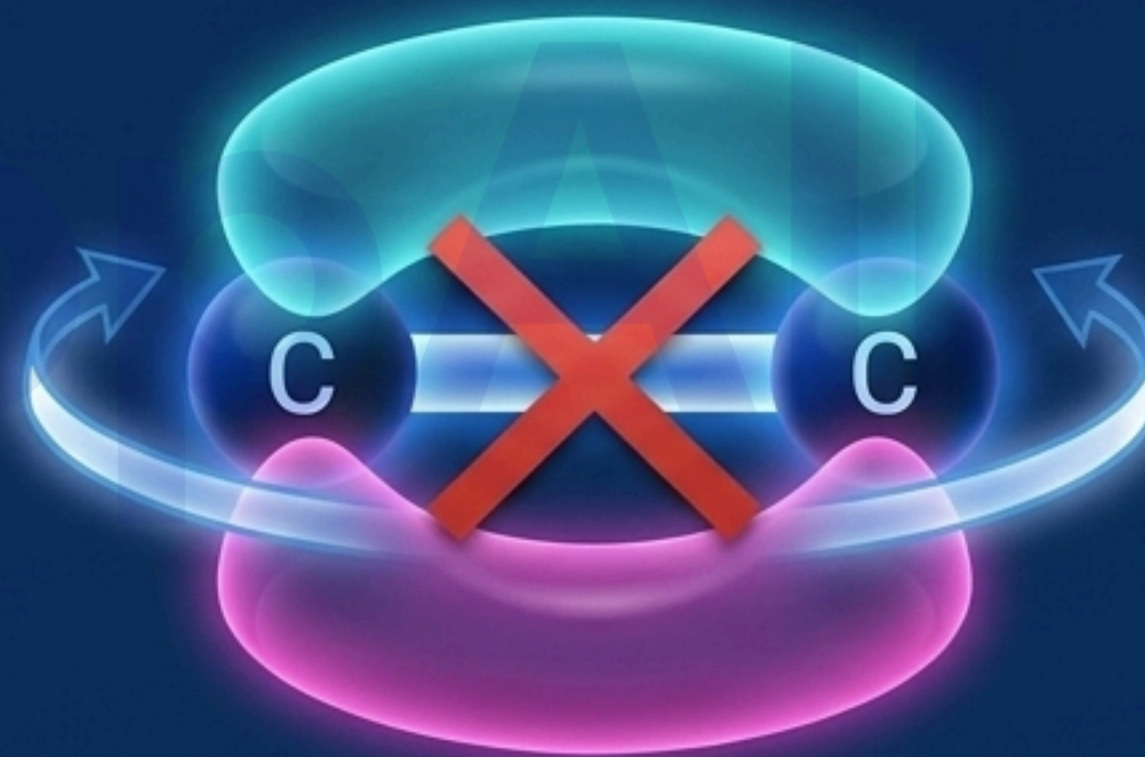


The Physics of the Double Bond: Restricted Rotation

Alkanes (Sigma Bond) = Free Rotation



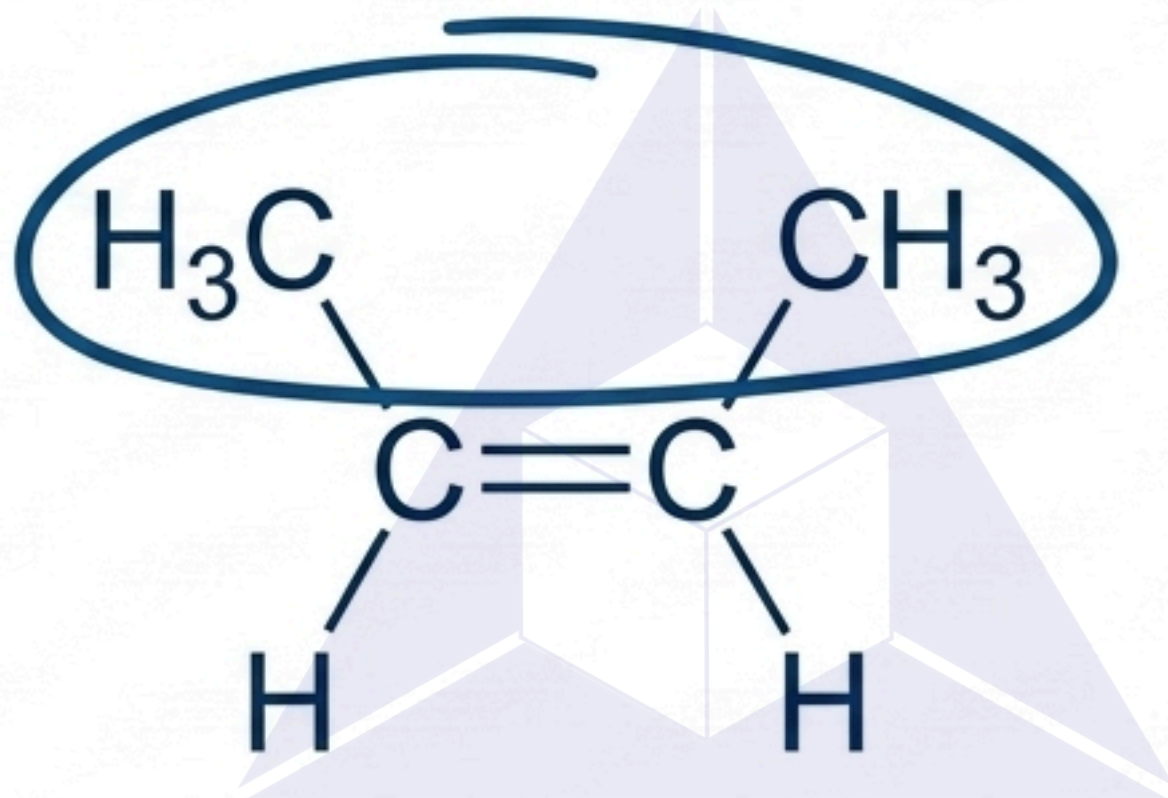
Alkenes (Pi-Bond) = Locked



Free rotation cannot occur without breaking the lateral π -overlap.
This physical lock freezes attached groups in space, creating geometrical isomers.

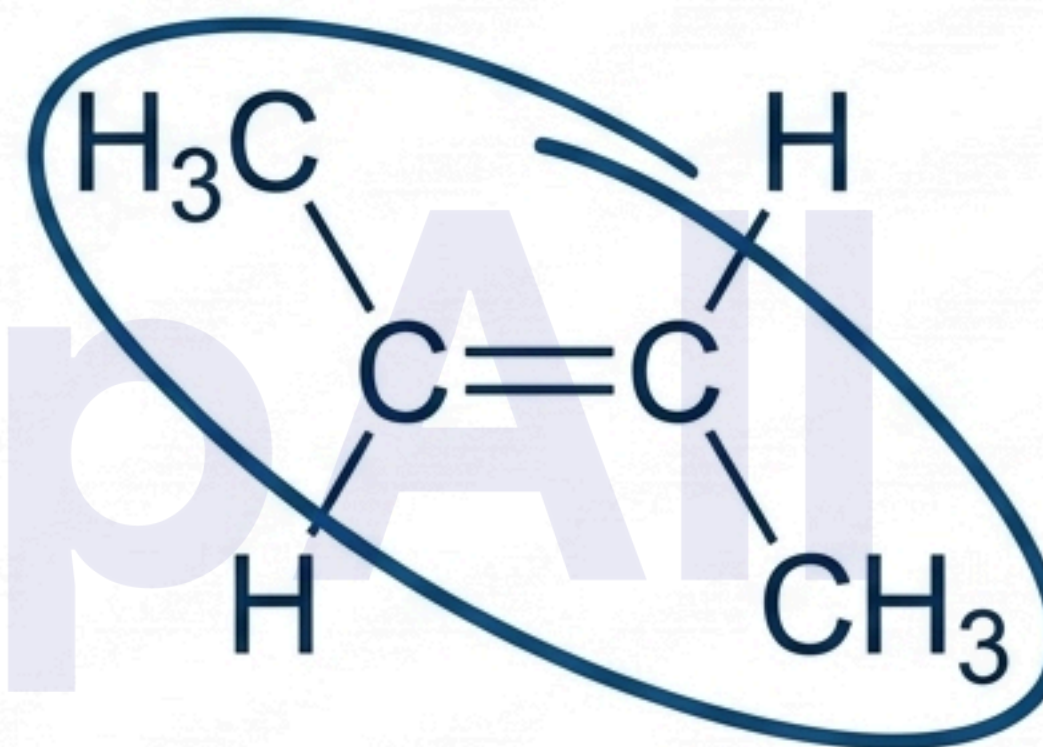
Naming the Geometries: Cis vs Trans

CIS (SAME SIDE)



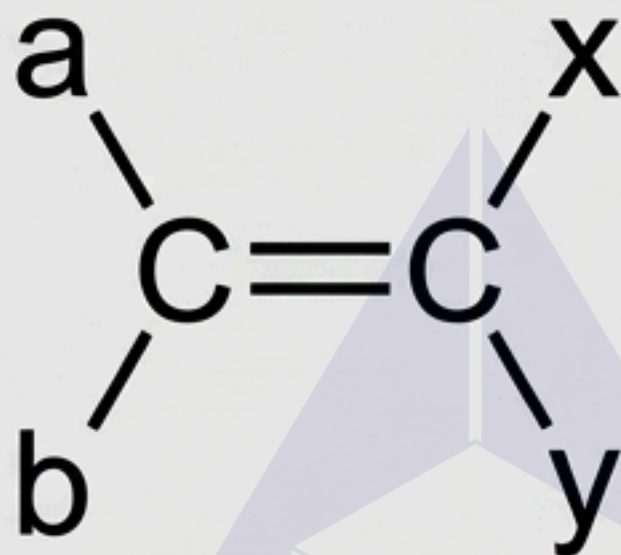
- Dipole moments add up ($\mu = 0.33\text{D}$)
- More polar
- Lower melting point

TRANS (OPPOSITE SIDE)

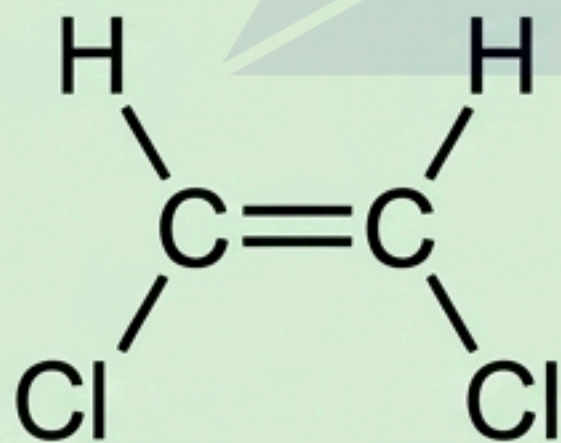


- Dipole moments cancel ($\mu = 0$)
- Non-polar
- Higher melting point

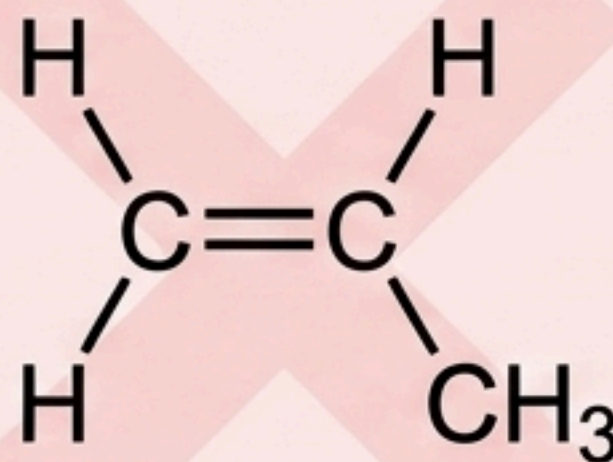
The Ultimate Condition for Geometrical Isomerism



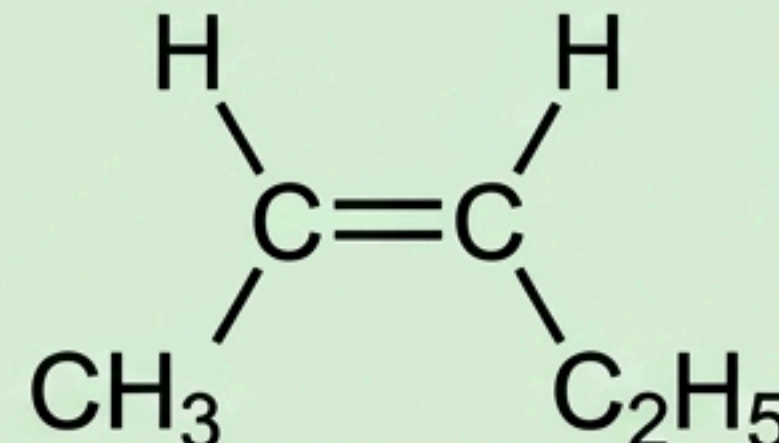
Each carbon of the C=C bond **MUST** have two **DIFFERENT** attached groups.
($a \neq b$ AND $x \neq y$).



✓ YES



✗ NO

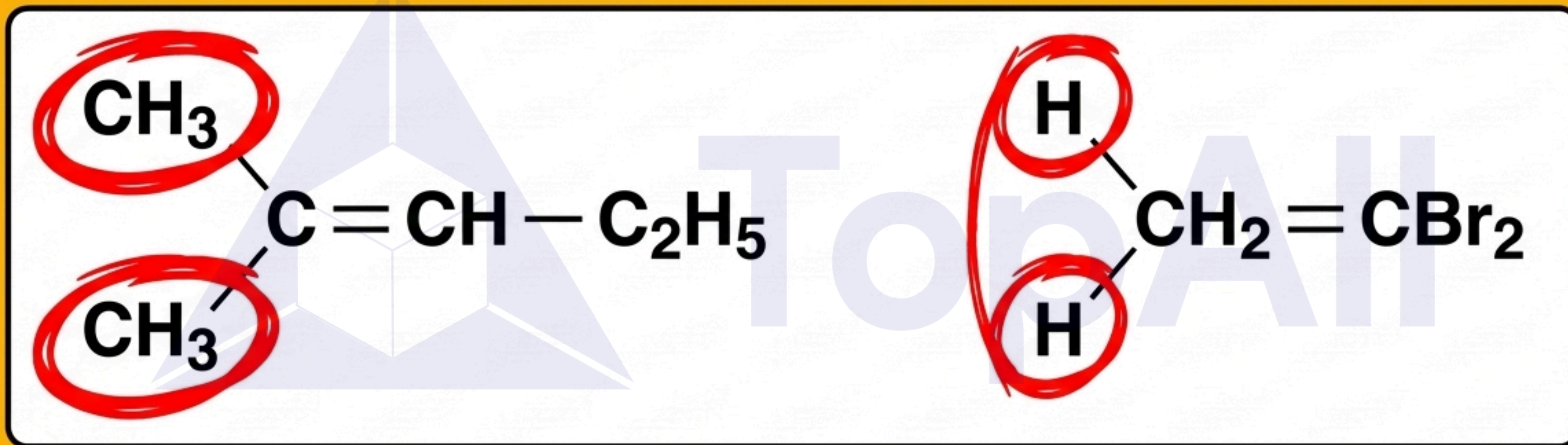


✓ YES



JEE TRAP: The Terminal Double Bond Illusion

Students see a complex molecule and immediately assume it has geometrical isomerism, completely failing to check the terminal carbon.



IF EITHER double-bond carbon has two identical groups attached $\Rightarrow$ GEOMETRICAL ISOMERISM IS IMPOSSIBLE.

$\mu = 0$ for isomers. No exceptions.



You've Learned the Theory.

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