EngineeringRise

Isomerism: structural and stereoisomerism

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Stereoisomers, n different centres	2^n Valid when: n different stereocentres, no internal symmetry	count
Symmetric, n even	2^(n-1) + 2^(n/2 - 1) Valid when: n stereocentres, identical ends, n even; counts meso forms	count
Symmetric, n odd	2^(n-1) Valid when: n stereocentres, identical ends, n odd (not for geometrical isomers)	count
Alkane isomers, C4 to C7	2, 3, 5, 9	count
C4H10O acyclic isomers	4 alcohols + 3 ethers = 7 Valid when: acyclic structural isomers of C4H10O, alcohols and ethers	count
C5H12O acyclic isomers	8 alcohols + 6 ethers = 14 Valid when: acyclic structural isomers of C5H12O, alcohols and ethers	count
Condition, geometrical	restricted rotation and two different groups on each carbon	n/a (condition)
Condition, optical	no plane or centre of symmetry (usually four different groups on one carbon) Valid when: molecule with no plane or centre of symmetry	n/a (condition)
Racemic mixture	1:1 enantiomers, net rotation 0	degrees

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/basic-principles-of-organic-chemistry/isomerism-structural-and-stereo

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