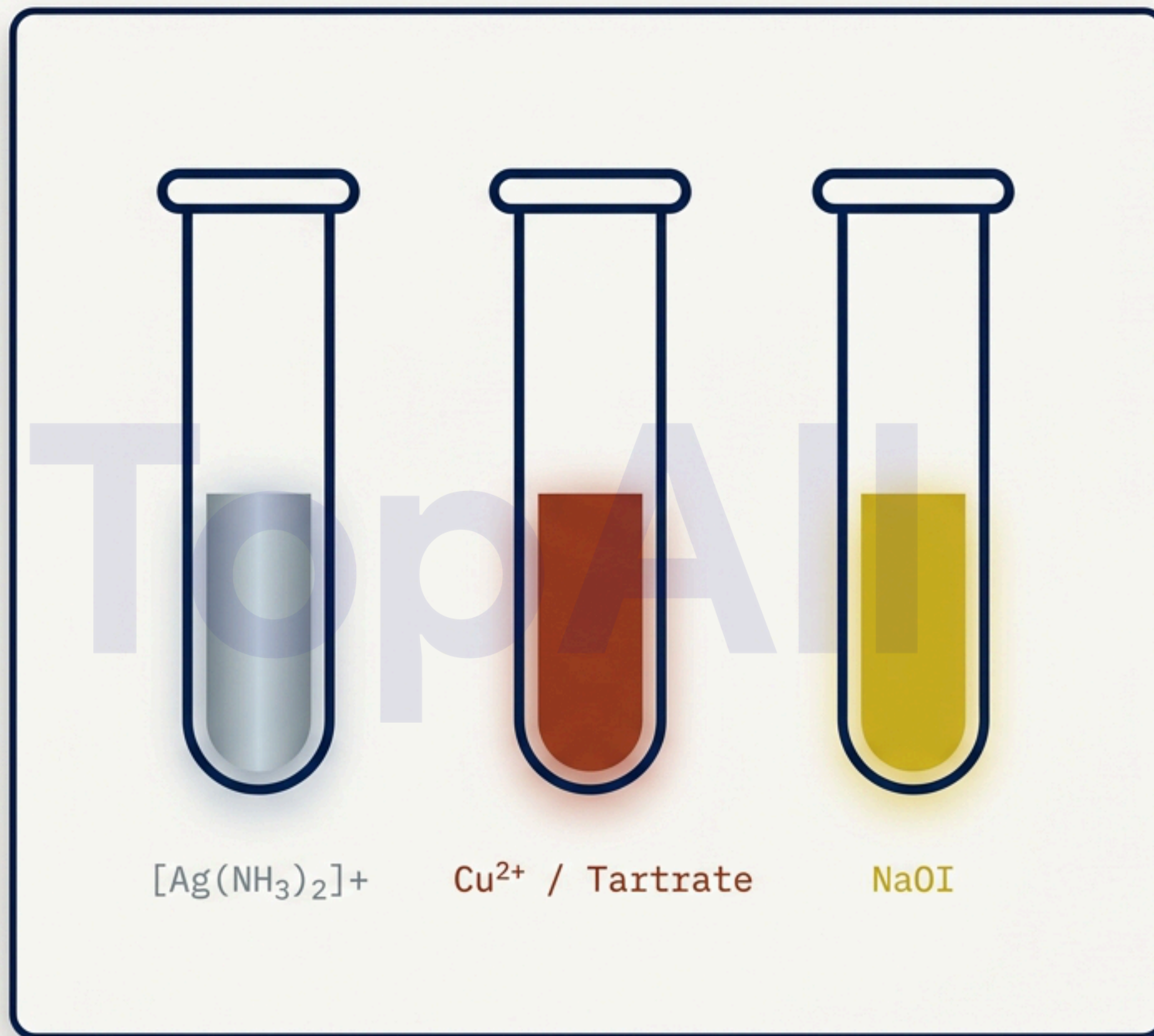


Tollens, Fehling & Haloform Tests

The definitive diagnostic toolkit for distinguishing aldehydes and ketones through mild oxidation.



Tollens' Test and the Silver Mirror



The Reagent

Freshly prepared ammoniacal silver nitrate in an alkaline medium.



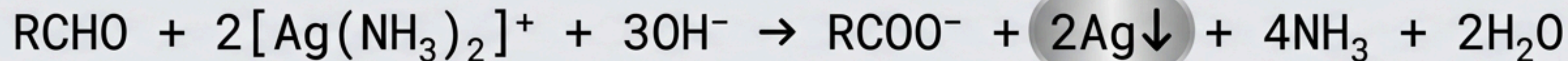
The Target

Oxidizes both aliphatic and aromatic aldehydes to their corresponding carboxylate anions.



The Observation

Ag^+ is reduced to metallic Silver, depositing a bright silver mirror on the glass.



Fehling's Test and the Cupric Reduction



The Reagent Mixture

Equal parts Solution A (aqueous CuSO_4) and Solution B (alkaline sodium potassium tartrate / Rochelle salt).



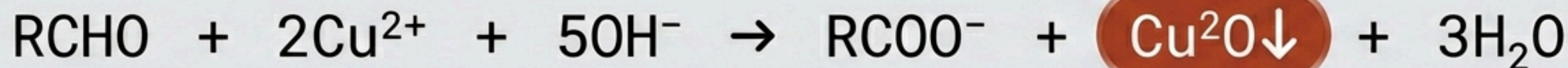
The Target

Strictly limited to aliphatic aldehydes. Ketones and aromatic aldehydes do not respond.



The Observation

Cu^{2+} is reduced to Cu^+ , yielding a distinct reddish-brown precipitate of Cuprous Oxide.





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

$$E=mc^2$$



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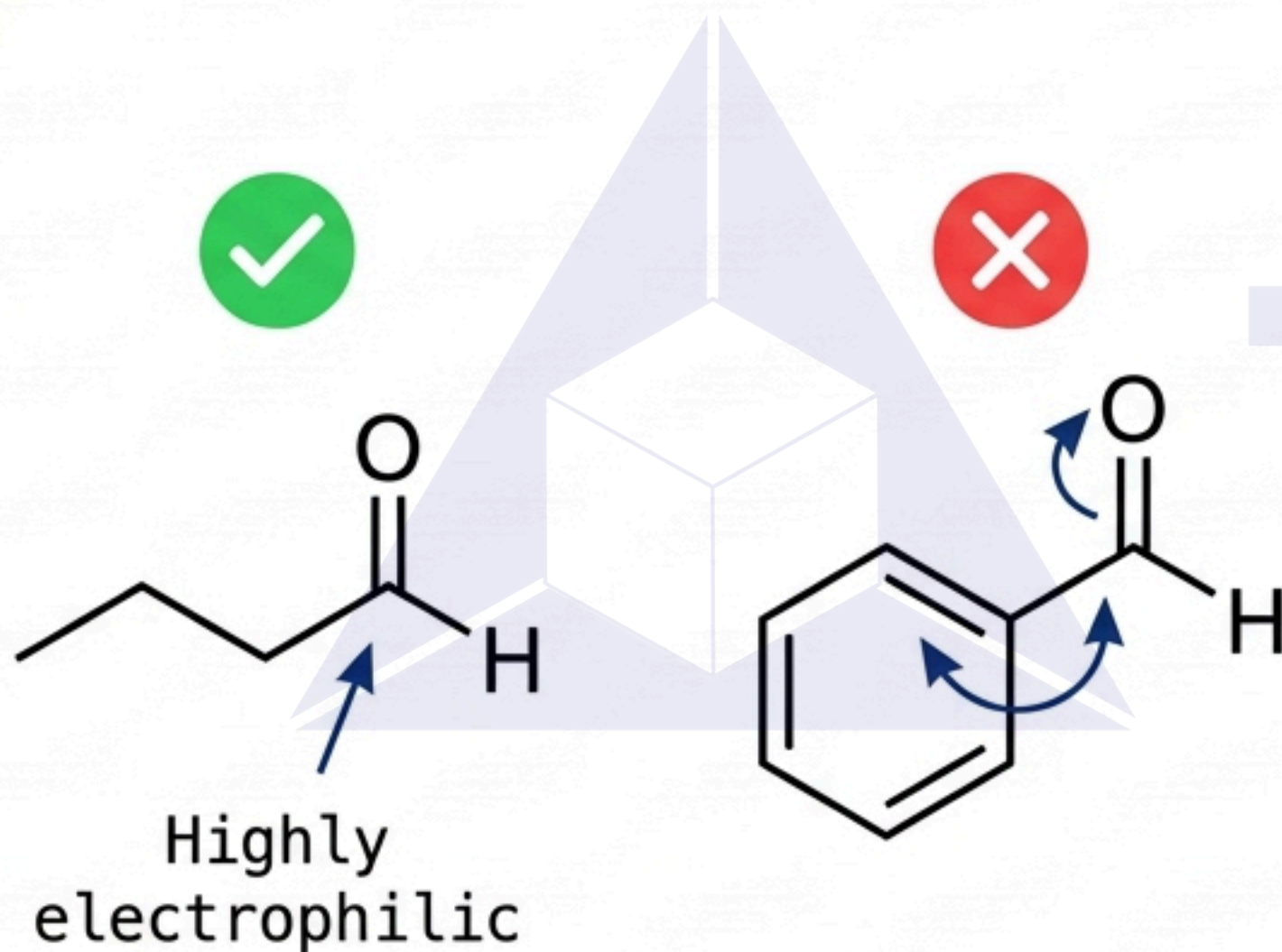
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- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



Why Aromatic Aldehydes Fail Fehling's Test



1. The Copper Limit

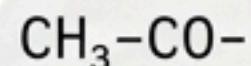
Cu^{2+} in Fehling's reagent is a significantly weaker oxidizing agent than the Ag^+ used in Tollens' test.

2. Resonance Stabilization

The aromatic benzene ring stabilizes the carbonyl group through resonance. This decreases the electrophilicity of the carbonyl carbon, making it too stable for weak oxidation.

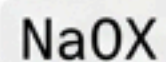
The Haloform Cleavage Reaction

The Target



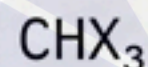
Carbonyl compounds possessing at least one methyl group directly attached to the carbonyl carbon.

The Reagent

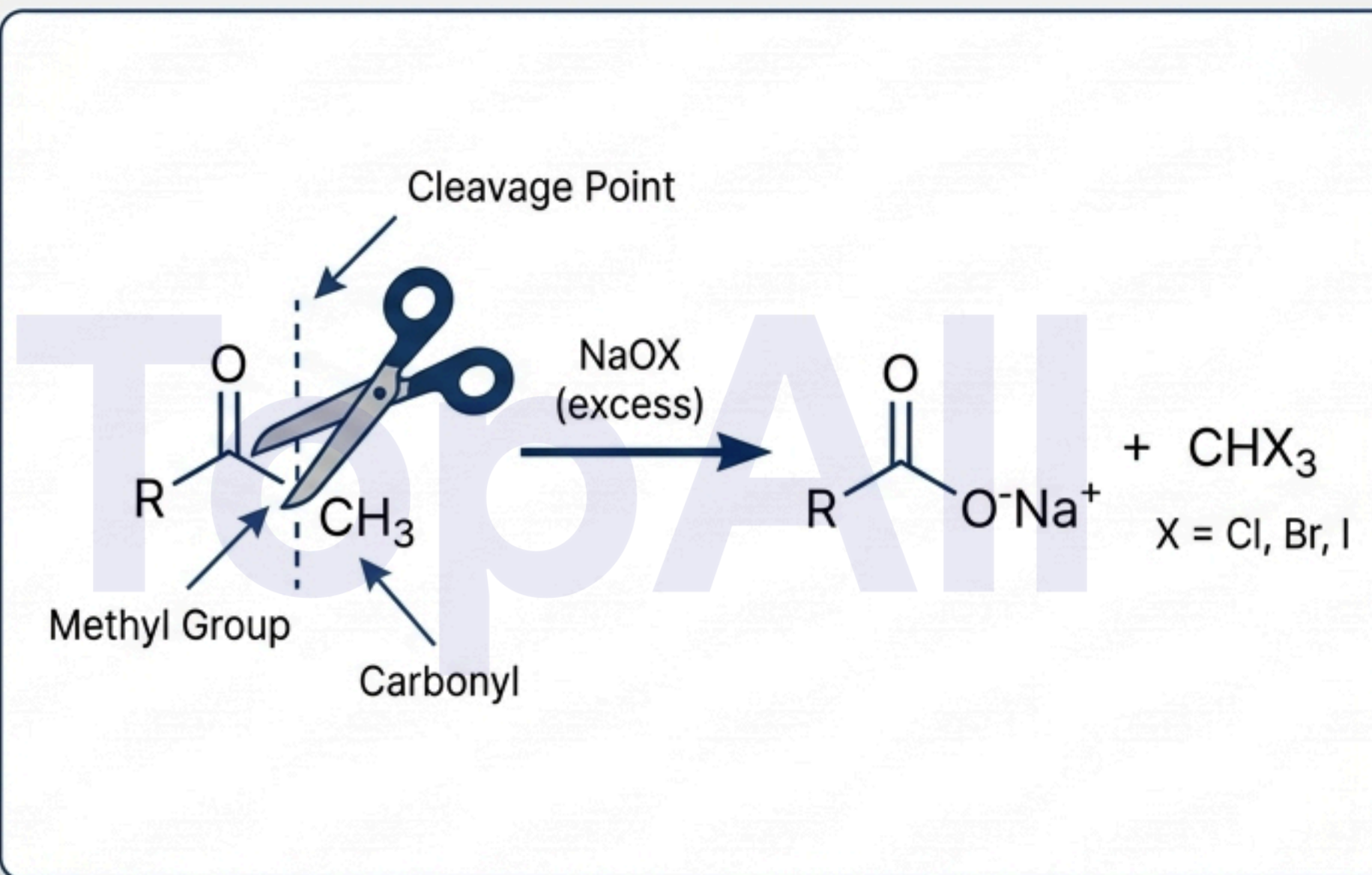


Sodium hypohalite.

The Cleavage



The alpha-methyl group is cleaved off and converted into a haloform. The remaining molecule becomes a sodium carboxylate salt (now one carbon shorter).



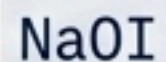
EXAM RULE

Haloform oxidation is strictly selective. It successfully oxidizes the methyl group but completely ignores carbon-carbon double bonds (C=C) present elsewhere in the molecule.

Spotting the Methyl Ketone with Iodoform

The Practical Setup

Conducted using Sodium Hypoiodite.



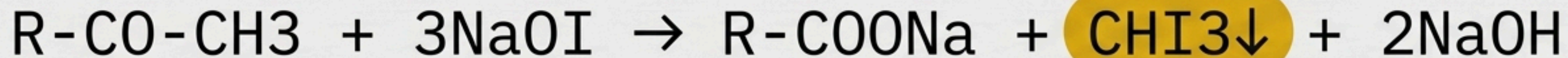
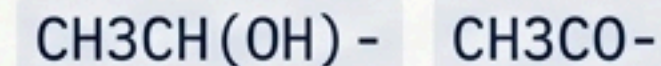
The Diagnostic Result

Produces Iodoform, a highly visible, distinctively yellow crystalline precipitate.



Extended Scope

Also tests positive for molecules with a secondary alcohol group. The reagent oxidizes this to a methyl ketone group in situ before cleaving it.



The Diagnostic Identification Matrix

	Tollens' Test	Fehling's Test	Iodoform Test
Aliphatic Aldehyde (e.g., Propanal)	✓ Silver Mirror	✓ Red-Brown Ppt	✗
Aromatic Aldehyde (e.g., Benzaldehyde)	✓ Silver Mirror	✗	✗
Methyl Ketone (e.g., Acetophenone)	✗	✗	✓ Yellow Ppt
Other Ketone (e.g., Benzophenone)	✗	✗	✗

Aldehydes respond to mild oxidation; Methyl Ketones respond to haloform cleavage.
Cross-reference this matrix to confidently solve distinguishing pair questions.



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