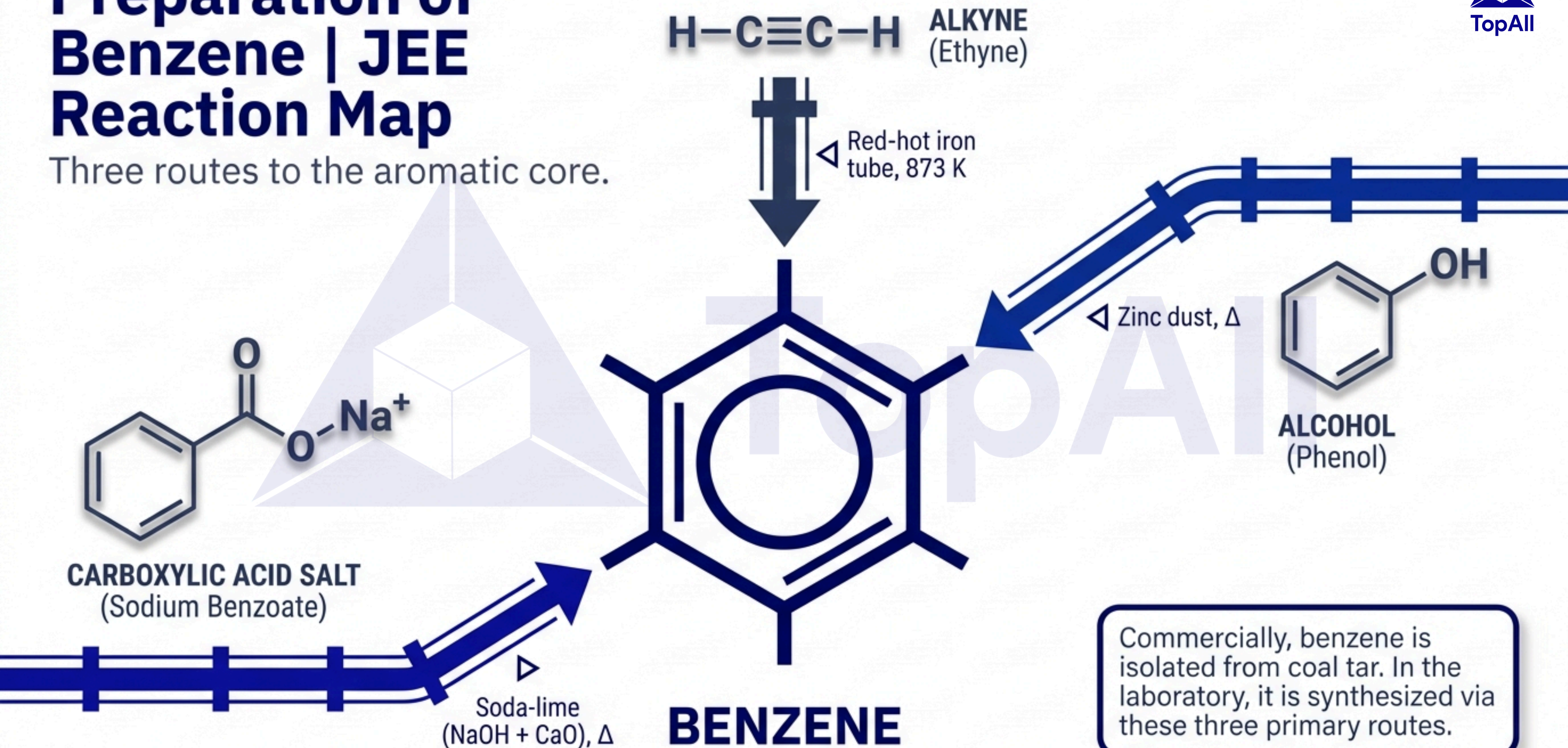
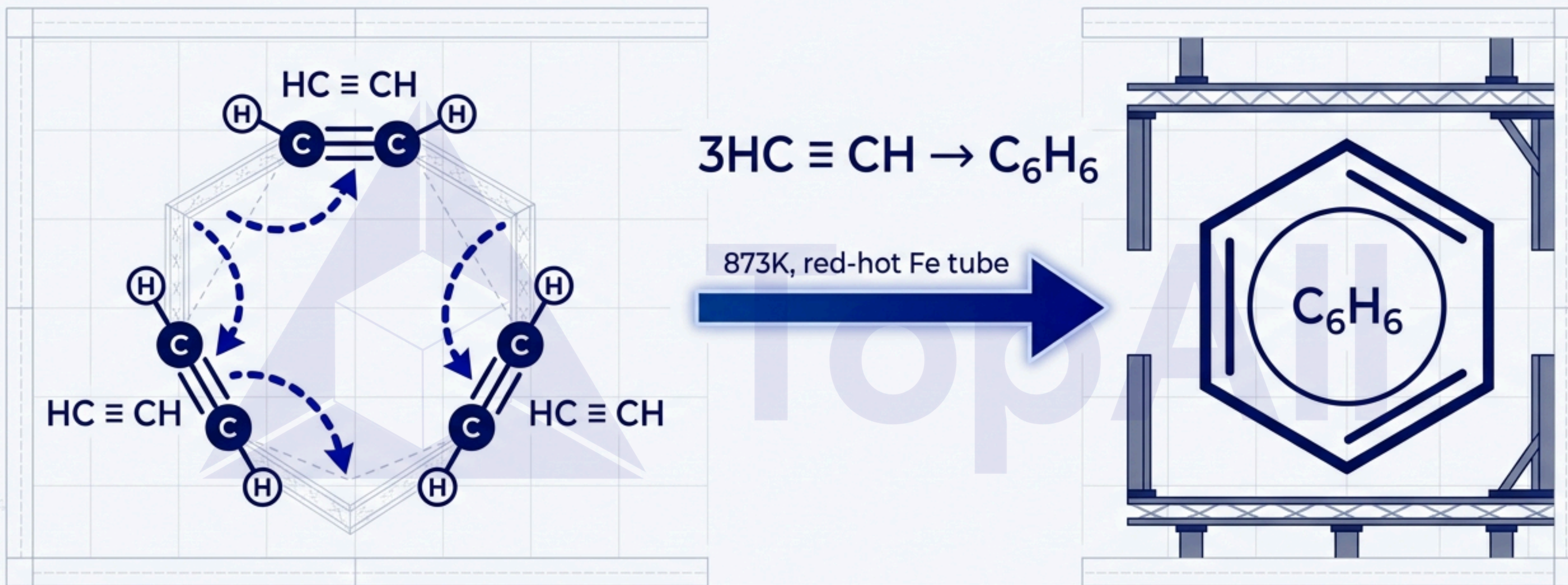


Preparation of Benzene | JEE Reaction Map

Three routes to the aromatic core.



Route 1: The Ethyne Route (Building the Ring)



Cyclic Polymerisation

The best route for entering from an aliphatic chain to an aromatic compound.



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$$E=mc^2$$



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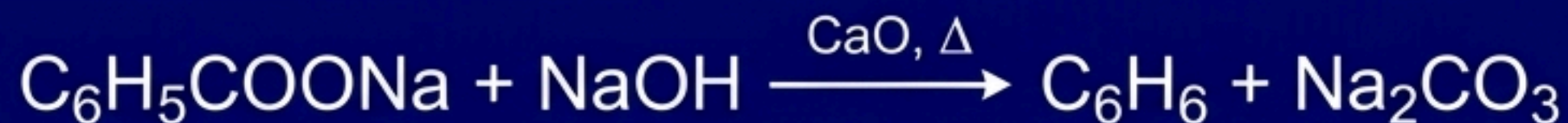
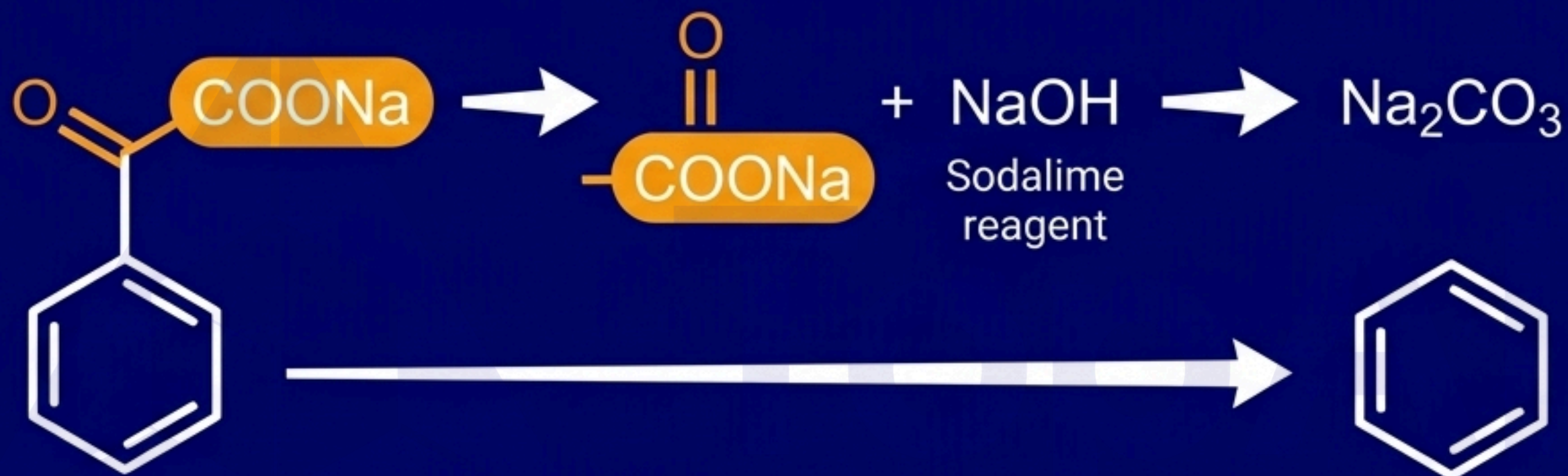
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- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



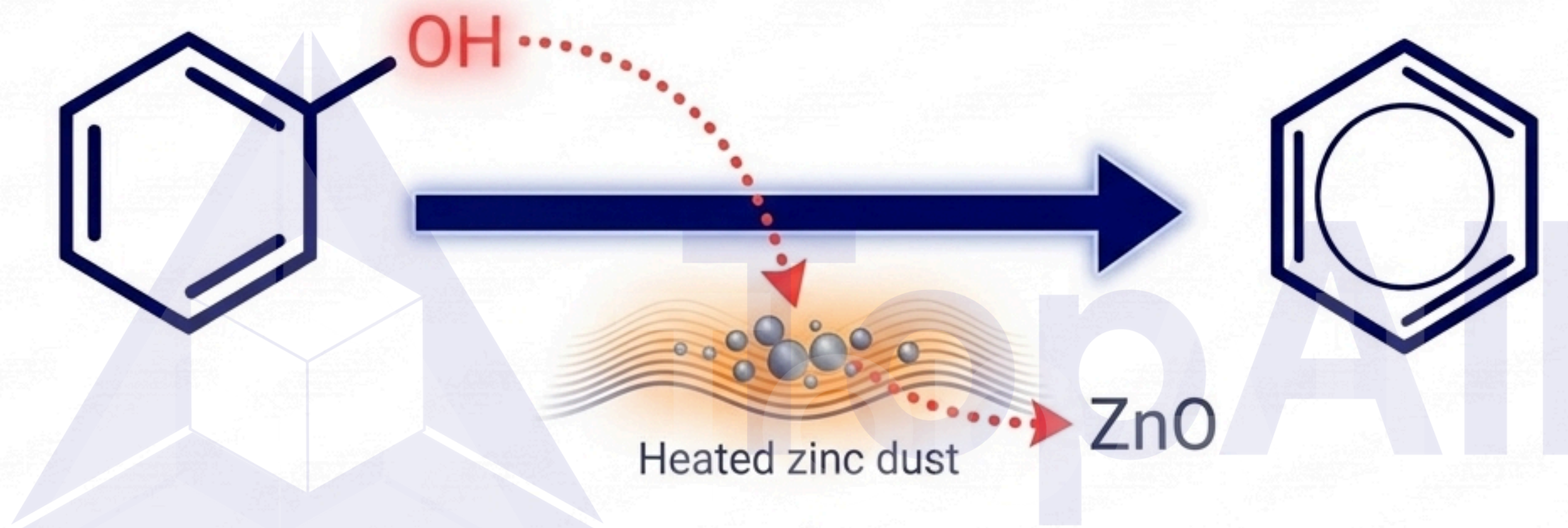
Route 2: The Decarboxylation Route (Trimming the Ring)



Step-Down Reaction (-1C)

The carbon count of the main organic skeleton decreases by 1 (7C in Benzoate → 6C in Benzene).

Route 3: Phenol Reduction (Stripping the Ring)



Deoxygenation (Isocarboxylic)

Zn has a high affinity for oxygen at elevated temperatures, effectively acting as an oxygen scavenger to strip it directly from the aromatic ring without altering the 6-carbon framework.

Synthesis Blueprint: The Carbon Tracking Matrix

Path: Ethyne $\rightarrow$ Benzene

Conditions: Red-hot Fe tube, 873K

Carbon Track: $3 \times 2\text{C} \rightarrow 6\text{C}$
(+C, Aliphatic to Aromatic)

Path: Sodium Benzoate $\rightarrow$ Benzene

Conditions: Sodalime (NaOH/CaO), Δ

Carbon Track: $7\text{C} \rightarrow 6\text{C}$ (-1C, Step-down)

Path: Phenol $\rightarrow$ Benzene

Conditions: Zn dust, Δ

Carbon Track: $6\text{C} \rightarrow 6\text{C}$
(0C, Isocarboic)



JEE Application & Synthesis Strategy

BEWARE TRACING ERRORS

In multi-step synthesis questions, do not mix up your stripping agents. Applying Sodalime to Phenol or Zinc dust to Benzoate will ruin the synthesis chain.

Always Track During Conversions:

Carbon Count

Did the reaction gain, lose, or maintain carbons?

Leaving Groups

What exactly left the molecule? (e.g., CO_2 vs. O).

Thermal Conditions

Is heat (Δ) or a specific temperature strictly required? (Note: All three benzene prep methods require high thermal energy).



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