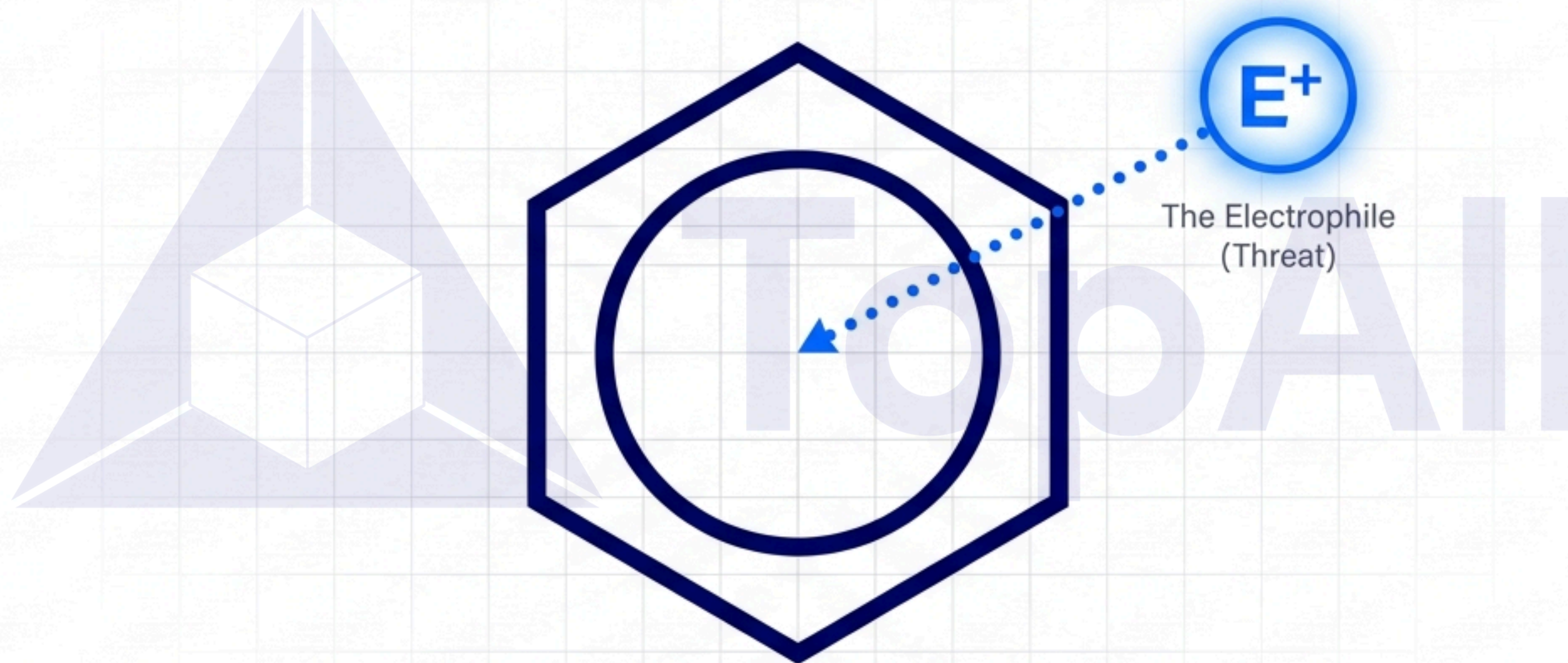


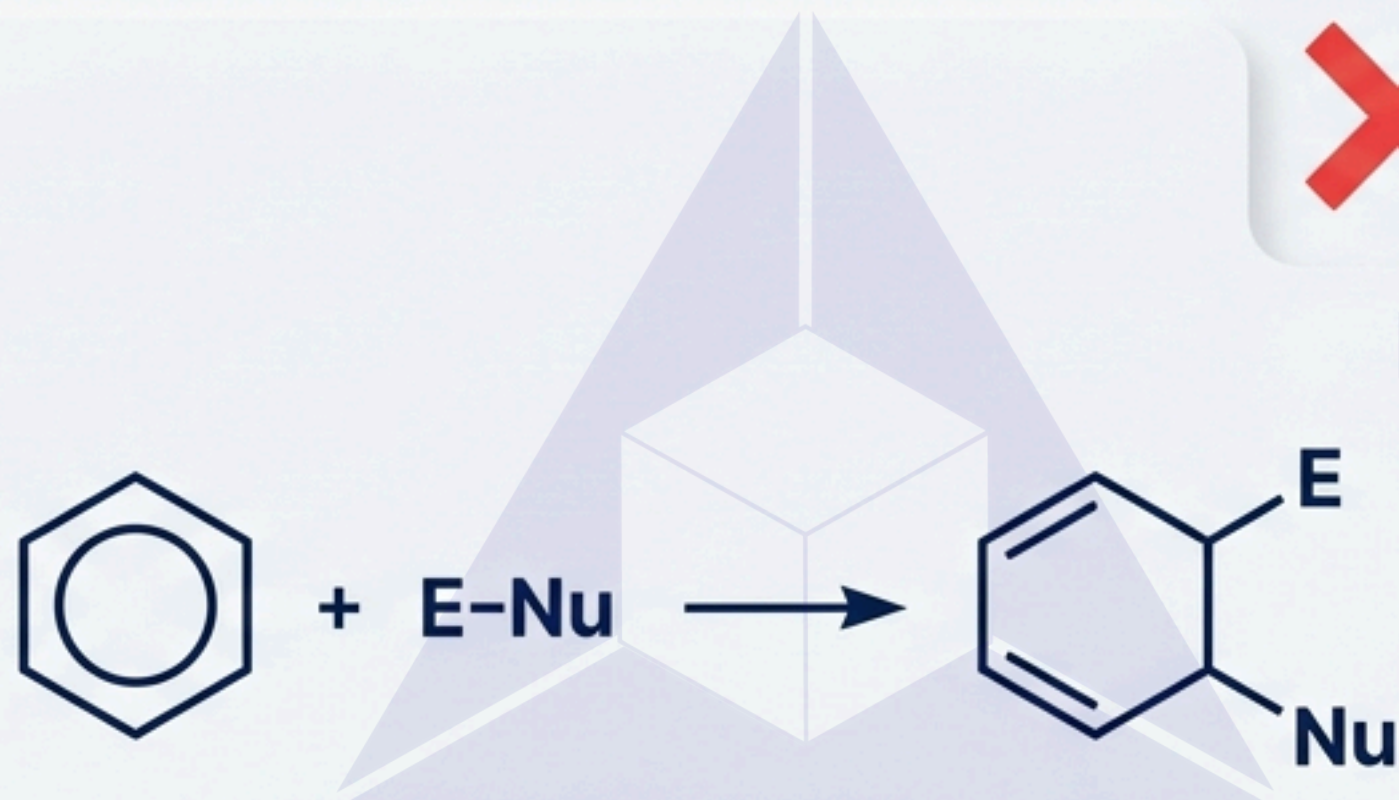
BENZENE PROTECTS ITS AROMATICITY



Electrophilic Substitution of Benzene

Why Substitution?

The Prime Directive of Benzene



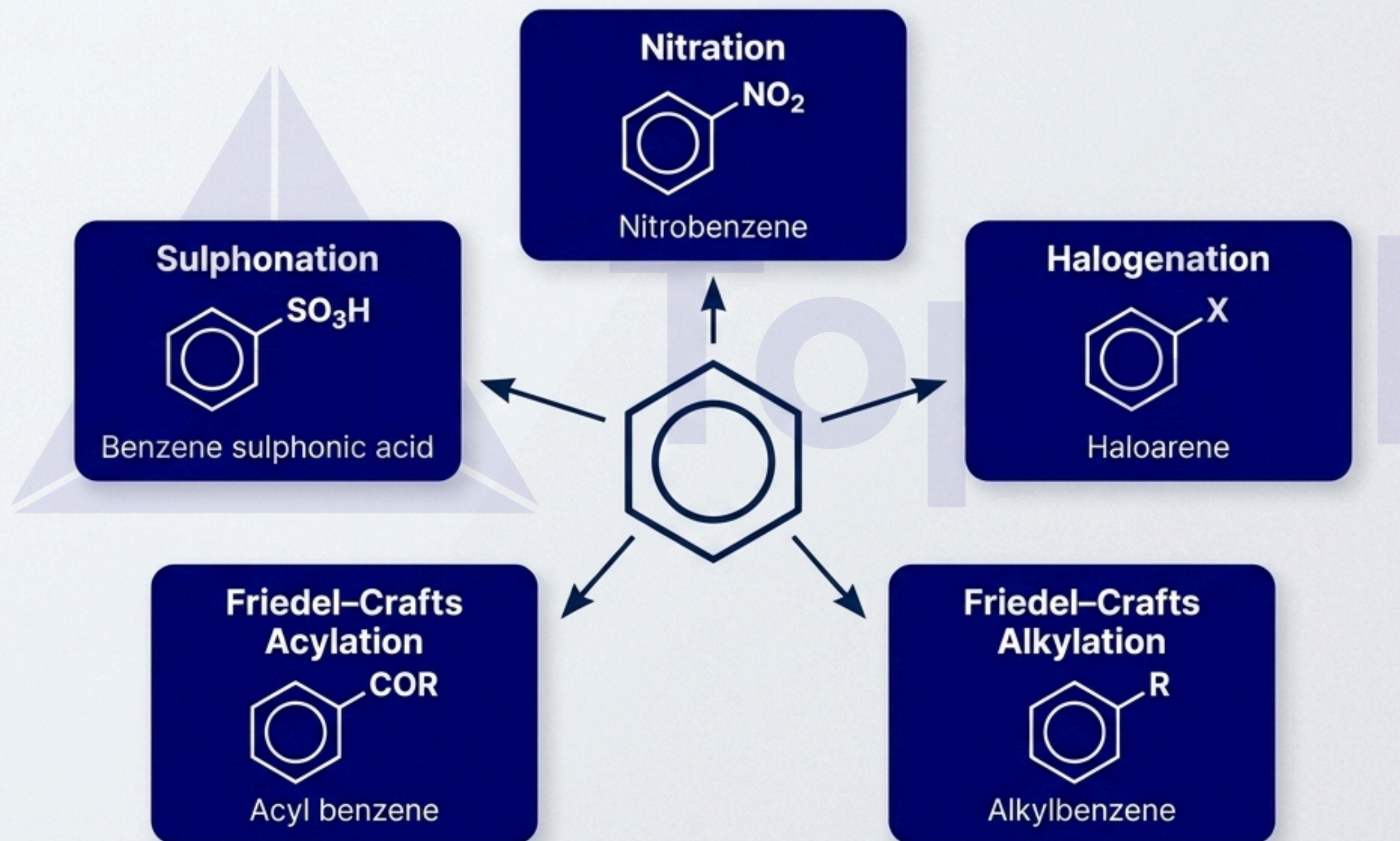
**Addition → Aromaticity lost
(sp^3 carbons formed)**



**Substitution →
Aromatic ring restored**

The Five Output Manifestations

One universal engine, five distinct targets.





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

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

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

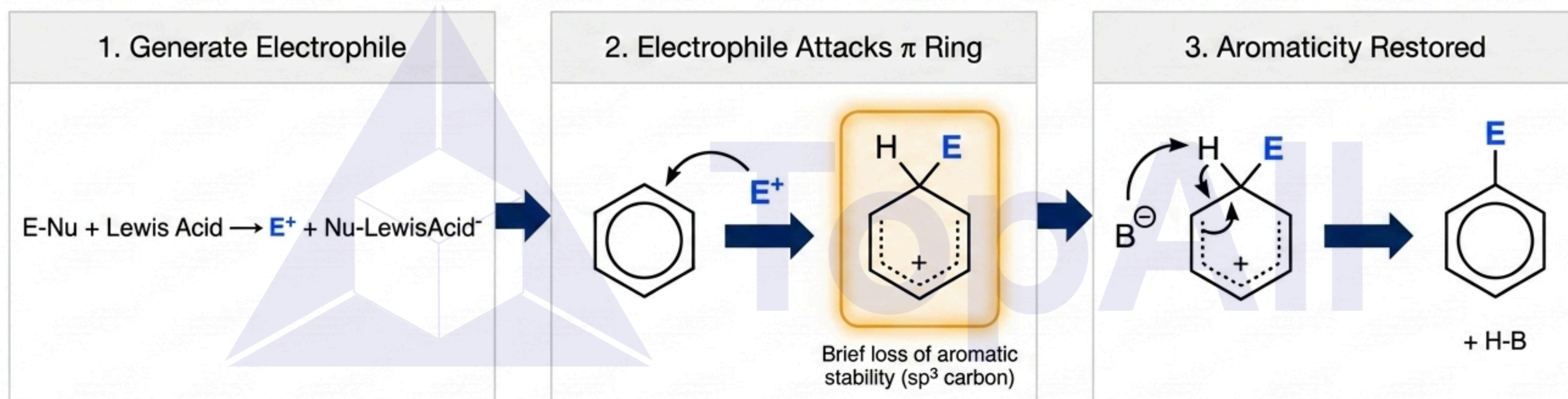


The Threat Matrix: Reaction Conditions

Generating the active electrophile (E^+) is the required trigger.

Reaction	Reagents	Catalyst / Conditions	Active Electrophile (E^+)
Nitration	conc. HNO_3 + conc. H_2SO_4	Heat	NO_2^+
Halogenation	Cl_2	Anhydrous FeCl_3 or AlCl_3	Cl^+
Sulphonation	Fuming H_2SO_4 (Oleum)	Heat	$\text{SO}_3\text{H}^+ / \text{SO}_3$
F-C Alkylation	R-Cl	Anhydrous AlCl_3	R^+
F-C Acylation	RCOCl	Anhydrous AlCl_3	RCO^+

The Universal Engine: General Mechanism



Exam Reality & Synthesis



The Friedel-Crafts Carbocation Trap

Benzene reacts with 1-chloropropane in the presence of AlCl_3 . What is the product?



n-propyl benzene



isopropyl benzene

Because the R^+ electrophile is a carbocation, it will undergo rearrangement to a more stable secondary carbocation before attacking the fortress!

Key Takeaways

1. Benzene's primary goal is always the restoration of aromaticity.
2. Despite 5 different names and reagents, EAS is just one universal 3-step mechanism.
3. The temporary σ -complex is the only moment the fortress drops its shields (sp^3 carbon).



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis