



SHREE H. N. SHUKLACOLLEGE OF SCIENCE

(AFFILIATED TO SAURASHTRA UNIVERSITY)

Shree H.N. Shukla College Campus Nr. Lalpari lake, Behind old Marketing Yard,
Amargadh, Bhichari, Rajkot-360001, Ph. No-9727753360

S.Y. B.Sc. (Sem. III) (303) **(CBCS)**

Unit-4 Chapter-6 : Name reactions and **Rearrangements**

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8. Question Bank



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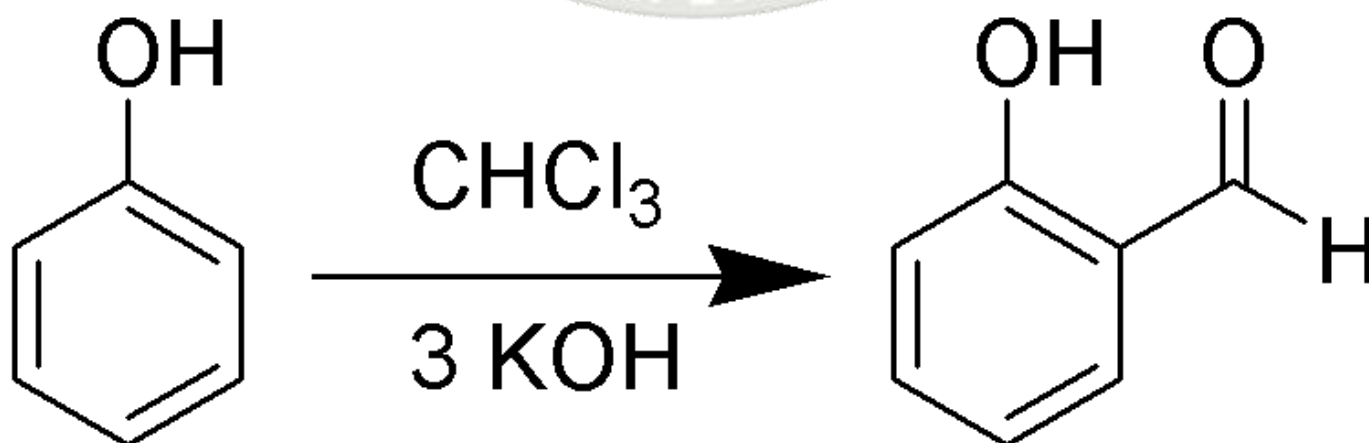
4.1 INTRODUCTION

A **name reaction** is a [chemical reaction](#) named after its discoverers or developers. Among the tens of thousands of organic reactions that are known, hundreds of such reactions are well-known enough to be named after people.

Well-known examples include the [Grignard reaction](#), the [Sabatier reaction](#), the [Wittig reaction](#), the [Claisen condensation](#), the [Friedel-Crafts acylation](#), and the [Diels-Alder reaction](#).

4.2 Reimer-Tiemann Reaction

The Reimer Tiemann reaction is an organic chemical reaction where phenol is converted into an ortho hydroxy benzaldehyde using chloroform, a base, and an acid workup. This reaction can also be described as the chemical reaction used for the ortho-formylation of phenols.



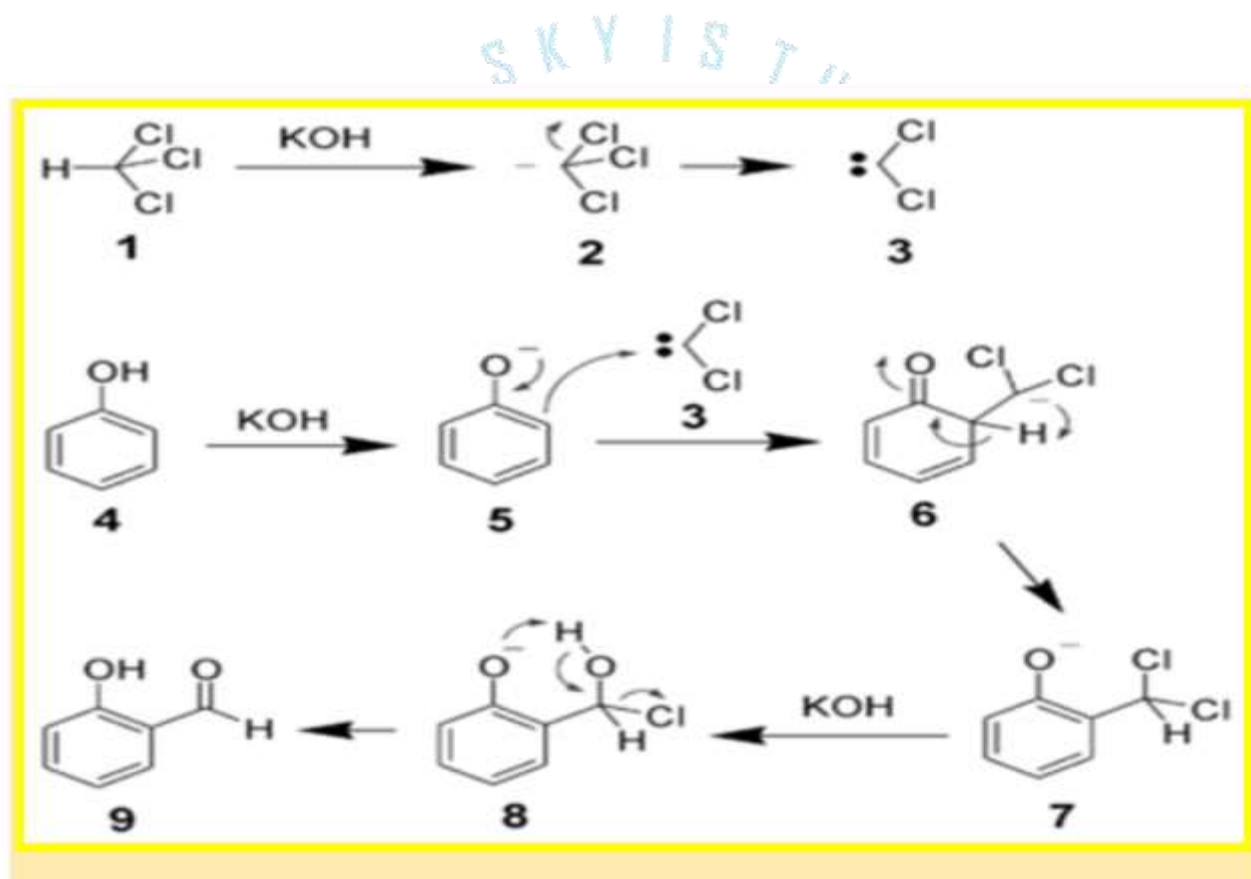


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Mechanism:



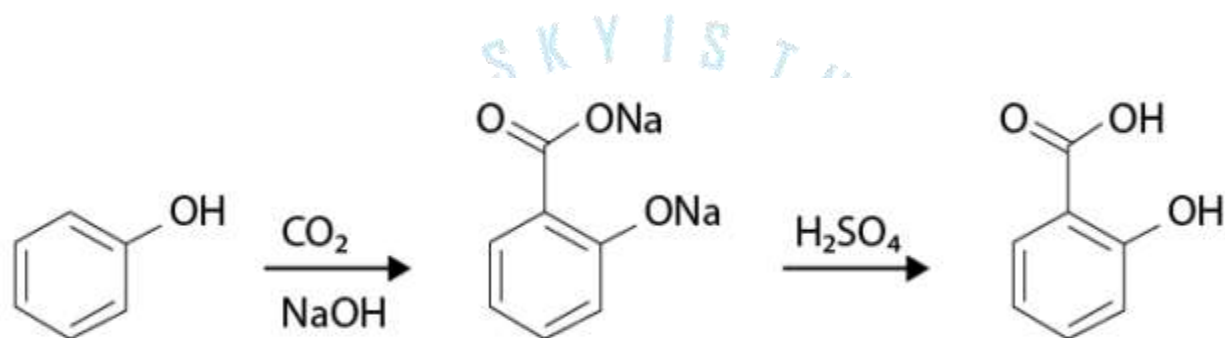


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4.3 Kolbe Schmitt Reaction



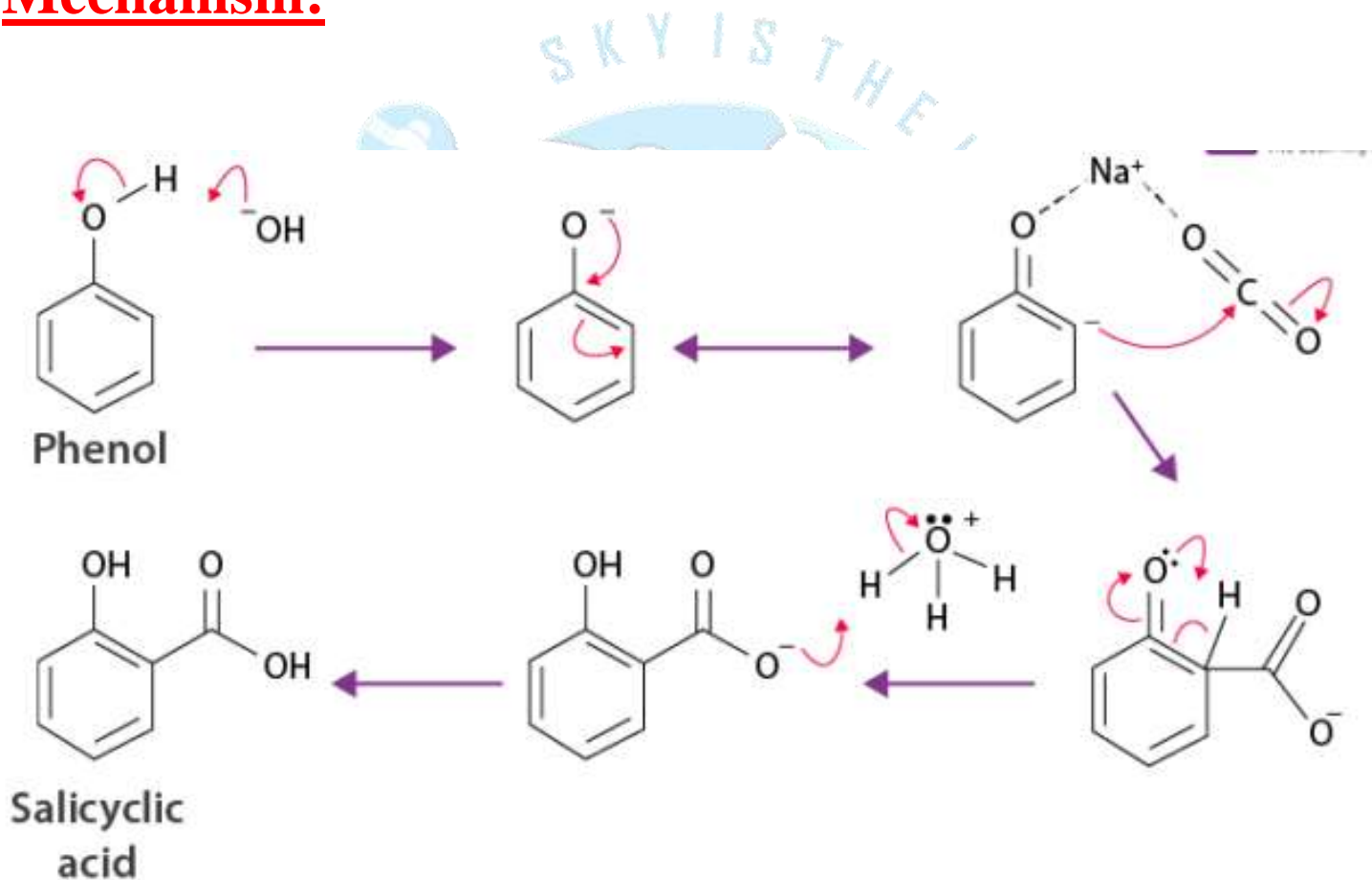


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Mechanism:



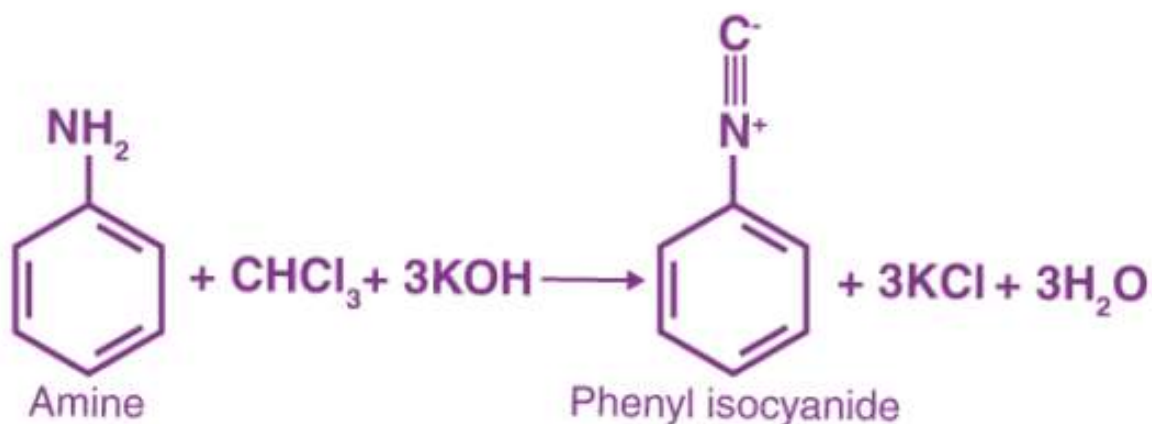


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4.4 Carbyl amine Reaction



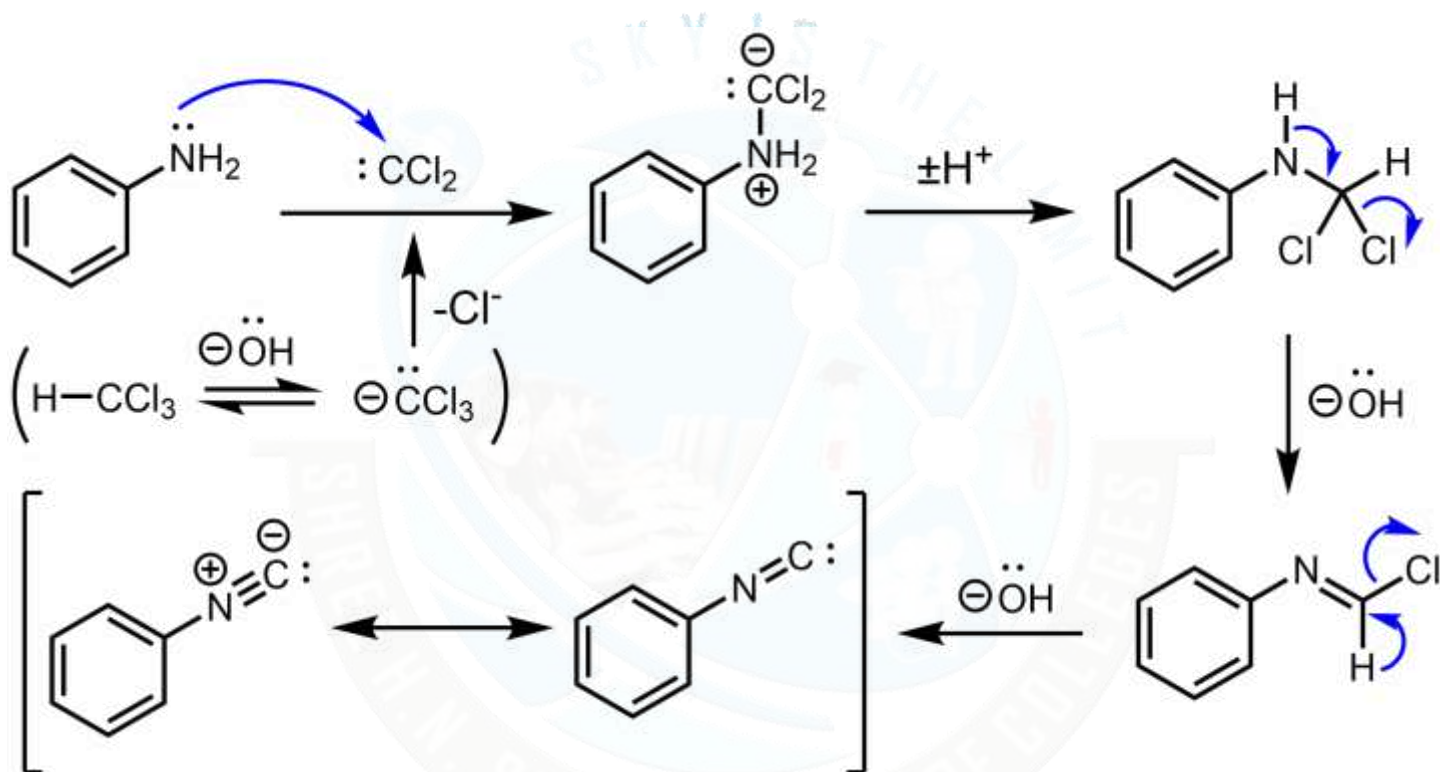


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Mechanism:



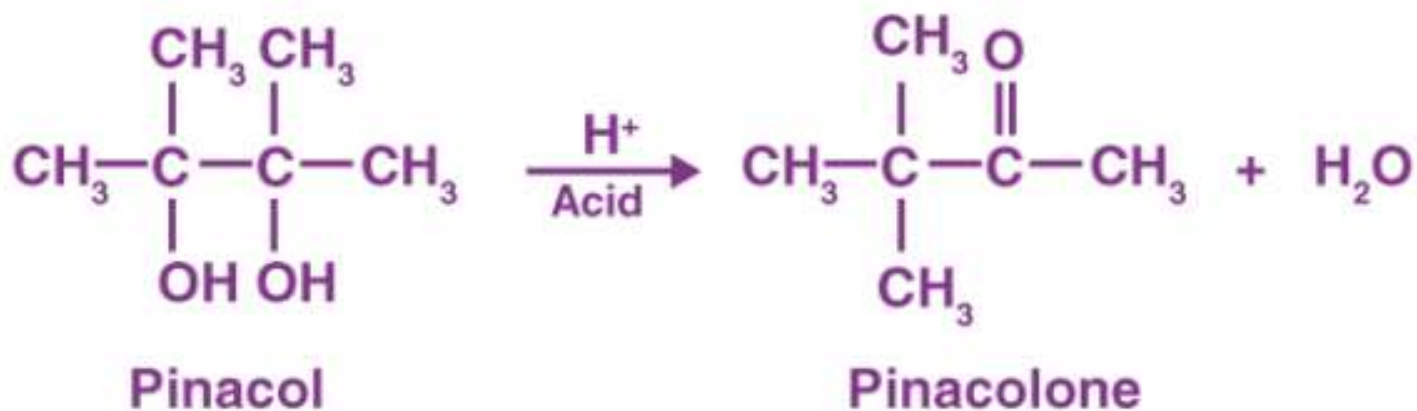


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4.5 Pinacol Pinacolone Rearrangement



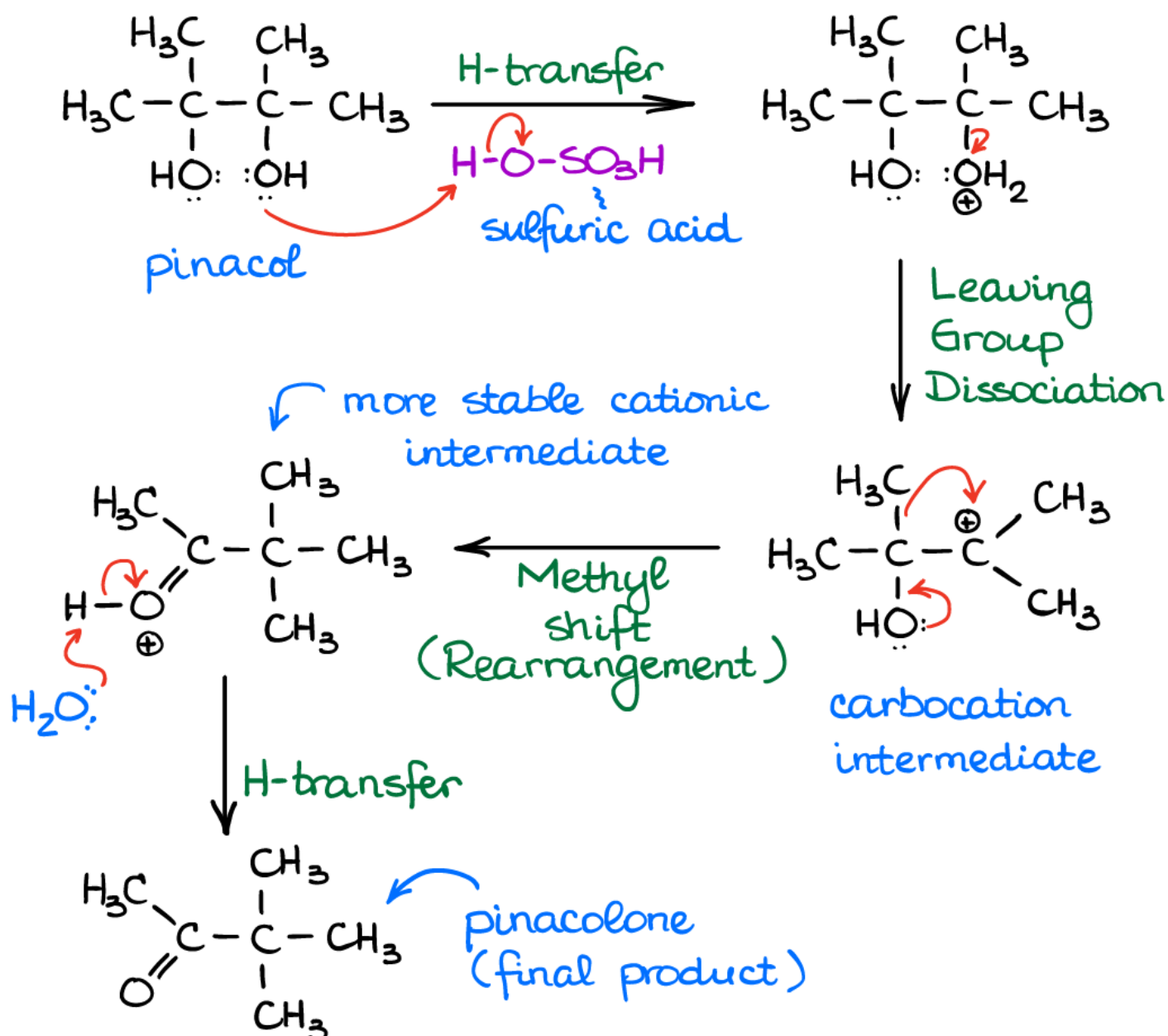


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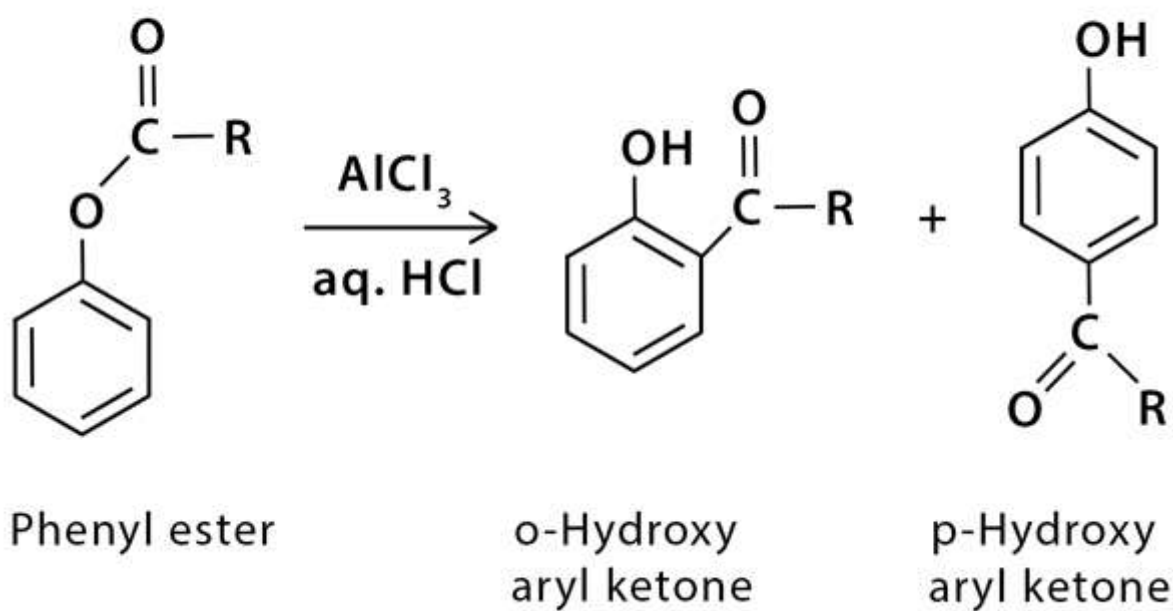
Mechanism:





4.6 Fries Rearrangement

Fries Rearrangement



ChemistryLearner.com



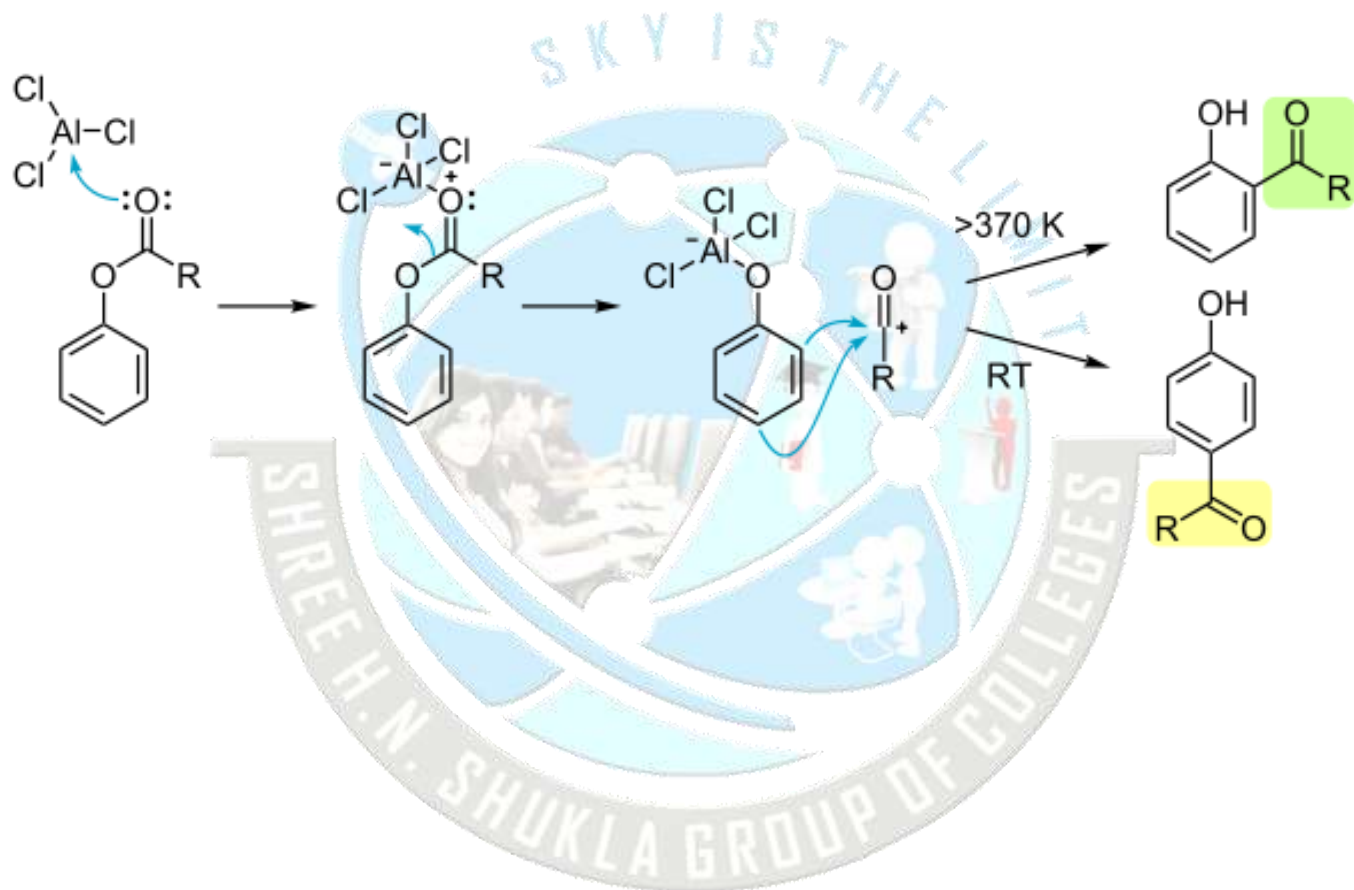


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Mechanism:





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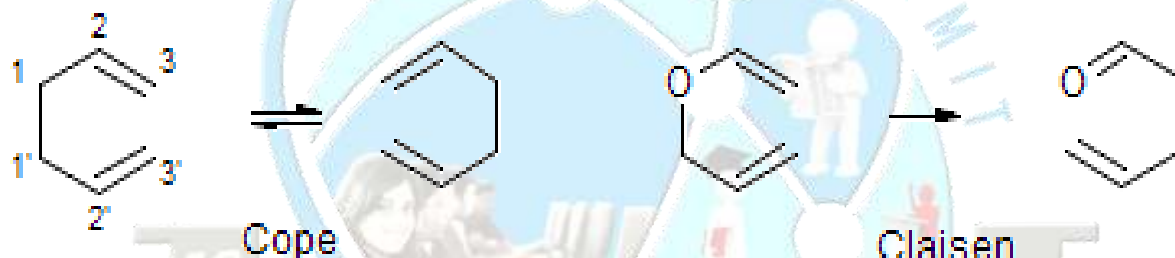
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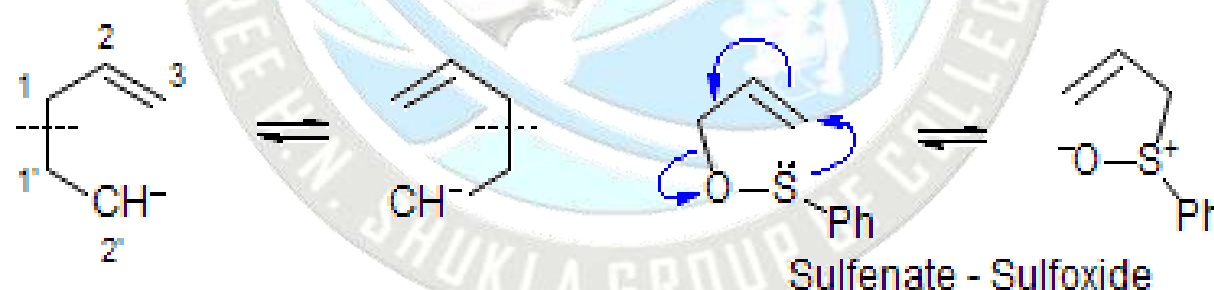
4.7 Claisen Rearrangement (sigmatropic Rearr.)

[2,3] Sigmatropic Rearrangements

[3,3] Sigmatropic Rearrangement



[2,3] Sigmatropic



Starting material and product are acyclic, but transition state is cyclic, with pronounced conformational effects.



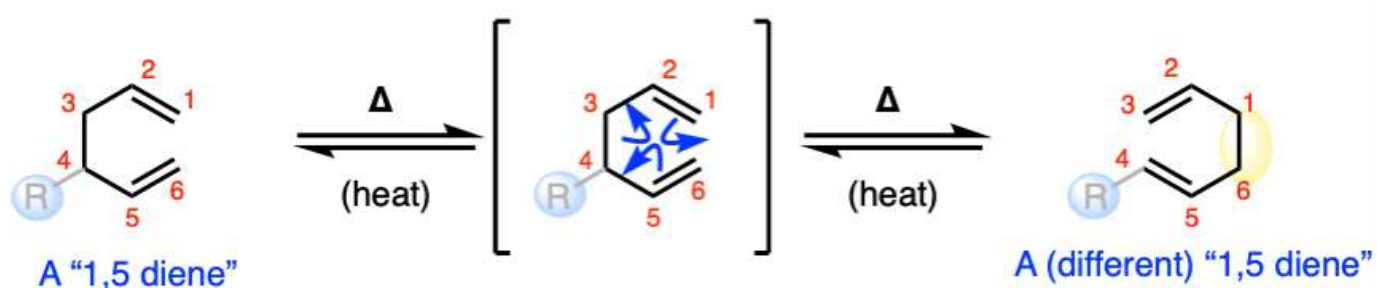
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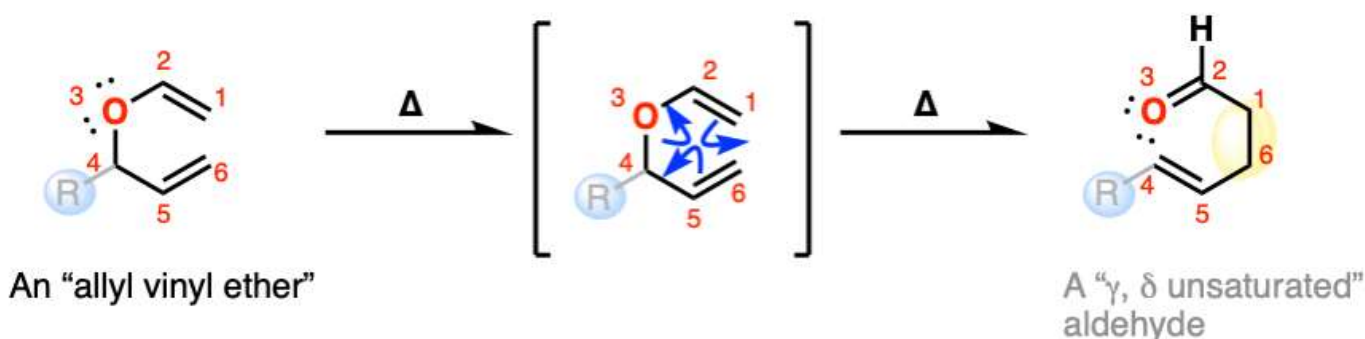
Summary: The Cope and Claisen Rearrangements

- The **Cope Rearrangement** is a reaction of "1,5" dienes that proceeds through a concerted, cyclic transition state. It belongs to the class of "pericyclic" reactions
- The reaction is reversible; equilibrium generally favors the **more substituted** alkene



When a hydroxy group is present at the 3- or 4- position, the product is an enol and gives a ketone after keto-enol tautomerism. This is called the "Oxy-Cope" rearrangement and favors formation of the ketone.

- The **Claisen Rearrangement** is a reaction of allyl vinyl ethers that proceeds through a concerted mechanism similar to the Cope.



- The Claisen condensation results in a new C–O pi bond at the expense of a C–C pi bond, which gives it a **strong driving force** (about 20 kcal/mol).

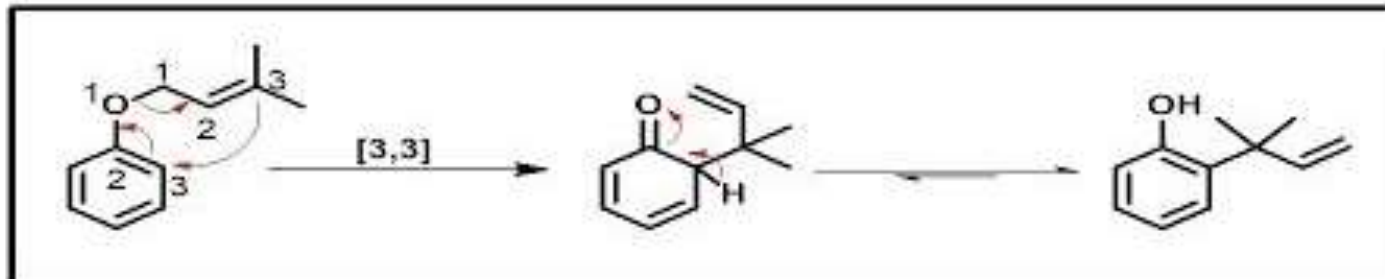
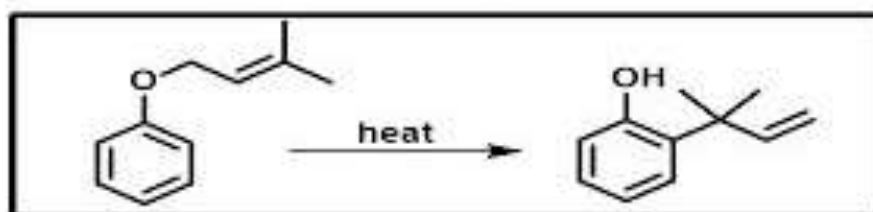


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Claisen Rearrangement (3,3 sigmatropic reaction)





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4.8 Question Bank (includes 2-3-5 mark questions)

1. Define Sigma tropic Rearrangement in detail explain by taking example.
2. Write a short note on Fries rearrangement.
3. Explain in detail Kolbe smitt reaction.
4. Write reaction, mechanism and principle of pinacole-pinacolone rearrangement.
5. Explain principle, mechanism and application of
 - a) Kolbe Schmitt
 - b) Carbyl amine
 - c) claisen rearrangement.

Have a happy Learning!