

- **What is retrosynthesis?** → Retrosynthesis is the process of breaking down a complex molecule into simpler precursors.
- **Who introduced retrosynthesis?** → E.J. Corey introduced retrosynthetic analysis.
- **What is the main symbol used in retrosynthesis?** → The symbol  $\Leftarrow$  is used in retrosynthetic analysis.
- **What is the goal of retrosynthesis?** → The goal is to design a synthetic route for complex molecules.
- **What is a synthon?** → A synthon is a hypothetical fragment used in retrosynthesis.
- **What is a precursor?** → A precursor is a simpler molecule that leads to the target compound.
- **What is a disconnection?** → A disconnection is the breaking of a bond in retrosynthetic analysis.
- **Which bond is most commonly disconnected?** → The C–C bond is commonly disconnected.
- **What is Functional Group Interconversion (FGI)?** → It is the process of changing one functional group into another.
- **What is Functional Group Addition (FGA)?** → It is the addition of a new functional group in synthesis.
- **Which reagent is commonly used to reduce a ketone to an alcohol?** →  $\text{NaBH}_4$  (Sodium borohydride).
- **Which reaction forms a  $\beta$ -hydroxy ketone?** → Aldol condensation.
- **Which reaction is used for alkene synthesis?** → Wittig reaction.
- **What is the precursor for an ester?** → Carboxylic acid and alcohol.
- **Which reaction is used for amide synthesis?** → Amine + Carboxylic acid reaction.
- **Which reagent is used to introduce a cyanide group (-CN)?** →  $\text{NaCN}$  (Sodium cyanide).
- **Which reaction forms a lactone?** → Baeyer-Villiger oxidation.
- **What is the precursor of benzophenone?** → Benzoyl chloride + Benzene.
- **Which reagent is used for carbon-carbon bond formation?** → Grignard reagent.

- **Which reaction converts an alcohol into an alkene?** → Dehydration reaction.
- **Which reaction is used for ester formation?** → Fischer esterification.
- **Which reaction is useful for making aldehydes?** → Oxidation of primary alcohols.
- **Which reaction is used for epoxide synthesis?** → Oxidation of alkenes.
- **What is a synthetic equivalent?** → A real reagent replacing a synthon.
- **What is the starting material for retrosynthesis of a ketone?** → Alcohol or Grignard reagent + Ester.
- **What is the retrosynthetic precursor of a carboxylic acid?** → Grignard reagent + CO<sub>2</sub>.
- **Which reaction is used to form amines?** → Reduction of nitriles or amides.
- **Which reagent is used to reduce nitro compounds to amines?** → Sn/HCl or Fe/HCl.
- **What is the starting material for benzophenone synthesis?** → Benzoyl chloride and benzene.
- **Which reaction is used to synthesize β-lactams?** → Staudinger reaction.
- **Which reaction is used to introduce a hydroxyl (-OH) group?** → Hydroboration-oxidation.
- **What is the precursor for an alkyne?** → Vicinal dihalide.
- **Which reagent is used for oxidation of alcohols?** → PCC (Pyridinium chlorochromate).
- **Which reaction converts an aldehyde to a carboxylic acid?** → Oxidation.
- **What is the main strategy in retrosynthesis?** → Identifying key bonds for disconnection.
- **Which reaction is useful for aromatic aldehyde synthesis?** → Reimer-Tiemann reaction.
- **What is umpolung in retrosynthesis?** → Reversing the polarity of a functional group.
- **Which reaction forms α,β-unsaturated carbonyl compounds?** → Aldol condensation.
- **What is the synthon for a nitrile (-CN)?** → Cyanide ion (<sup>-</sup>CN).
- **Which reaction is used to form an ether?** → Williamson ether synthesis.
- **Which reaction forms amides from nitriles?** → Hydrolysis.

- **Which reaction is used to form a carbonyl group in retrosynthesis?** → Oxidation of alcohols.
- **What is the precursor of an alkene?** → Alkyl halide or alcohol.
- **Which reaction is used for carbonyl group formation?** → Ozonolysis of alkenes.
- **Which reagent is used to reduce esters to alcohols?** →  $\text{LiAlH}_4$ .
- **Which reaction is used for making carboxylic acids?** → Oxidation of aldehydes.
- **What is a protecting group in retrosynthesis?** → A group used to prevent unwanted reactions.
- **Which reaction is used to introduce a phenol (-OH) group?** → Hydrolysis of aryl halides.
- **Which reagent is used in the Kolbe reaction?** →  $\text{CO}_2$  and  $\text{NaOH}$ .
- **Which reaction is used to form ketones from carboxylic acids?** → Decarboxylation