

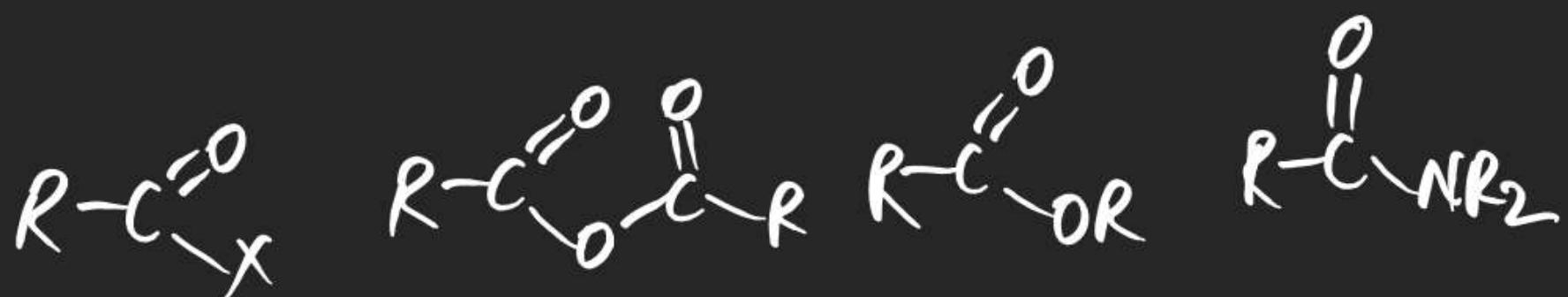
Carboxylic Acid & Derivatives

\Rightarrow Carboxylic Acid



↑ Hydrolysis

\Rightarrow Carboxylic Acid derivatives



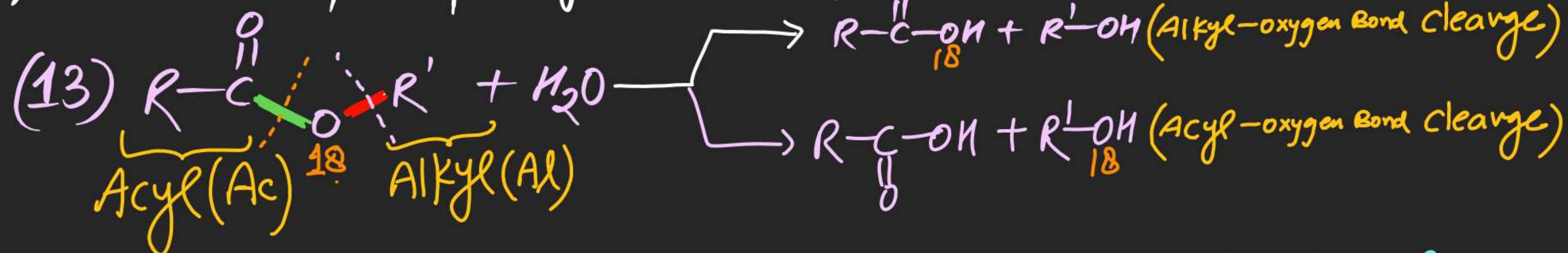
Method of Preparation:

(1) By reaction of PbS , SOCl_2 with R-COOH



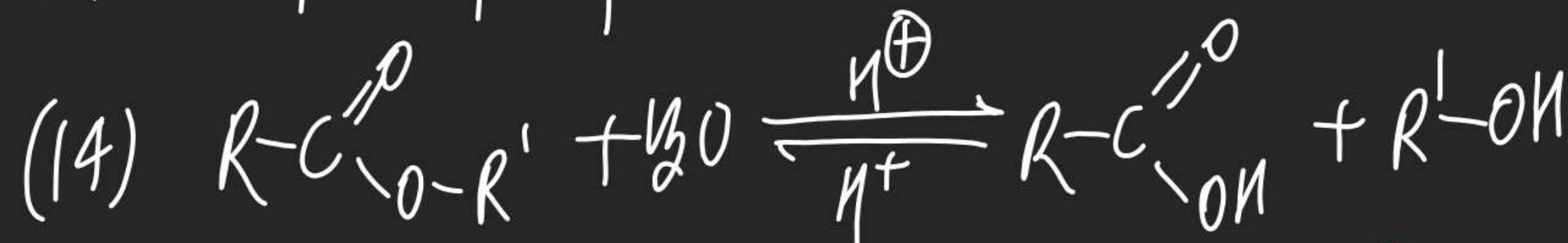
(6) Hydrolysis of Ester:

⇒ Ester on Hydrolysis gives Carboxylic Acid & Alcohol as a Product.



Note: (i) Hydrolysis of ester can be catalysed both by Acid or Base

(ii) Acid catalysed hydrolysis of ester is removable in nature.



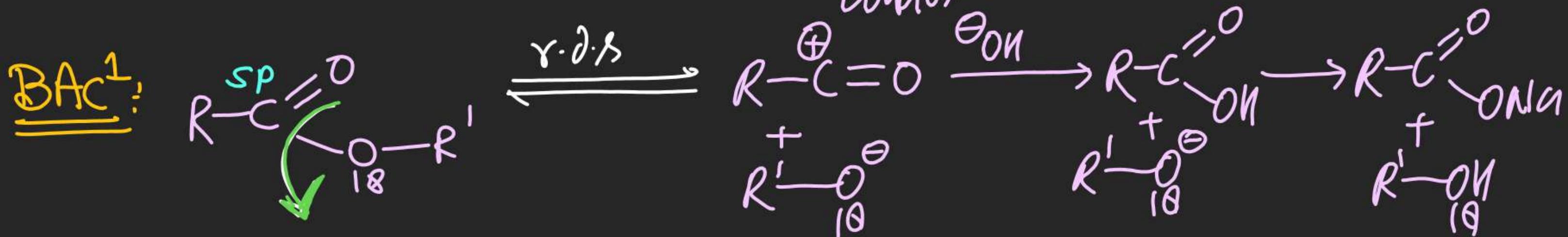
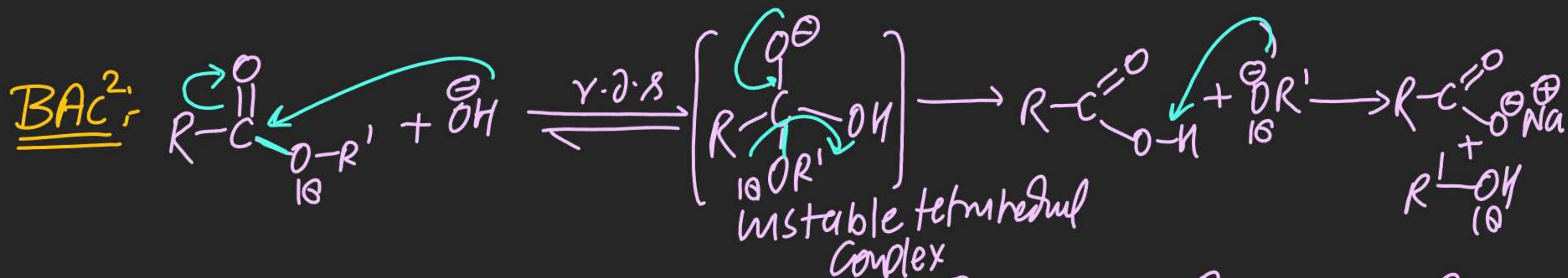
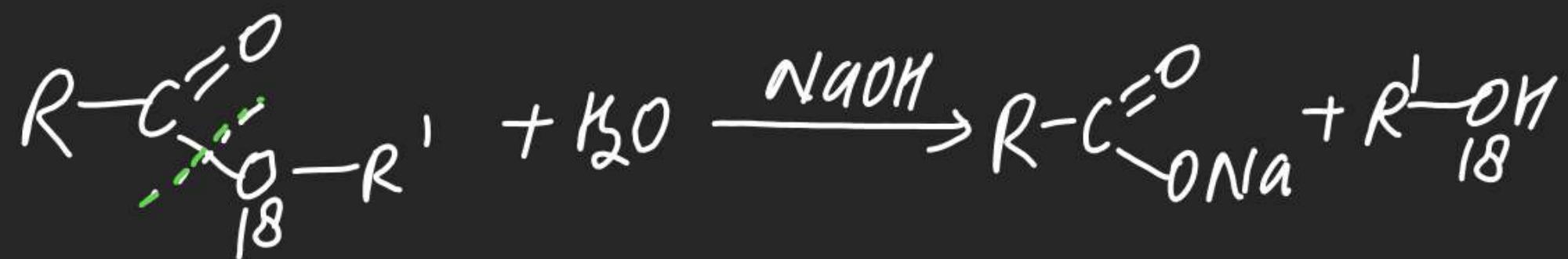
(iii) Base Catalysed Hydrolysis of Ester is invisible in nature & known as saponification.

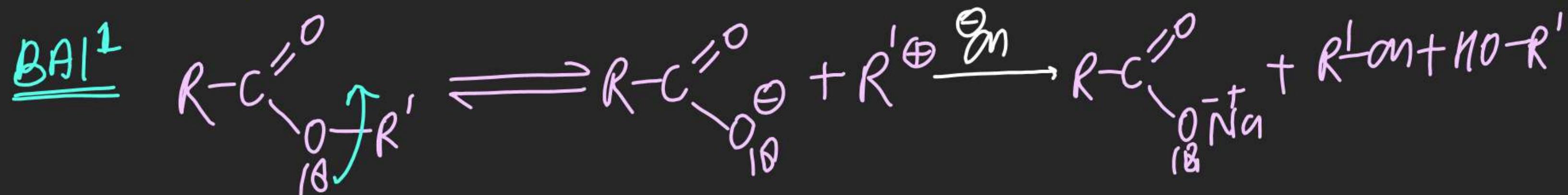
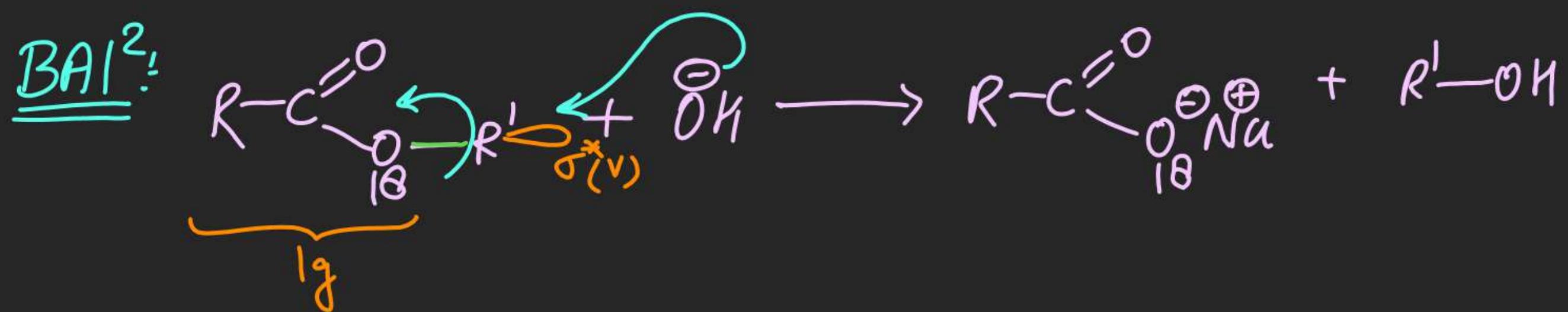
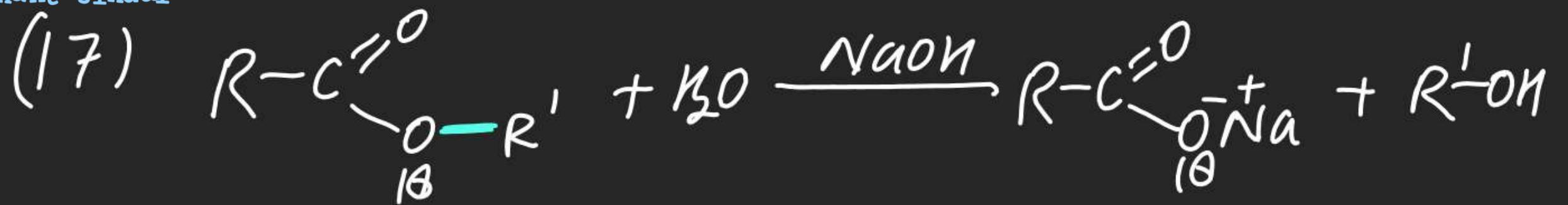


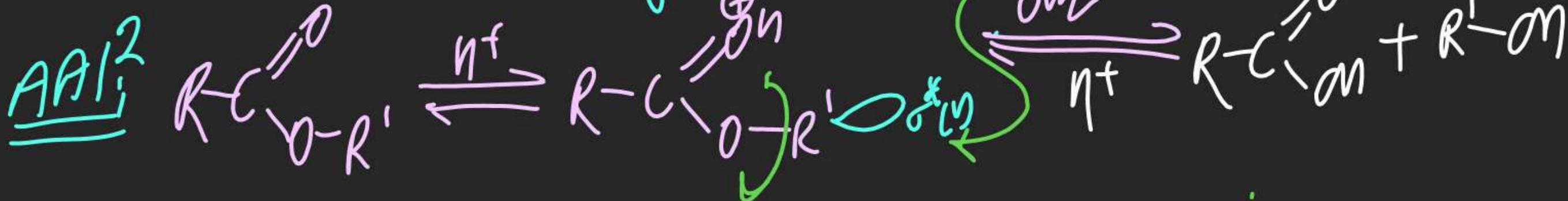
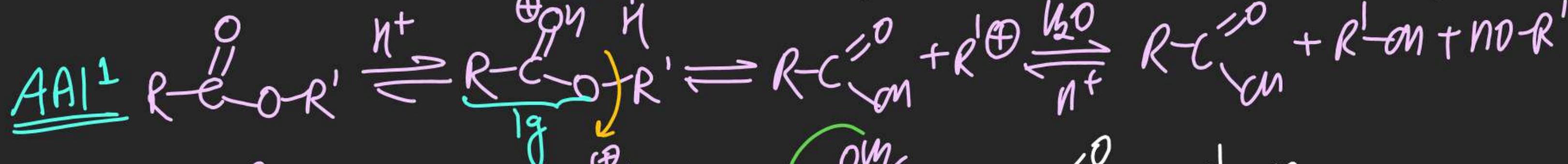
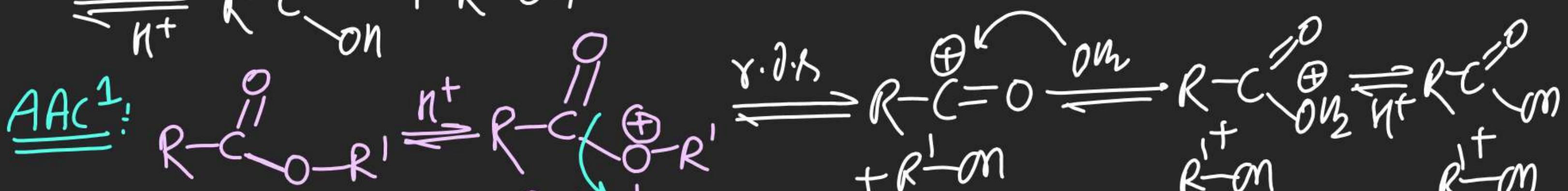
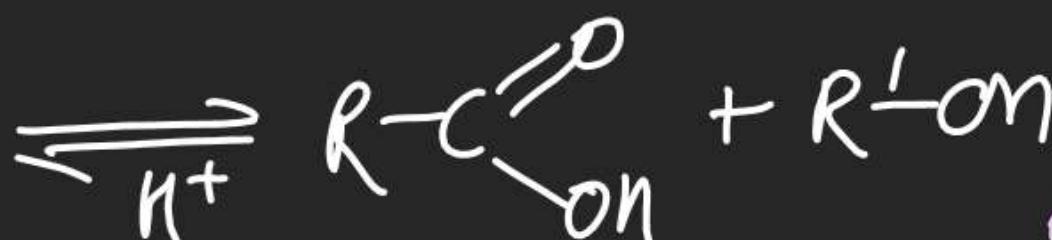
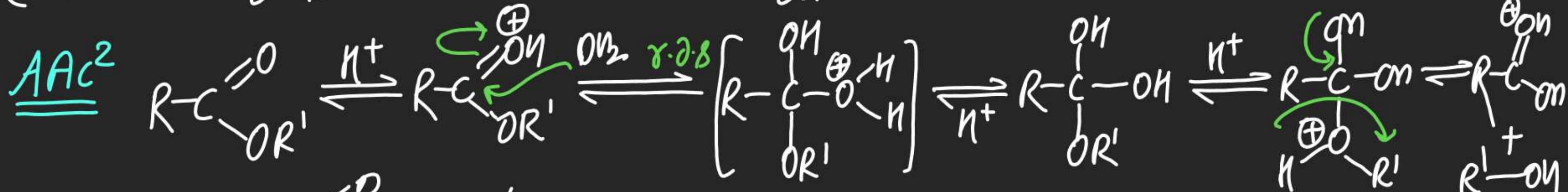
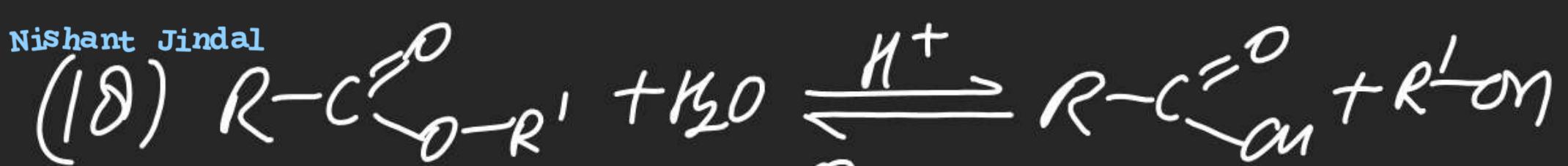
(iv) Possible mechanism

- (a) BAC² [Bimolecular Base Catalysed Acyl-Oxygen Bond cleavage mechanism)
- (b) BAC¹ [Unimolecular
- (c) BAI² [Bimolecular
- (d) BAI¹ [Uni
- (e) AAC² [Bi
- (f) AAC¹
- (g) AAI²
- (h) AAI¹

(16)



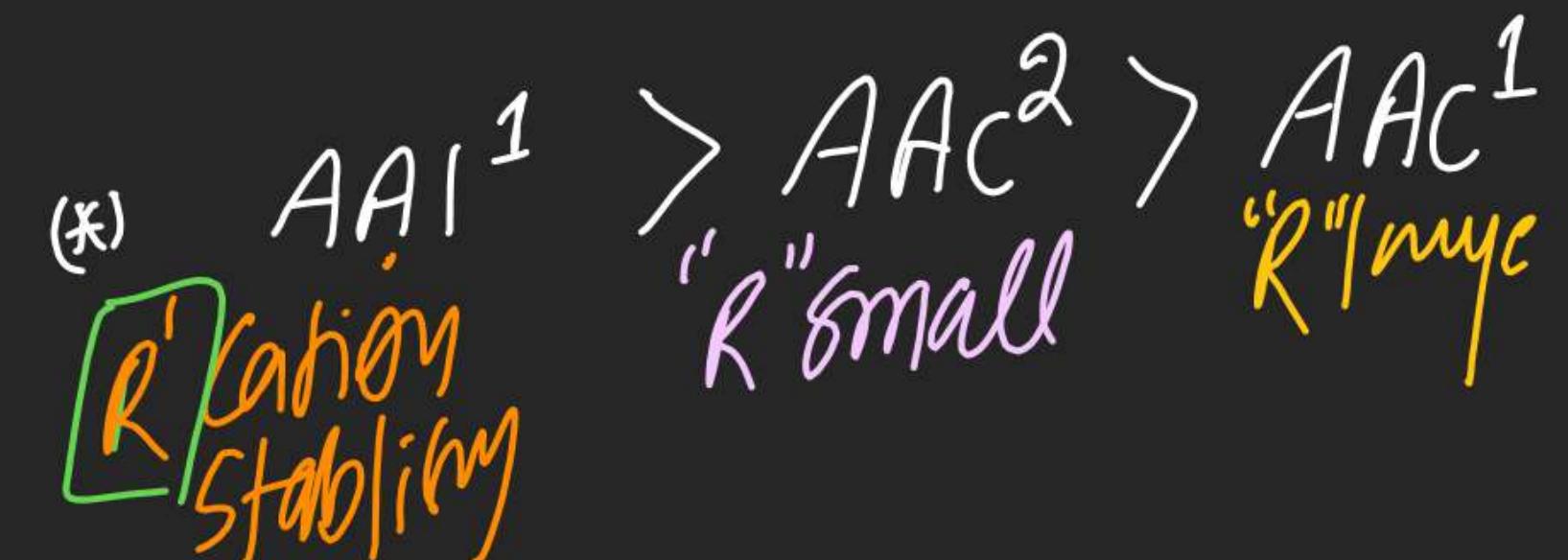
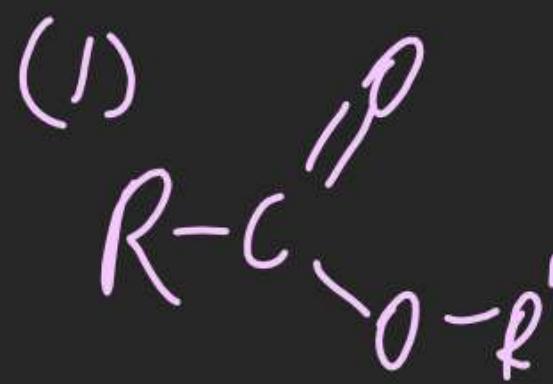
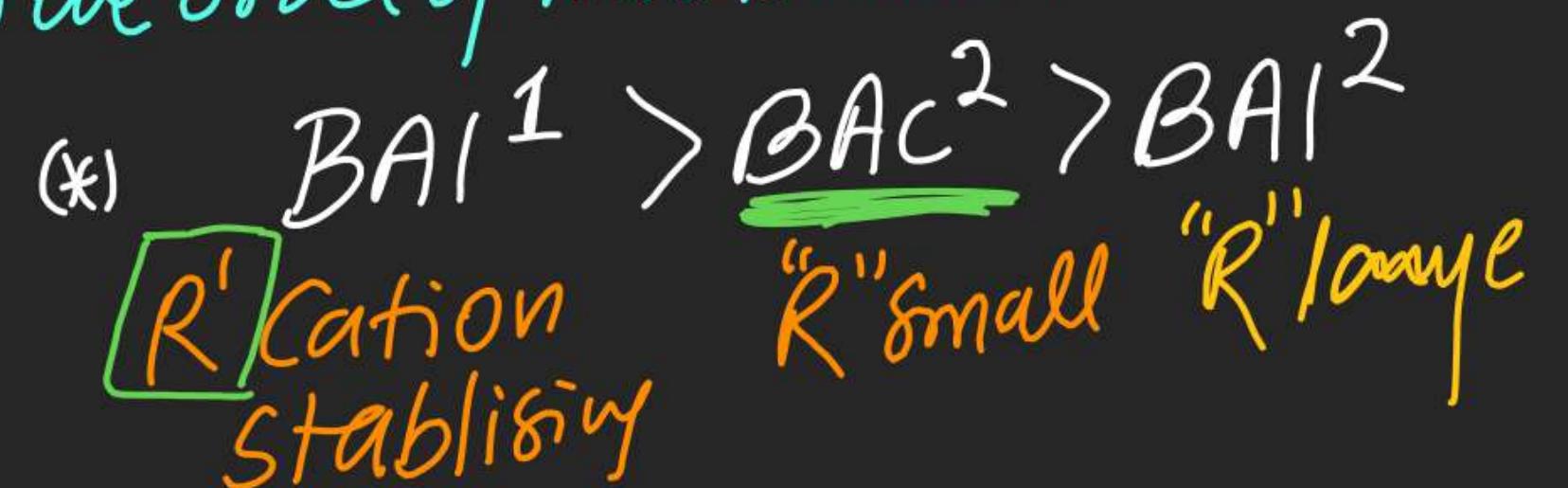


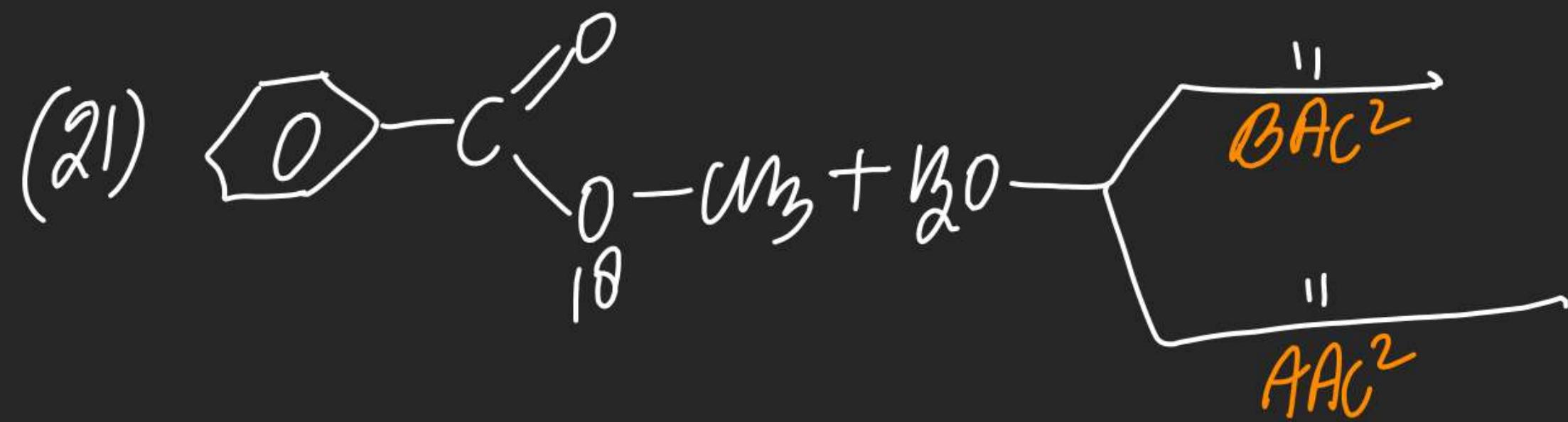
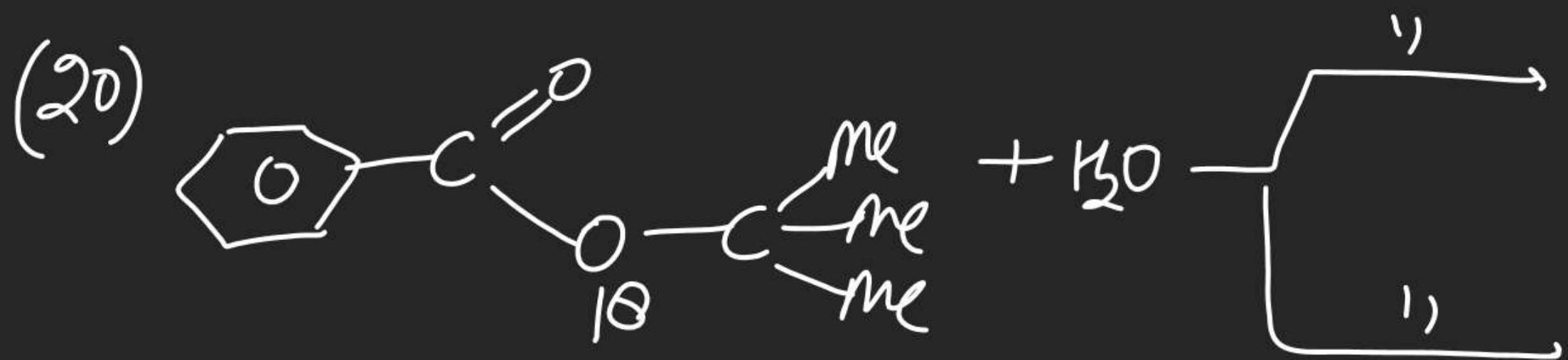
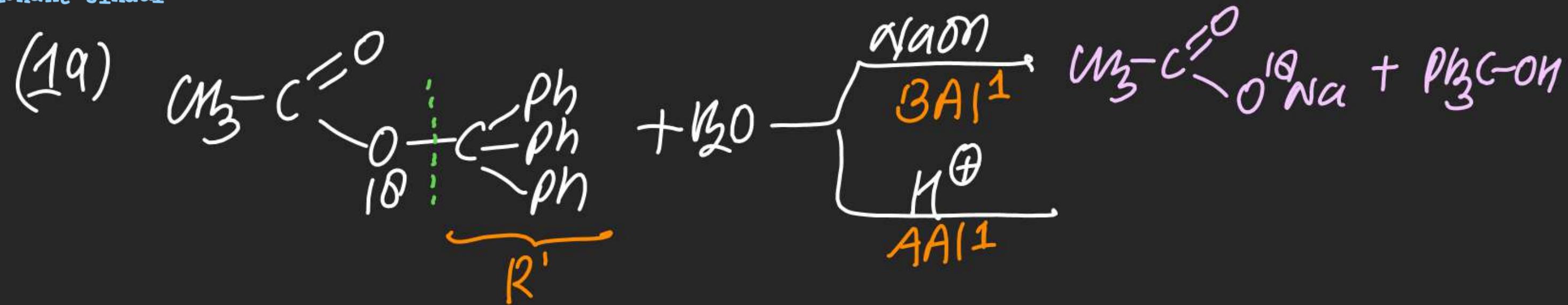


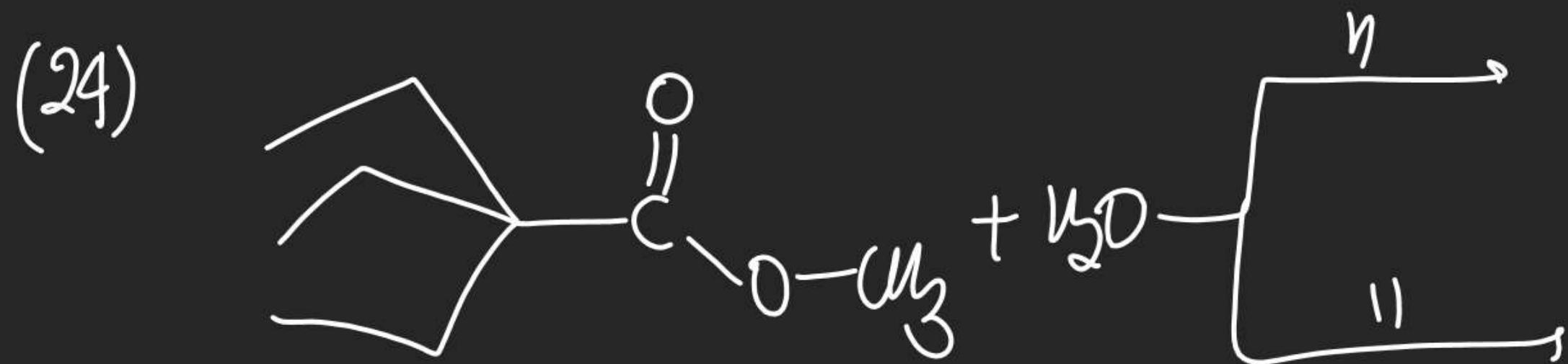
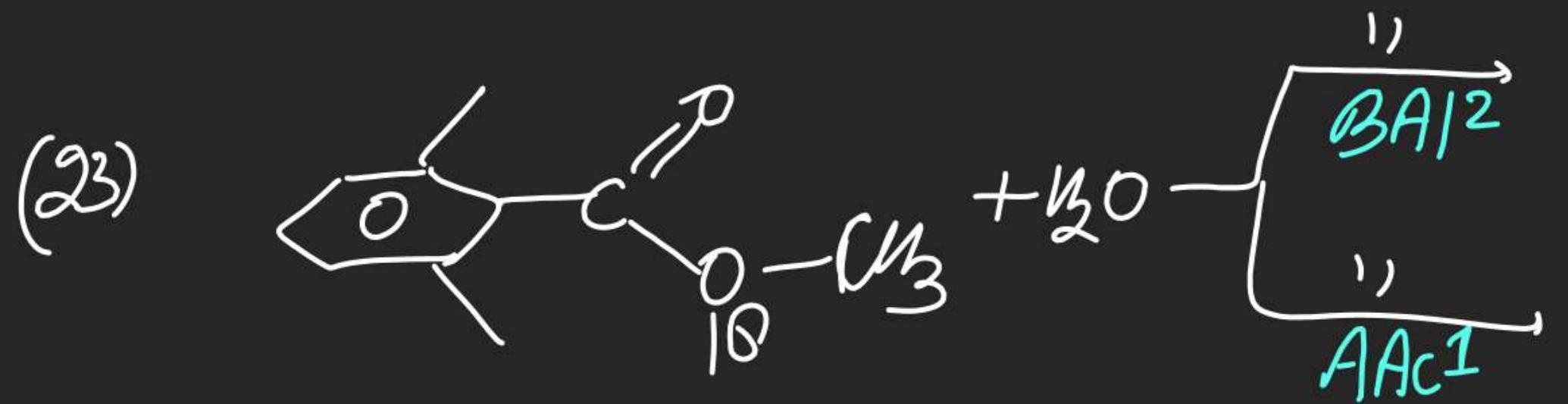
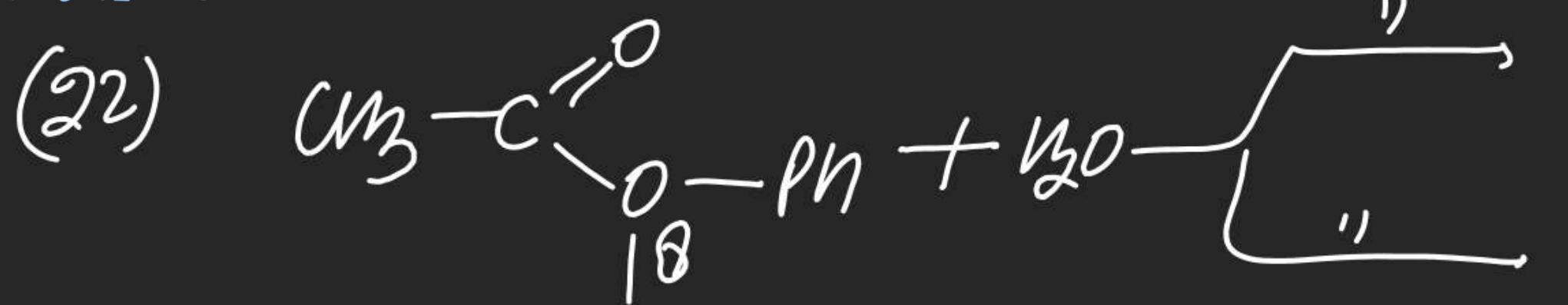
Note (i) There is no any Ester found till now which gets hydrolysed

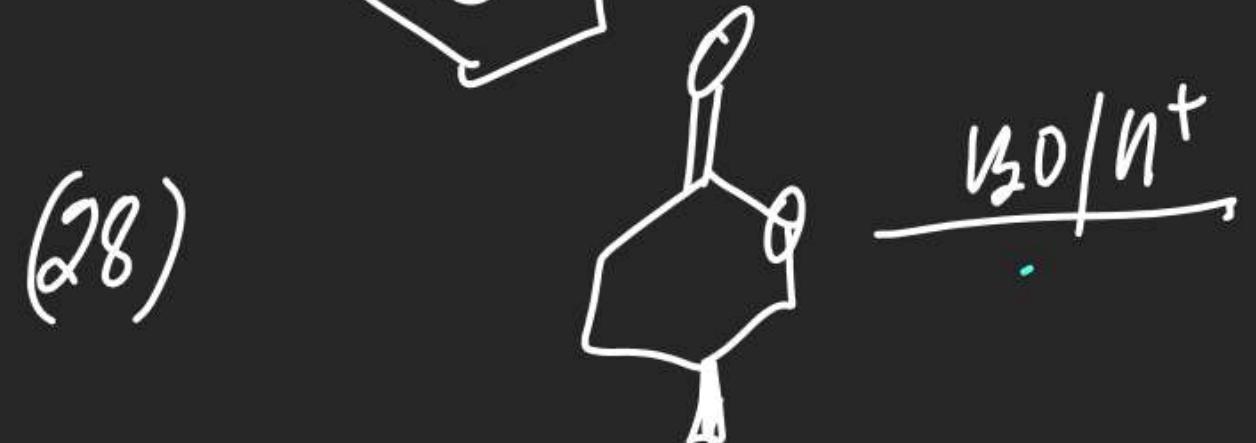
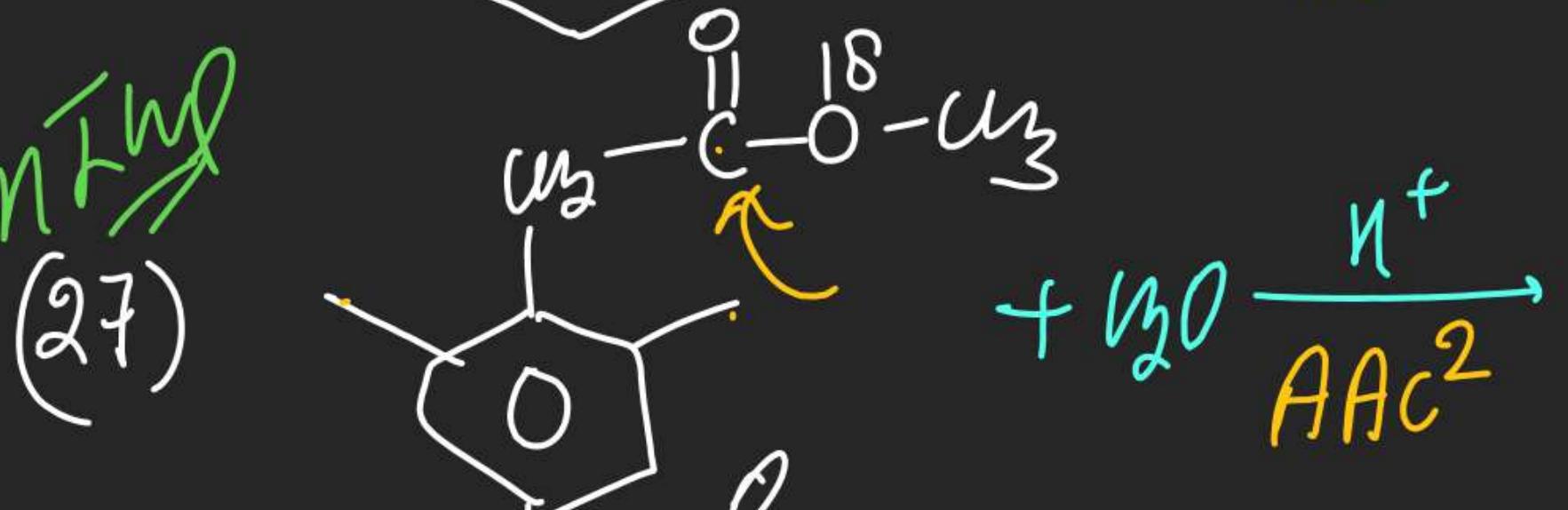
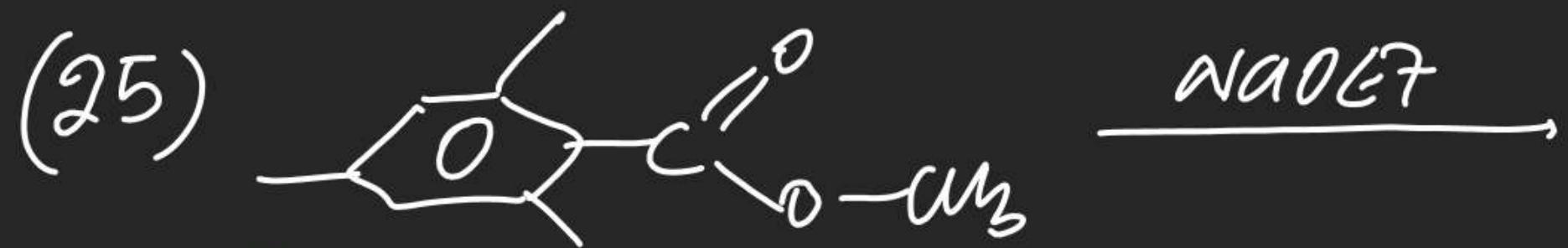
By BAC^1 & AAI^2

(ii) Preferred order of mechanism



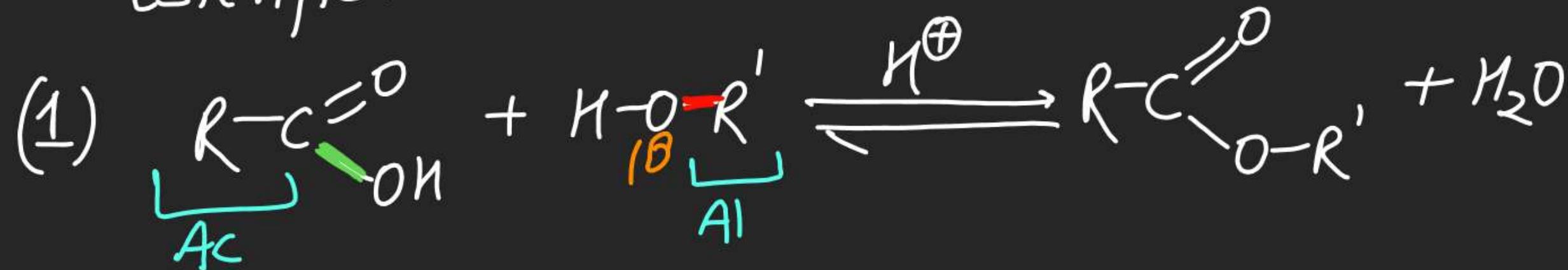






(#) Esterification:

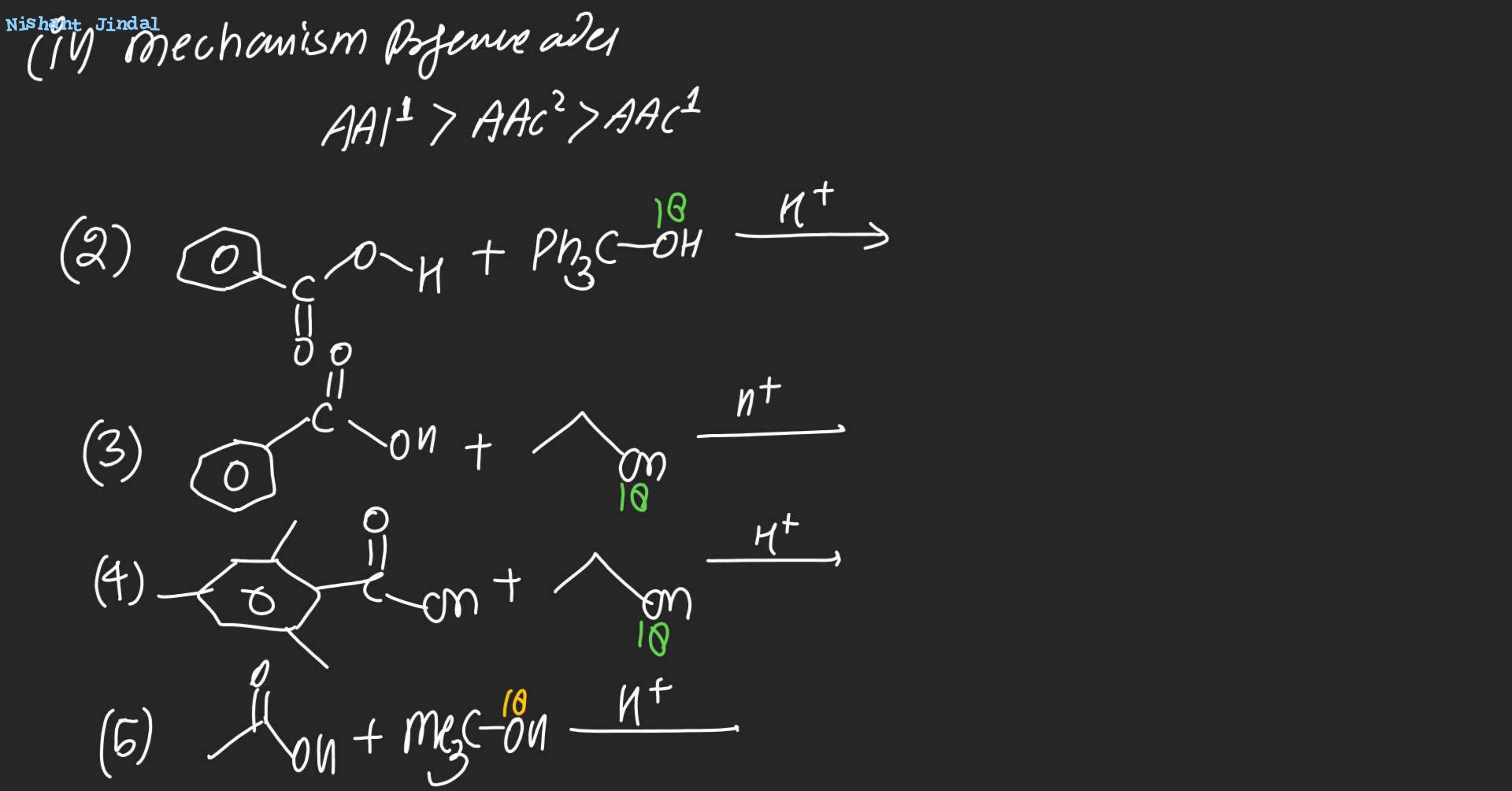
→ Formation of ester by reaction b/w Acid & alcohol are known as esterification.



Note (i) Reversible Rxn

(ii) Can be catalysed only by Acid
(iii) mechanism possible



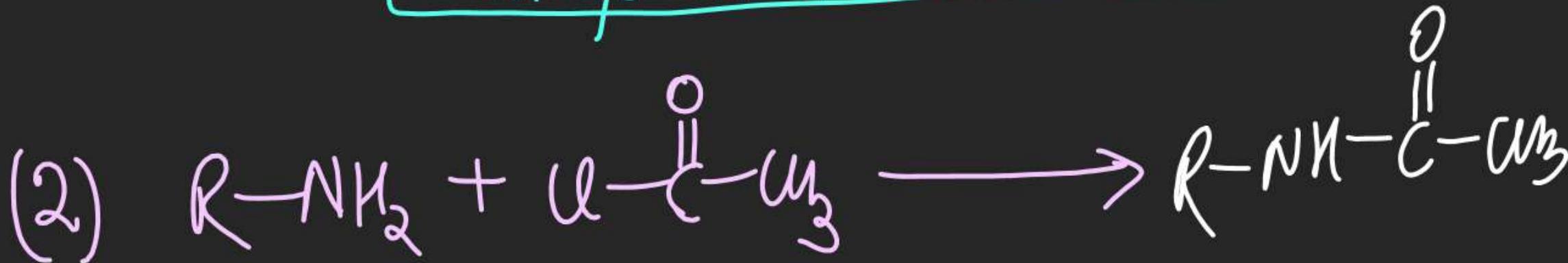
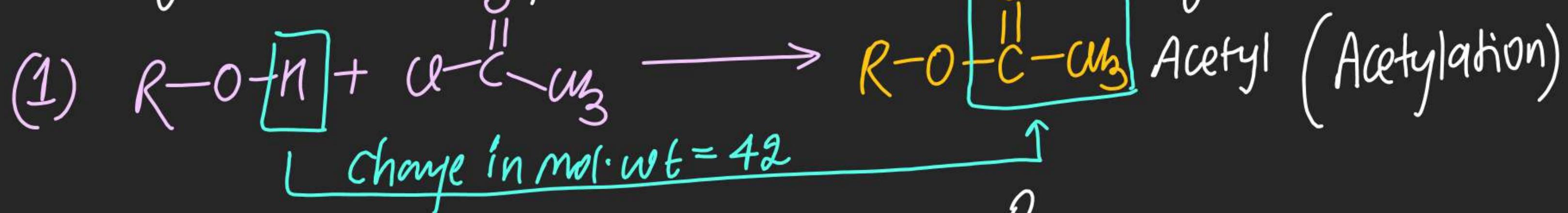


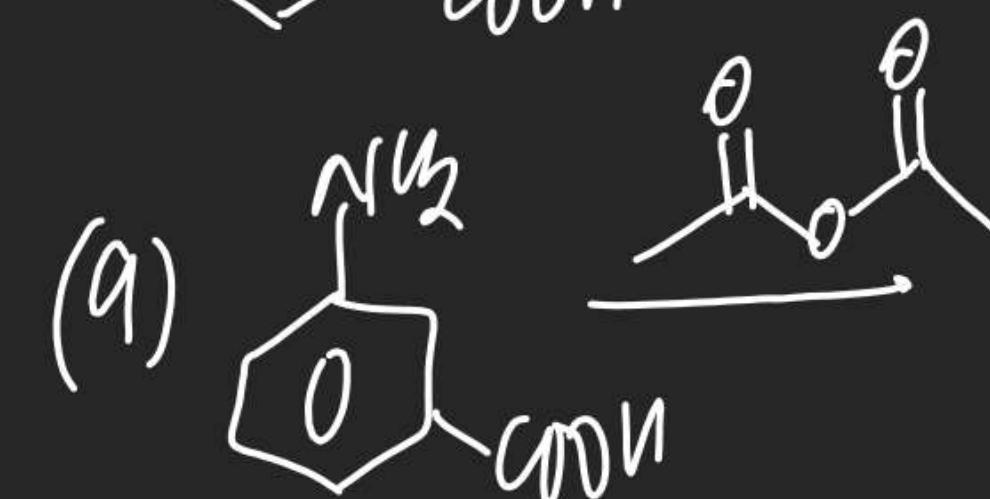
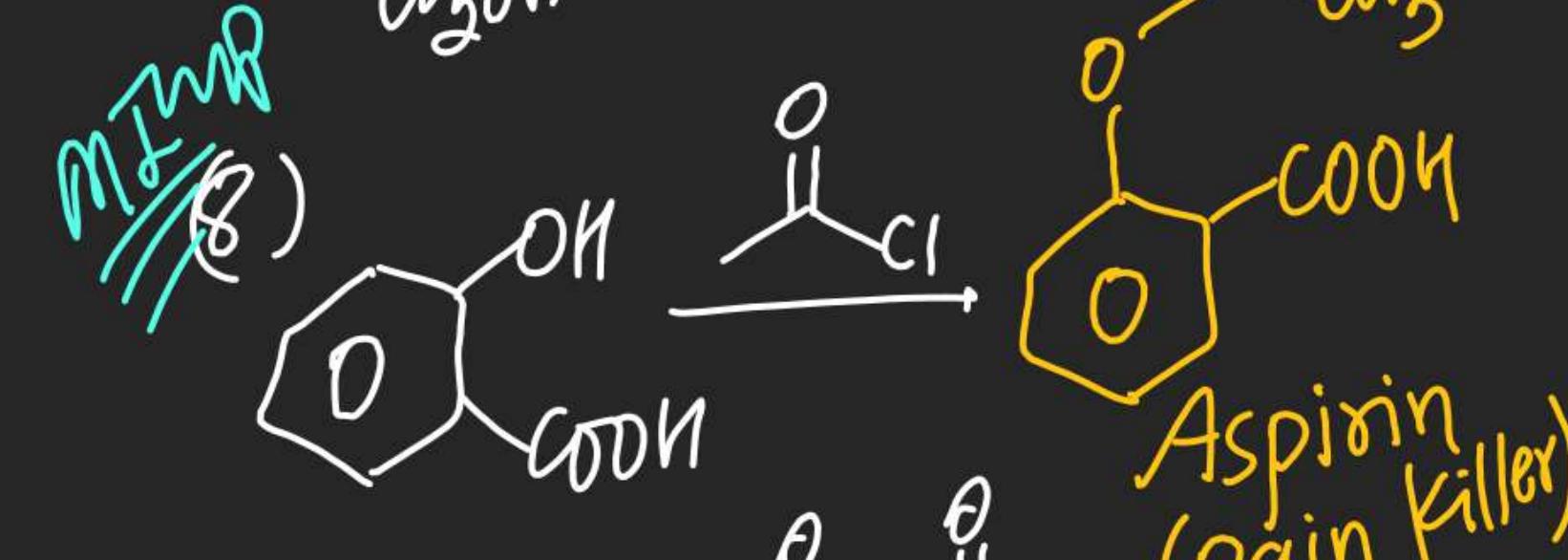
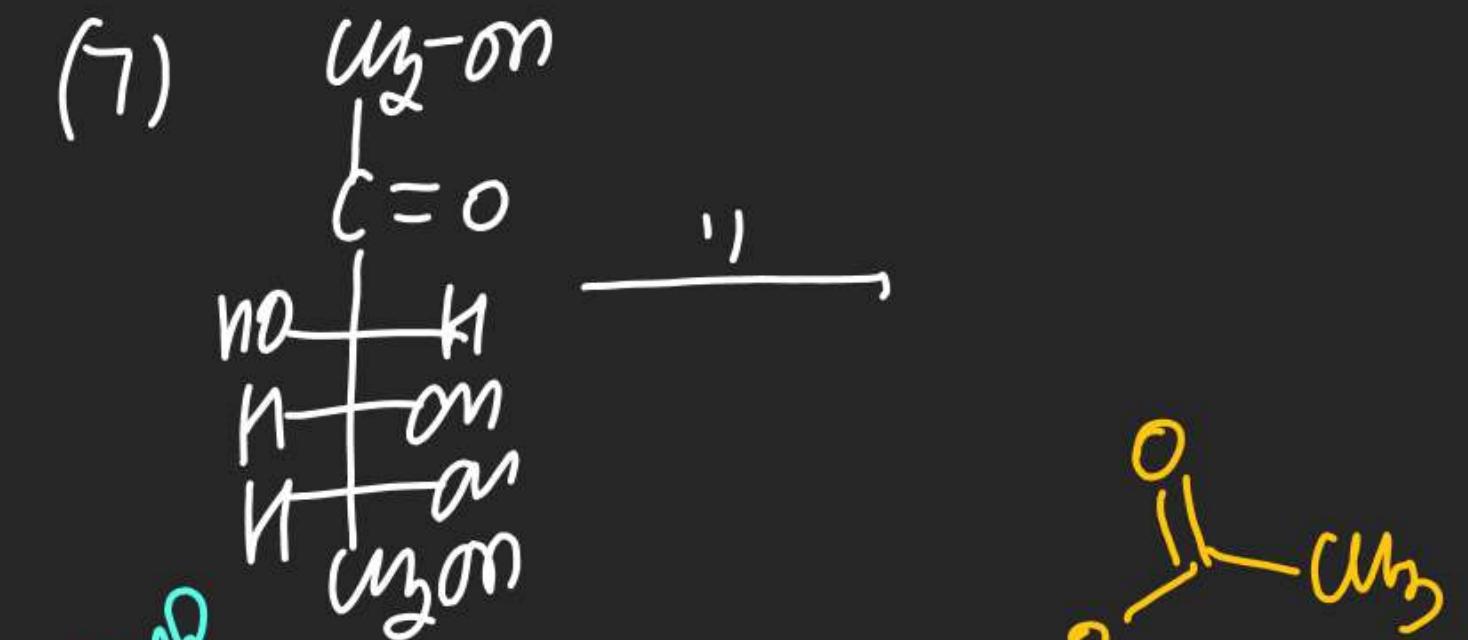
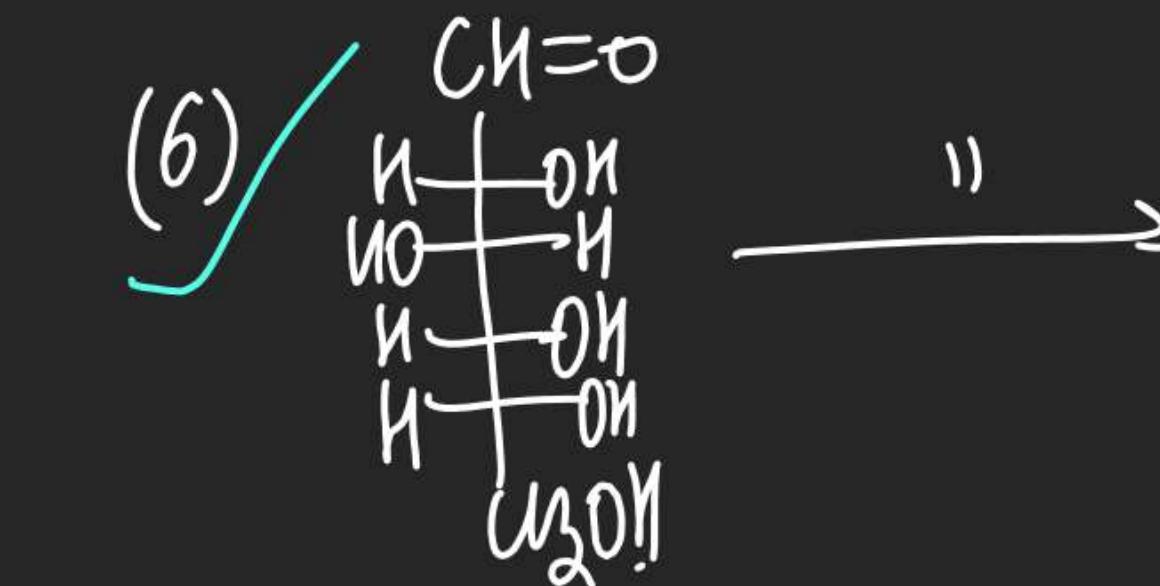
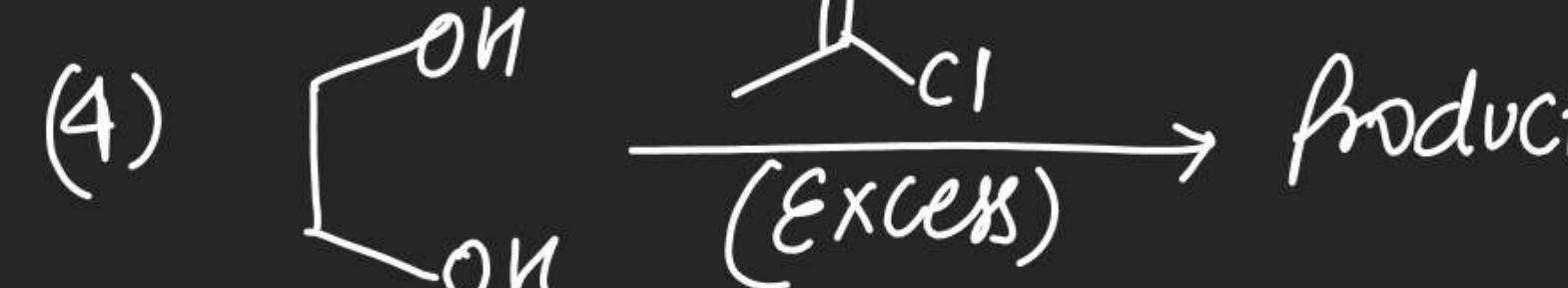
(#) Acylation:-

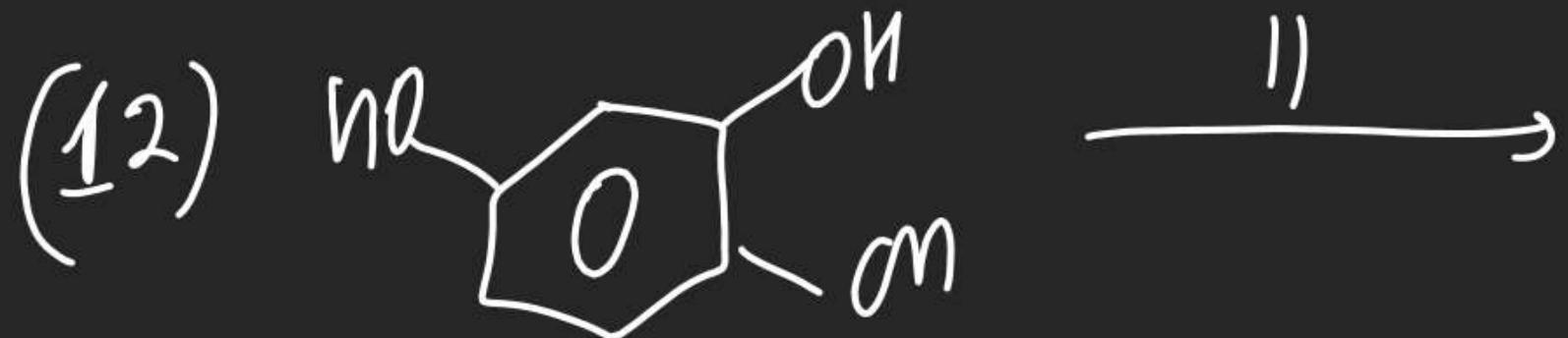
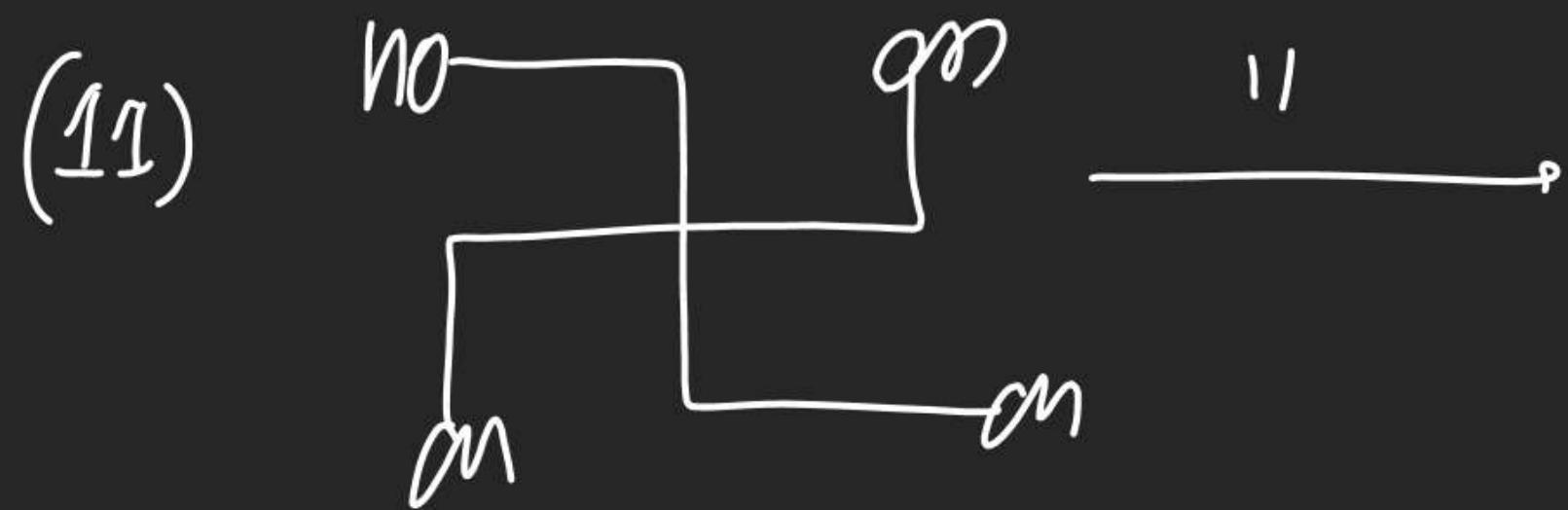
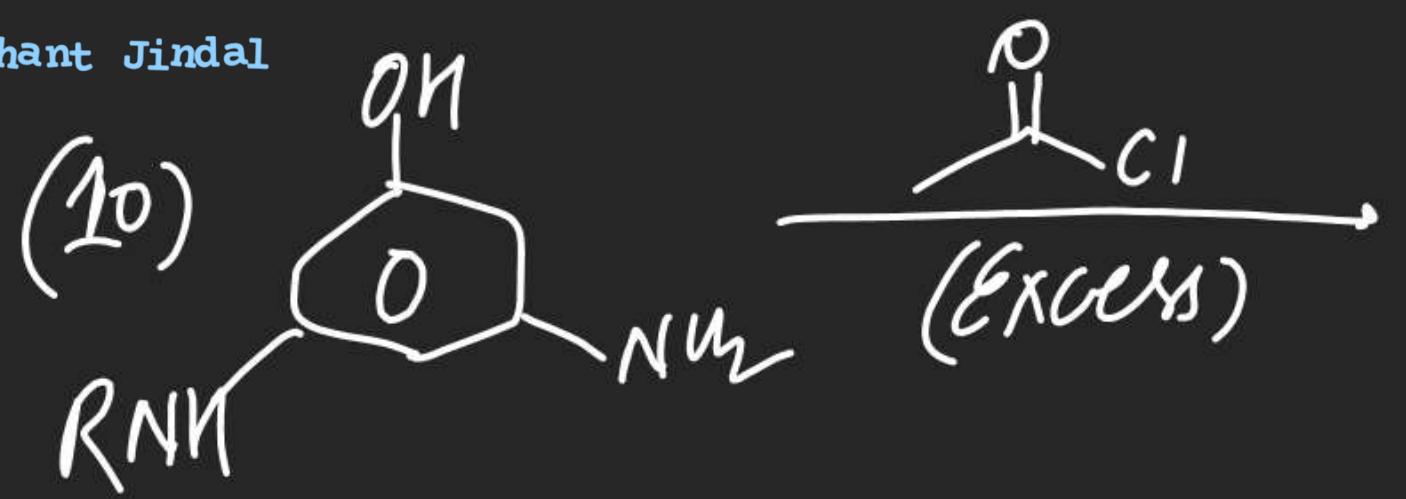
→ Insertion of $-C(=O)R$ group is known as Acylation



⇒ Acylation is oftenly carried out by using $R-C(=O)X$ or $R-C(=O)OR'$

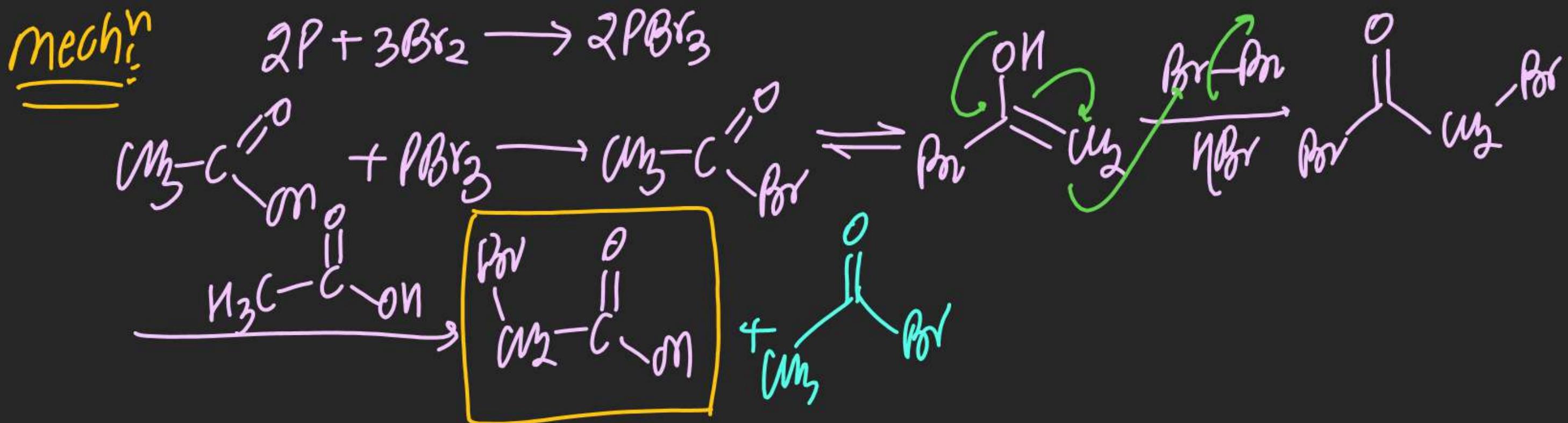






(#) Hell Volhard Zelinsky Reaction (HVZ Reaction)

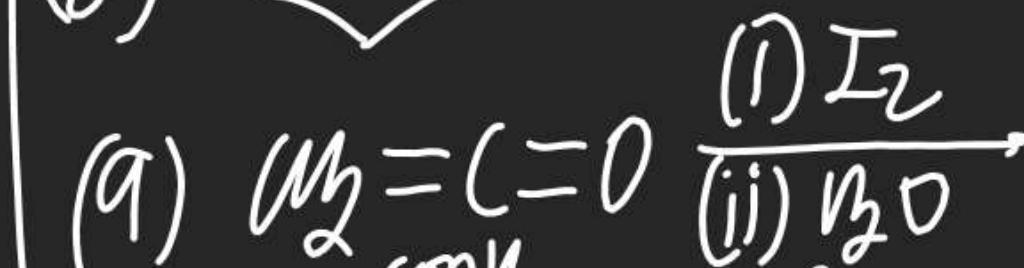
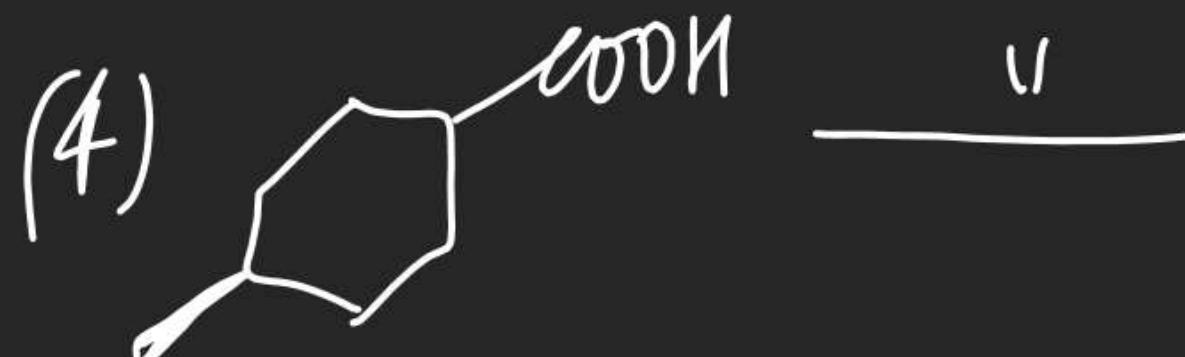
⇒ In this Reaction Carboxylic Acid is treated with ReOP/Br_2 so that α -Bromo Acid is obtained as a Product.



Note (i) $Oxidn Rxn$

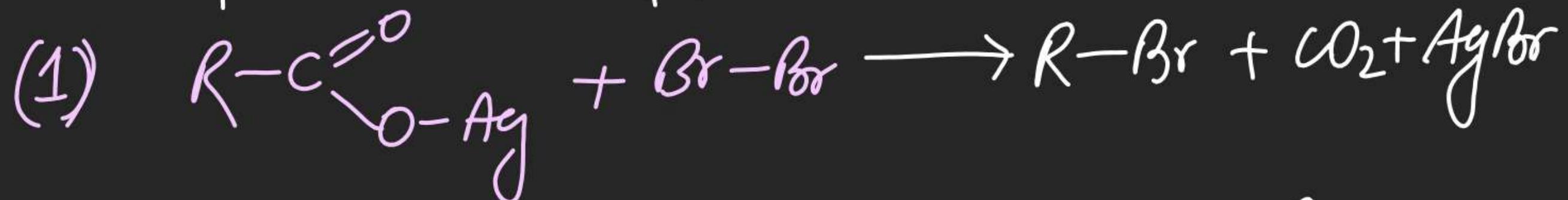
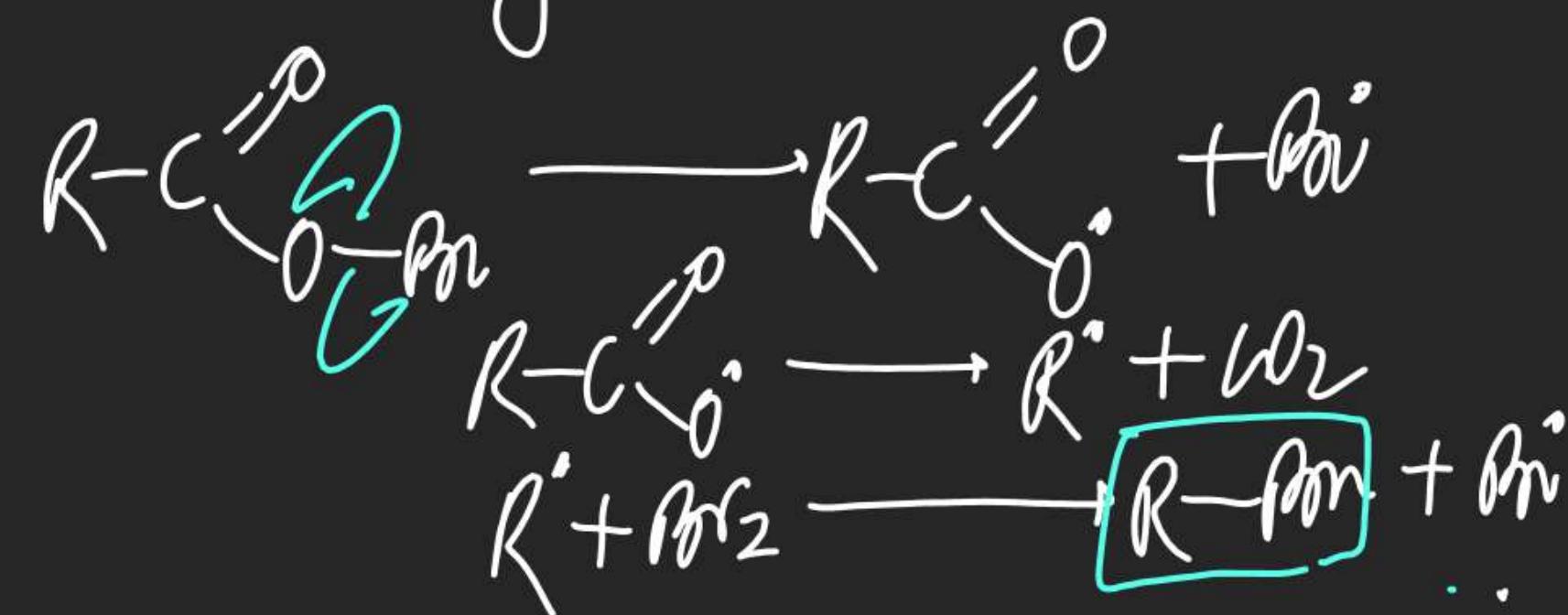
(ii) Electrophilic substitution Rxn

(iii) Iodine can't be substituted by HVZ



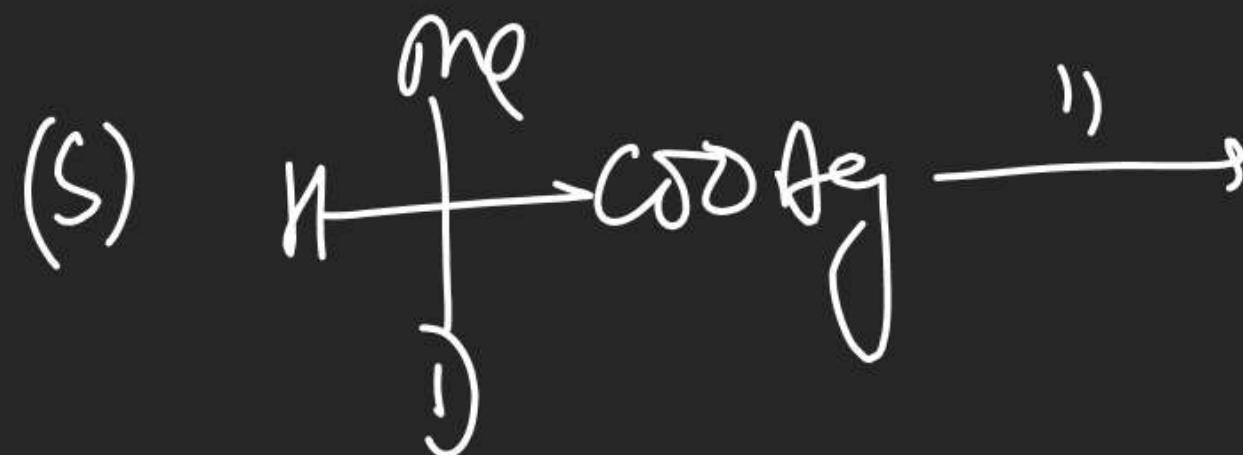
(H) Borodine-Hunsdiecker Rxn:

→ In this Reaction Ag salt of Carboxylic Acid is treated with Br_2/CCl_4 so that alkyl Bromide is obtained as a Product.

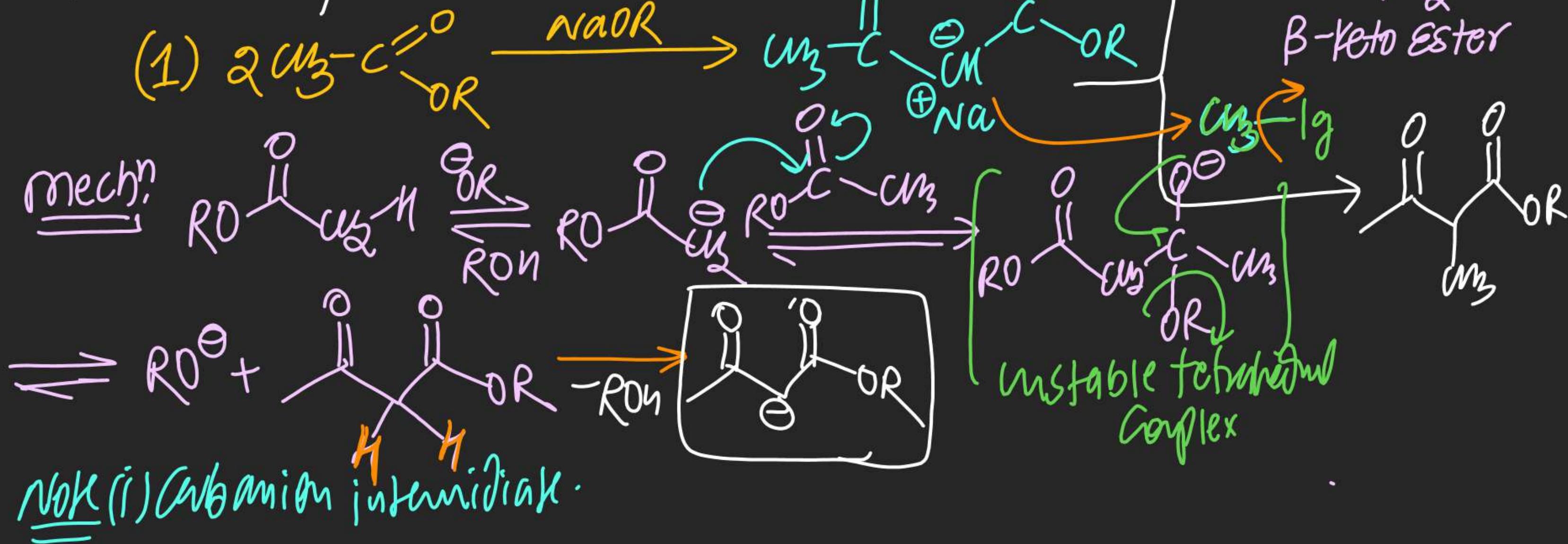
Mechn:

Note (i) Degradation Rxn

(ii) Ester is side product.



(#) Claisen Condensation: Esters having " α " H atom whenever treated with Sodium alkoxide gives β -Keto ester as a product followed by Acidification





(#) Intra Molecular Claisen Condensation: (5/6 membered Ring)

