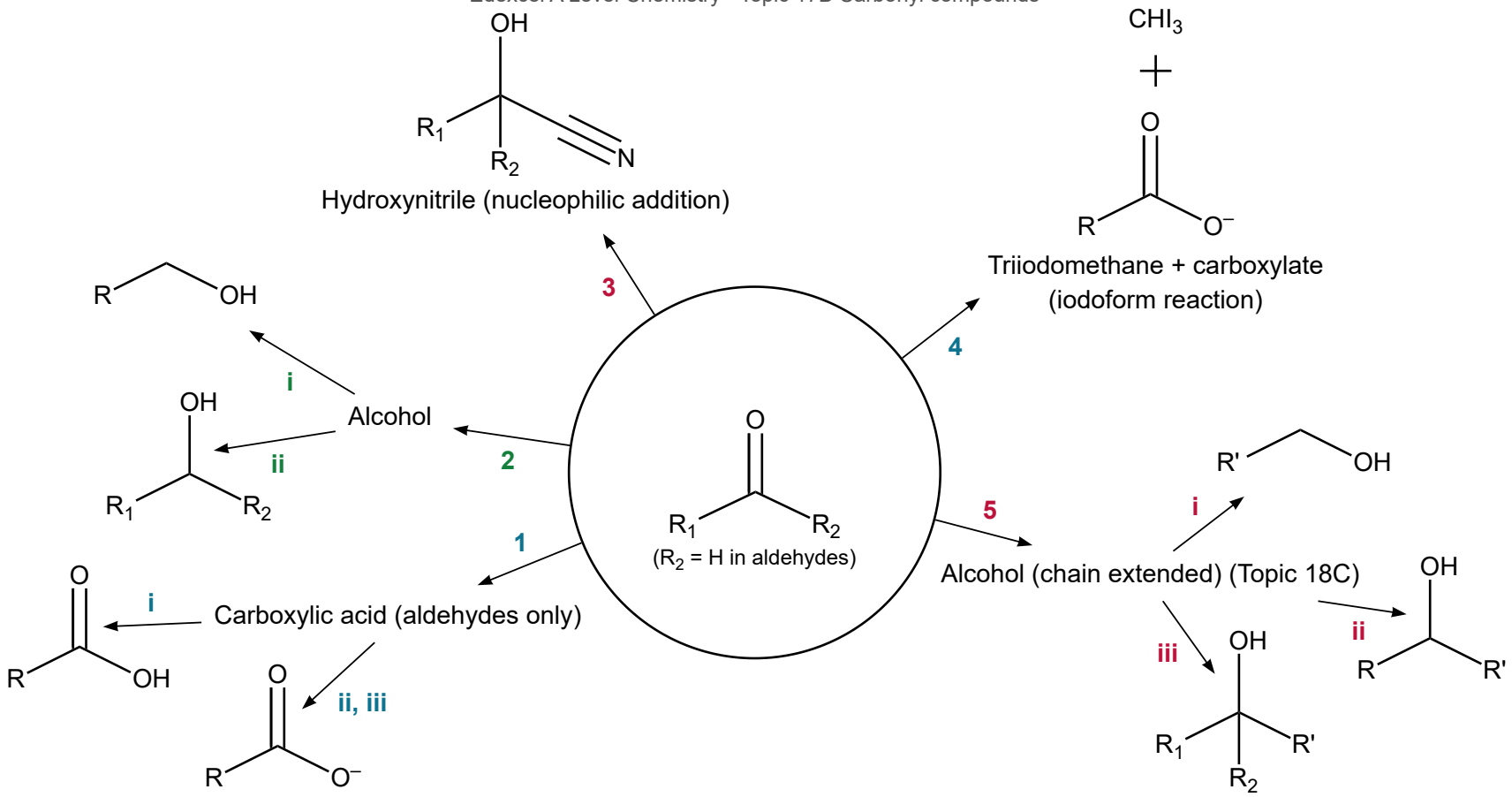
Aldehydes and Ketones Map

Edexcel A Level Chemistry · Topic 17B Carbonyl compounds



1 oxidation: [O]
- **i** $K_2Cr_2O_7$ and dil. H_2SO_4, heat under reflux; orange → green → carboxylic acid
- **ii** Tollens' reagent, warm; silver mirror → carboxylate
- **iii** Fehling's or Benedict's solution, warm; blue → brick-red precipitate → carboxylate

2 reduction: [H]; $LiAlH_4$ in dry ether, room temperature, then add dilute acid
- **i** from aldehydes → primary alcohol
- **ii** from ketones → secondary alcohol

3 addition: HCN with KCN, room temperature; racemic product

4 oxidation (iodoform): I_2 and NaOH(aq), warm; yellow precipitate with $CH_3CO–$ compounds

5 addition: Grignard reagent R'MgX in dry ether, then dilute acid
- **i** from methanal → primary alcohol
- **ii** from other aldehydes → secondary alcohol
- **iii** from ketones → tertiary alcohol

Test for C=O: 2,4-DNPH gives an orange precipitate; melting temperature of the derivative identifies the compound (no equation needed).
Ketones are not oxidised: no change with Tollens', Fehling's or Benedict's, or acidified dichromate.

oxidation reduction addition

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