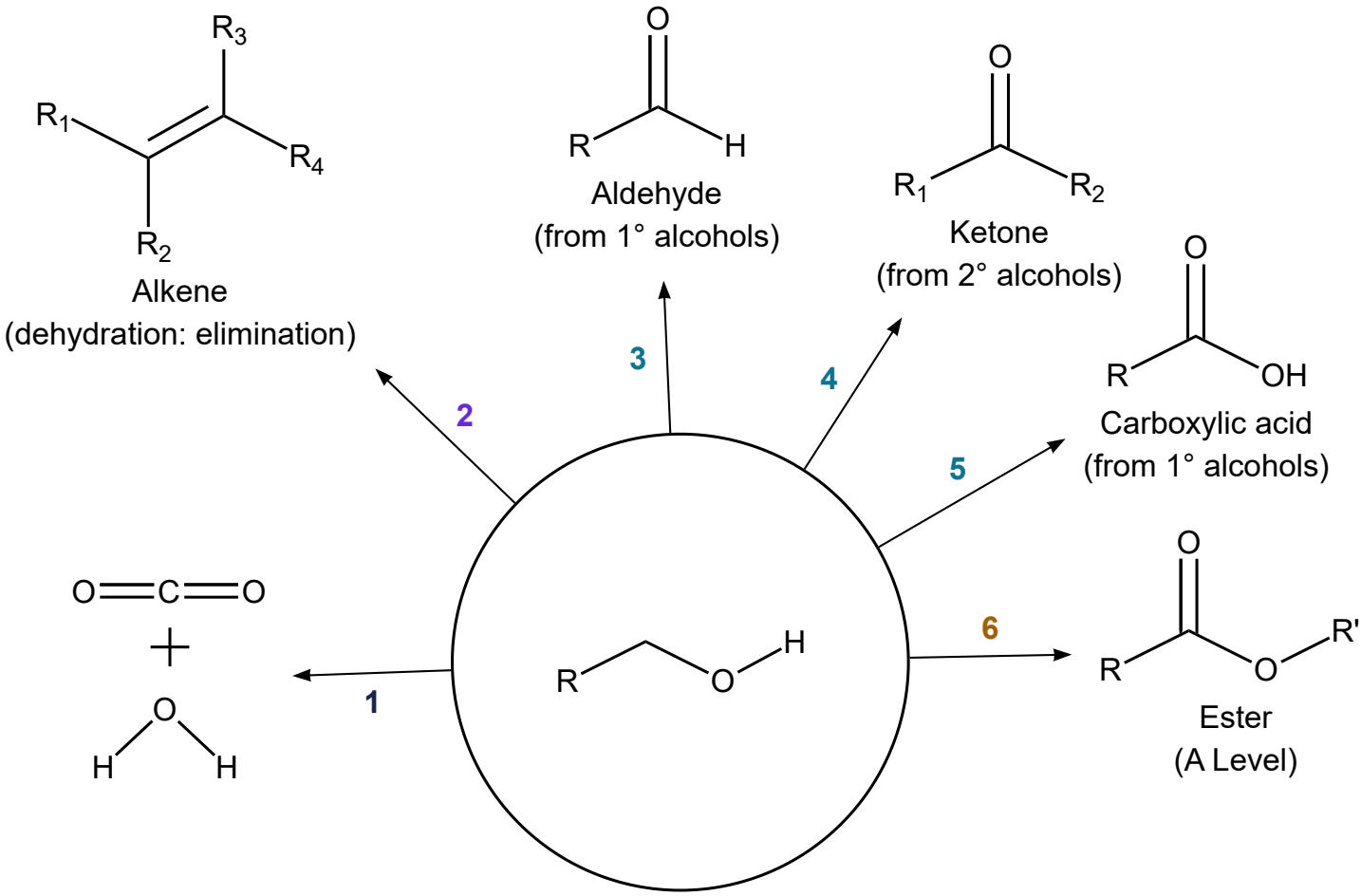
Alcohols Map

AQA A Level Chemistry · 3.3.5 Alcohols



1 **combustion**: excess $O_2(g)$, burn (biofuel: carbon neutral in theory)

2 **dehydration (elimination)**: conc. H_2SO_4 or conc. H_3PO_4, heat

3 **oxidation**: [O]; acidified $K_2Cr_2O_7$, warm and distil off the aldehyde immediately; orange → green

4 **oxidation**: [O]; acidified $K_2Cr_2O_7$, heat under reflux; orange → green

5 **oxidation**: [O]; excess acidified $K_2Cr_2O_7$, heat under reflux; orange → green

6 **condensation (esterification)**: carboxylic acid, acyl chloride or acid anhydride
i carboxylic acid, conc. H_2SO_4 catalyst, heat
ii acyl chloride, room temperature (addition-elimination)
iii acid anhydride, warm (addition-elimination)

Tertiary alcohols are not easily oxidised: the dichromate stays orange.
Tests: aldehyde: Fehling's solution gives a red precipitate; Tollens' reagent gives a silver mirror.
Ethanol is made by hydration of ethene (H_3PO_4, 300 °C, 6–7 MPa) or by fermentation of glucose (yeast, 35 °C, anaerobic).

combustion **dehydration (elimination)** **oxidation** **condensation**

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