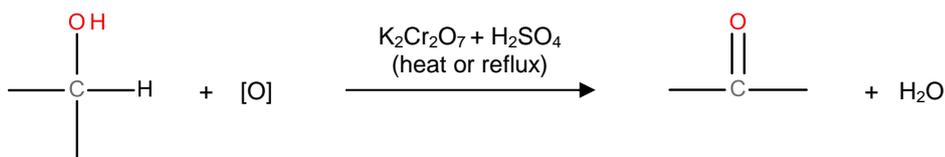




## Oxidation of 2<sup>y</sup> alcohols



2<sup>y</sup> alcohol

ketone

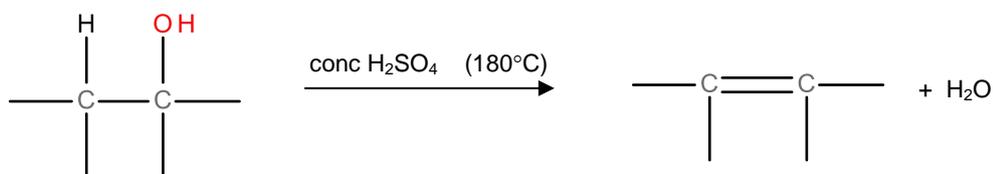
## Oxidation of 3<sup>y</sup> alcohols

These are not easily oxidised (but they are if you set fire to them!) as you would have to break C-C bonds – all the other oxidations involve the breaking of C-H bonds. [This also explains why ketones are not easily oxidised].

## Dehydration of alcohols

Alcohols that contain an H atom on the C atom adjacent to the C atom with the OH group are dehydrated when reacted with hot, concentrated H<sub>2</sub>SO<sub>4</sub> at 180°C.

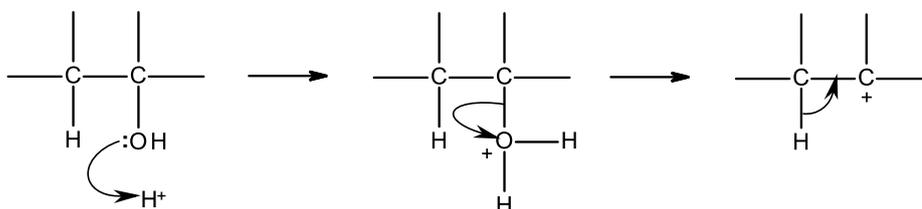
A mixture of alkenes may be produced as the H could come from any C atom adjacent to the one with the OH.



alcohol

alkene

Mechanism = elimination



## TASK

Write balanced equations for the following reactions. Always **draw structural formulas** of organic compounds and **name the organic product**. Write *no reaction* if there is no reaction!

- 1) propan-2-ol + H<sub>2</sub>SO<sub>4</sub> / K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> with heating
- 2) butan-1-ol + H<sub>2</sub>SO<sub>4</sub> / K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> distilling off the product
- 3) propanal + Tollen's reagent with heating
- 4) 2,2-dimethylpropan-1-ol + hot conc H<sub>2</sub>SO<sub>4</sub>
- 5) butan-2-ol + hot conc H<sub>2</sub>SO<sub>4</sub>
- 6) methylpropan-1-ol + H<sub>2</sub>SO<sub>4</sub> / K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> refluxing
- 7) butanone + Fehling's solution with heating
- 8) ethanol + H<sub>2</sub>SO<sub>4</sub> / K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> refluxing
- 9) ethanal + Fehling's solution with heating
- 10) 2-methylbutan-2-ol + H<sub>2</sub>SO<sub>4</sub> / K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> refluxing
- 11) 2-methylbutanal + H<sub>2</sub>SO<sub>4</sub> / K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> with heating
- 12) 2-methylbutan-2-ol + hot conc H<sub>2</sub>SO<sub>4</sub>