

Solutions

Each answer shows the steps, then the **result**.

2.1

(a)

- a carboxylic acid

(b)

- a ketone

2.2

- orange to green

3.1 C

- Tertiary alcohols are not oxidised

3.2 B

- Distil off the aldehyde before it is further oxidised

3.3

(a)

- add acidified potassium dichromate(VI) and warm; the secondary alcohol turns it from orange to green (oxidised to a ketone); the tertiary alcohol leaves it orange (not oxidised)

(b)

- pass the ethanol vapour over hot Al_2O_3 (or heat with concentrated sulfuric/phosphoric acid)

3.4

- the alkyl group pushes electron density onto the oxygen, making the ethoxide ion (RO^-) less stable than OH^- , so ethanol holds its H^+ more tightly — weaker acid