

Question 22 (6 marks)

A student prepared the compound methyl propanoate in a school laboratory.

- (a) Give a common use for the class of compounds to which methyl propanoate belongs. 1

Perfume smells. Esters release a
smells which are used in make perfumes.

- (b) In the preparation of this compound a few drops of concentrated sulfuric acid were added to the starting materials. The mixture was then refluxed for a period of time. 2

Why was it necessary to reflux the mixture?

Reflux occurs when a mixture is heated in
with a cooling condenser attached to it
vertically. This allows volatile components
of the mixture to travel up the column,
cool and condense, then flow back into the mixture
this reduces the risk of losing any raw materials
when heated.

- (c) Name the TWO reactants used in preparing the methyl propanoate and draw their structural formulae.

Methyl Propanoate ~~CH₃CH₂COOCH₃~~

Methanol + Propanoic Acid \rightleftharpoons Methyl propanoate + water

