

alcohol - $C_n H_{2n+1}$

~~propanoic acid~~

Question 22 (6 marks)

~~methanol~~

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

A common use of methyl propanoate would be in the esterification process.

- (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?

When adding the concentrated sulfuric acid esters are formed. Reflux allows an easier separation of the ester to the solution that it is initially in.

- (c) Name the TWO reactants used in preparing the methyl propanoate and draw their structural formulae. 3

~~methanol~~
methanol propanoic acid

$$\begin{array}{c} \text{C} \text{H} \text{O} \text{H} \\ | \\ \text{H} \\ | \\ \text{C} - \text{O} - \text{H} \end{array}$$

$$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H} - \text{C} - \text{C} - \text{C} = \text{O} \\ | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{O} - \text{H} \end{array}$$