

**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

Esters such as methyl propanoate  
are used in 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 occurred because of the  
use of volatile reagents in esterification.  
As the reagent <sup>become</sup> vapour readily, refluxing  
force the vapour back into the reaction  
mixture to allow heating to continue for a long time.

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

propanoic acid

