Worksheet 10.3

Alcohols

1 When ethanol vapour is passed over heated aluminium oxide, a dehydration reaction takes place and ethene gas is formed.

a Write the equation for this reaction using the structural formulae.

b What is meant by a **dehydration reaction**?

.....

c Draw a diagram of suitable apparatus for carrying out this reaction in the lab.

d In industry, ethanol can be made by a reaction which is the reverse of the one above. Ethene and steam are reacted together in the presence of phosphoric acid at high temperature and pressure.

i Write the equation for this reaction.

.....

ii What type of reaction is this?

.....

iii What is the function of the phosphoric acid?

.....

e The ethanol produced by the method in **d** is pure but the method is expensive.

i What alternative method is available for the large-scale production of ethanol?

……

ii Give **one** advantage (other than cost) and **one** disadvantage of this method compared with the method in **d**.

……

……

2 **a** Ethanol is a member of a homologous series.

i Which homologous series is ethanol a member of? ……..

ii What is the general formula of the series? ……..

iii What is the functional group of the series? ……..

b There are two isomers of the alcohol propanol.

i What is the molecular formula of propanol? ……..

ii Draw the **two** structural formulae of the isomers of propanol, and give their names.