Alcohols and carboxylic acids

Edexcel GCSE Chemistry (1CH0) · Foundation and Higher

Answer on your own paper. Show your working where needed.

1. Identify the functional groups

Sort CH_3CH_2OH, $HCOOH$, $CH_3CH_2CH_3$ and CH_3CH_2COOH into alcohol, carboxylic acid or neither. Underline the characteristic group in each alcohol and acid.

2. Recognising an alcohol series

Name CH_3OH and $CH_3CH_2CH_2OH$. State how the molecular formula changes from one member of the alcohol series to the next.

3. Changing a functional group

Ethanol can be converted to ethanoic acid. Name the type of reaction. Use the same change to predict the name and condensed structural formula of the product from butan-1-ol.

4. Testing ethanoic acid

A pupil adds calcium carbonate to ethanoic acid. State what they would see and give a test and expected result for the gas produced.

5. Yeast in a sugar solution

A pupil adds yeast to an aqueous glucose solution. In warm conditions with very little oxygen, ethanol and a gas form. Name the process and the gas. Explain why adding yeast helps.

6. Separating a mixture

Fermentation gives a mixture of ethanol and water. Ethanol boils at 78 °C and water at 100 °C at the same pressure. Name a method for collecting an ethanol-rich liquid. Explain how the mixture and the selected component behave during the process.

7. A different reaction of ethanol

Ethanol can lose a molecule of water to form a product. Name the type of reaction and draw the displayed formula of the organic product. Show all its covalent bonds.

8. Higher · acids at the same concentration

Ethanoic acid and hydrochloric acid solutions have the same concentration. Which has the higher pH? Explain your choice in terms of particles in solution.

9. Extra challenge · Choose between two reaction routes

Lab records say an ethanol sample was either oxidised or dehydrated. Trial A gives a liquid that fizzes with sodium carbonate. Trial B gives a gas that turns orange bromine water colourless.

Assign a route to each trial. Name each organic product and draw its displayed formula.

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