

Alcohols

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Give the formula and relative formula mass of propanol. (C = 12, H = 1, O = 16) (2 marks)

Step 1 · Formula

Three carbons, with the -OH group: C₃H₇OH

Step 2 · M_r

$$3 \times 12 + 8 \times 1 + 16 = 36 + 8 + 16 = 60$$

Answer: C₃H₇OH; 60

Check: Count all 8 hydrogen atoms, including the one in -OH.

2. Now try one with the steps

Describe what you would see when a small piece of sodium is added to ethanol and name the gas. (2 marks)

Step 1 · Observation

Step 2 · Gas

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Give the functional group of the alcohols. [1]

2. Name the alcohol with formula CH₃OH. [1]

3. Write the formula of propanol. [1]

4. Calculate the relative formula mass of ethanol, C₂H₅OH. (C = 12, H = 1, O = 16) [1]

5. State the pH of a solution of ethanol in water. [1]

6. Give two uses of alcohols. [2]

7. Name the two products when sodium reacts with ethanol. [2]

8. Write a balanced equation for the complete combustion of ethanol. [2]

9. Describe the conditions needed to make ethanol by fermentation. [3]

10. Explain why fermentation is not carried out above about 40 °C. [1]

11. Name the product formed when ethanol is oxidised, for example by an oxidising agent or by microbes in air. [1]

12. Write a balanced equation for the complete combustion of methanol, CH₃OH. [2]

13. Calculate the maximum mass, in g, of ethanol made by fermenting 90 g of glucose. C₆H₁₂O₆ → 2C₂H₅OH + 2CO₂ (C = 12, H = 1, O = 16) [3]

14. Compare making ethanol by fermentation with making it by hydration of ethene.

[4]

4. Before you hand it in

"Ethanol is a base because it contains OH."

Alcohol solutions are neutral, pH 7.

Writing ethanol $\text{C}_2\text{H}_5\text{OH}$ without showing -OH

Write $\text{C}_2\text{H}_5\text{OH}$ (or $\text{CH}_3\text{CH}_2\text{OH}$) so the -OH is visible.

"Fermentation needs oxygen."

Fermentation is done without air; air lets microbes oxidise ethanol to ethanoic acid.