

Alcohols, Carboxylic Acids and Esters

Question Paper

Level	GCSE
Subject	Chemistry
Exam Board	AQA
Unit	C3
Topic	Alcohols, Carboxylic Acids and Esters
Difficulty Level	Silver Level
Booklet	Question Paper

Time Allowed: 26 minutes

Score: /26

Percentage: /100

Q1. This question is about organic compounds.

- (a) Ethanol is an alcohol.
One use of ethanol is in alcoholic drinks.

Give **two** other uses of ethanol.

.....
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(2)

- (b) Which gas is produced when sodium reacts with ethanol?

Tick (✓) **one** box.

Carbon dioxide

Carbon monoxide

Hydrogen

Oxygen

(1)

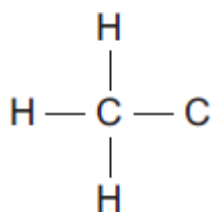
- (c) Ethanoic acid (CH_3COOH) can be produced from ethanol ($\text{CH}_3\text{CH}_2\text{OH}$).

- (i) What type of reaction produces ethanoic acid from ethanol?

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(1)

- (ii) Complete the displayed structure of ethanoic acid.



(1)

- (iii) Solutions of ethanoic acid and hydrochloric acid with the same concentration have different pH values.

Explain why the solution of ethanoic acid has a higher pH than the solution of hydrochloric acid.

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(2)

- (d) Ethanol and ethanoic acid react in the presence of a catalyst to form an ester.

- (i) Name the ester made from ethanol and ethanoic acid.

.....

(1)

- (ii) What type of chemical is used as a catalyst in this reaction?

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(1)

- (iii) Esters are used in perfumes because they smell pleasant and are volatile.

What does volatile mean?

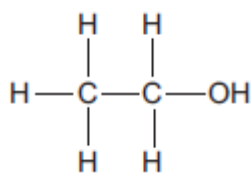
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(Total 10 marks)

- Q2.(a) The structure of an alcohol is shown in **Figure 1**.

Figure 1



(i) Draw a circle around the functional group in the structure of the alcohol. (1)

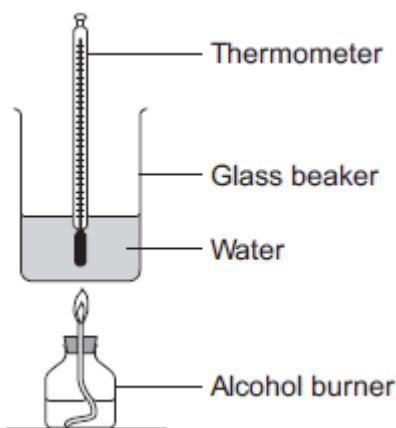
(ii) What is the chemical name of this alcohol?
..... (1)

(b) Alcohols are used as fuels.

A student plans an experiment to find the energy released per gram of alcohol burned.

The student uses the apparatus shown in **Figure 2**.

Figure 2



(i) Suggest **two** ways that this apparatus could be improved to obtain accurate results.

.....
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(2)

- (ii) **In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.**

Describe how the student should do this experiment.

You should include any measurements the student should make.

Do **not** describe any improvements to the apparatus.

Do **not** describe how to do any calculations.

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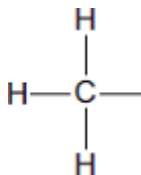
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(Total 10 marks)

Q3. This question is about organic compounds.

(a) Wine contains ethanol ($\text{CH}_3\text{CH}_2\text{OH}$).

(i) Complete the displayed structure of ethanol.



(1)

(ii) Wine left in a glass for several days turns sour.
The sour taste is caused by ethanoic acid.



Complete the sentences.

The ethanoic acid is produced from a reaction between ethanol
and

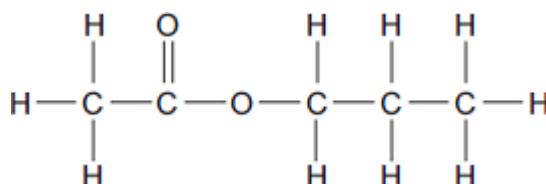
This type of reaction is

(2)

(b) Propyl ethanoate, a fragrance, can be produced by reacting ethanoic acid with an alcohol.

Propyl ethanoate is a member of a series of organic compounds. The members of the series all have the same functional group.

The displayed structure of propyl ethanoate is:



(i) Draw a ring around the functional group for this series on the displayed structure of propyl ethanoate.

(1)

(ii) Name the series of organic compounds with this functional group.

.....

(1)

(iii) The alcohol used to make propyl ethanoate has the formula $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

Name this alcohol.

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(1)

(Total 6 marks)