AQA GCSE Chemistry

Organic chemistry · Foundation tier

Questions only

The newest questions on the Foundation papers, about an hour. All 10 are in the exam generator.

Questions	Total marks	Time allowed
5	**54**	**57 min**

Name _____ Class or teacher _____ Date _____

Instructions

- Answer all questions in the spaces provided.
- Use black ink. Show your working for every calculation.
- You may use a scientific calculator and the periodic table insert.
- Print the separate mark scheme when you are ready to mark your answers.

For marking

Q	Source	Marks	Score
1	2023 P2F Q2	12	
2	2024 P2F Q1	12	
3	2024 P2F Q6	9	
4	2025 P2F Q2	12	
5	2025 P2F Q9 / P2H Q2	9	

Total _____ / 54 **Percentage** _____ %

Questions from AQA GCSE past papers, 2023–2025, reproduced for revision. Practise these topics online, with instant marking:
`whiteboardchemistry.com/revision/gcse-chemistry/exam-questions?topics=c7-organic-chemistry&demand=low,standard&len=0`

Questions

Organic chemistry · Foundation tier · 5 questions · 54 marks · time allowed 57 min

Q1 · June 2023 · Paper 2 Foundation · Q2 · [12 marks]

This question also needs Atomic structure and the periodic table and Using resources.

This question is about glass and polymers.

Beakers can be made from borosilicate glass or poly(propene).

Table 1 shows information about materials used to make beakers.

Table 1

	Material used to make beakers	
	borosilicate glass	**poly(propene)**
Temperature at which melting begins in °C	850	160
Flammability	does not burn	burns
Resistance to impact	shatters	tough
Cost of 100 cm^3 beaker in £	1.50	2.00

02.1 Suggest **two** reasons why a Bunsen burner should **not** be used to heat a liquid in a poly(propene) beaker.

Use Table 1.

[2 marks]

1

2

02.2 Poly(propene) beakers are more expensive than borosilicate glass beakers.

Suggest **one** reason why using poly(propene) beakers instead of borosilicate glass beakers could save money.

Use Table 1.

[1 mark]

02.3 Which is a raw material used to make borosilicate glass?

Tick (✓) **one** box.

Boron trioxide	☐
Clay	☐
Limestone	☐

[1 mark]

02.4 Poly(propene) is produced from propene.

The displayed structural formula of propene is:

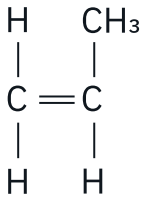


Table 2 shows some information about the elements in one molecule of propene.

Table 2

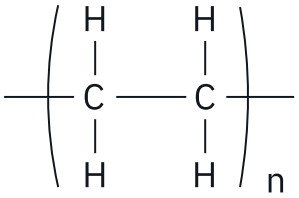
Symbol for element	Name of element	Number of atoms of element in one molecule of propene
C		
H		

Complete Table 2.

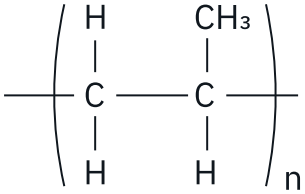
[2 marks]

02.5 Which structure is the repeating unit of poly(propene)?

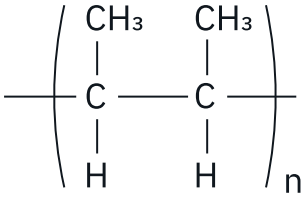
Tick (✓) **one** box.



☐



☐



☐

[1 mark]

02.6 Poly(propene) is produced in three stages:

- Stage 1: separating large alkane molecules from crude oil
- Stage 2: producing propene molecules from large alkane molecules
- Stage 3: joining many propene molecules together.

Name Stage 1, Stage 2 and Stage 3.

Choose answers from the box.

cracking	**fermentation**	**fractional distillation**
polymerisation	reverse osmosis	

Stage 1 is _____ .

Stage 2 is _____ .

Stage 3 is _____ .

[3 marks]

02.7 A molecule of hexene contains a double carbon–carbon bond.

Many hexene molecules join together to form poly(hexene).

Which **two** words describe a hexene molecule in this process?

Tick (✓) **two** boxes.

Alkene	☐
Catalyst	☐
Composite	☐
Element	☐
Monomer	☐

[2 marks]

Q2 · June 2024 · Paper 2 Foundation · Q1 · [12 marks]

This question also needs Atomic structure and the periodic table and Chemistry of the atmosphere.

This question is about hydrocarbons.

A hydrocarbon has the formula C_6H_{14}

01.1 Name the **two** elements in a hydrocarbon.

[2 marks]

1

2

01.2 How many atoms are there in one molecule of C_6H_{14}?

Tick (✓) **one** box.

2	☐
6	☐
14	☐
20	☐

[1 mark]

01.3 C_6H_{14} is a member of a homologous series.

What is the general formula for the homologous series that contains C_6H_{14}?

Tick (✓) **one** box.

C_nH_{2n-2}	☐
C_nH_{2n}	☐
C_nH_{2n+2}	☐

[1 mark]

01.4 Which homologous series has C_6H_{14} as a member?

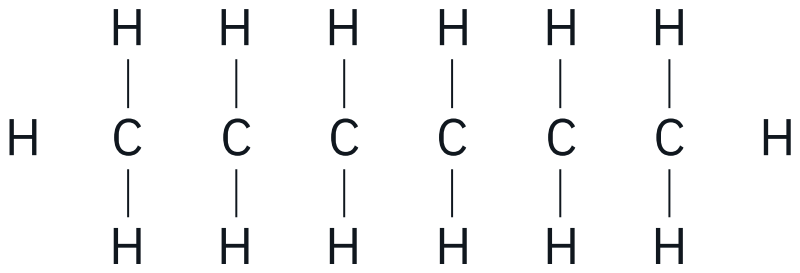
Tick (✓) **one** box.

Alcohols	☐
Alkanes	☐
Alkenes	☐
Carboxylic acids	☐

[1 mark]

01.5 Complete Figure 1 to show the displayed structural formula of C_6H_{14}

Figure 1



[1 mark]

Draw your answer on the figure above.

01.6 Petrol contains C_6H_{14}

Petrol is burned in car engines.

What general name is used to describe petrol when petrol is burned to release energy?

[1 mark]

01.7 Atmospheric pollutants are formed when C_6H_{14} undergoes incomplete combustion.

Complete the sentences.

Choose answers from the box.

[2 marks]

ammonia carbon monoxide coal

soot sulfur sulfur dioxide

The solid atmospheric pollutant formed during incomplete combustion of C_6H_{14} is _____ .

The gaseous atmospheric pollutant formed during incomplete combustion of C_6H_{14} is _____ .

01.8 A different organic compound ($C_{12}H_{26}$) can be broken down to produce C_6H_{14} and one other compound.

Complete the equation for the reaction.

$C_{12}H_{26} \rightarrow C_6H_{14} + C_____H_____$

[1 mark]

01.9 The percentage by mass of each element in C_6H_{14} is:

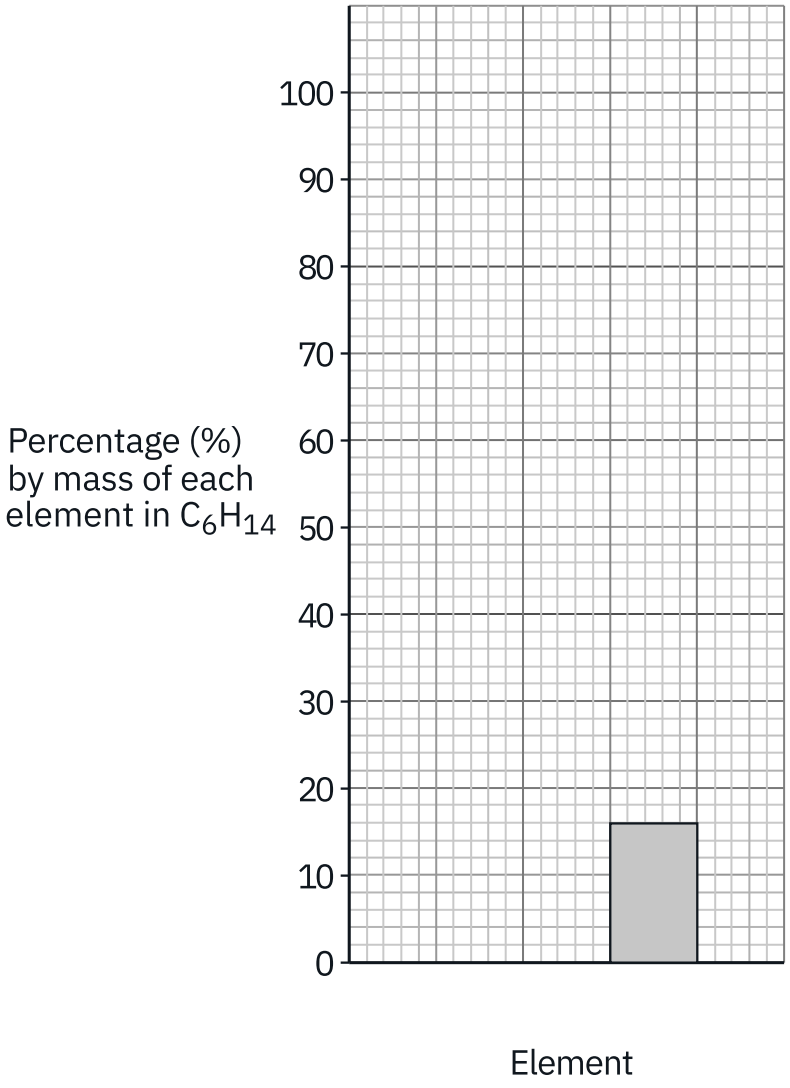
- 84% C
- 16% H

Complete Figure 2.

You should:

- label each element on the x-axis
- plot the percentage by mass of C in C_6H_{14}

Figure 2



[2 marks]

Draw your answer on the figure above.

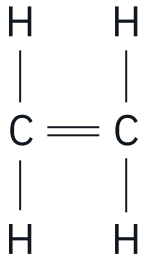
Q3 · June 2024 · Paper 2 Foundation · Q6 · [9 marks]

This question also needs Chemical analysis and Using resources.

This question is about addition reactions.

Figure 7 shows the displayed structural formula of ethene.

Figure 7



06.1 Complete the sentence.

When bromine water is added to ethene, the bromine water changes from orange to

.

[1 mark]

06.2 Chlorine reacts with ethene.

What is used to identify chlorine?

Tick (✓) **one** box.

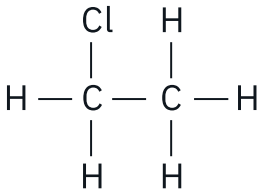
A lighted splint	☐
Damp litmus paper	☐
Limewater	☐

[1 mark]

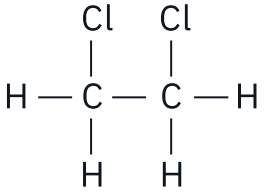
06.3 Which of the following shows the displayed structural formula of the compound produced when chlorine reacts with ethene?

Use Figure 7.

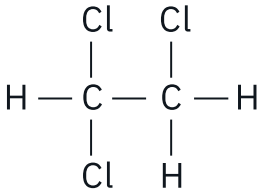
Tick (✓) **one** box.



☐



☐

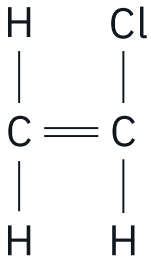


☐

[1 mark]

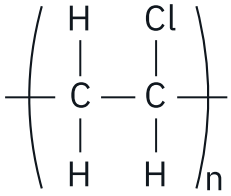
06.4 Chloroethene can be used to produce a polymer called poly(chloroethene).

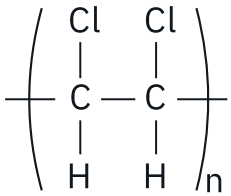
The displayed structural formula of chloroethene is

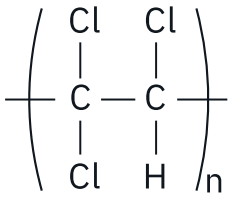


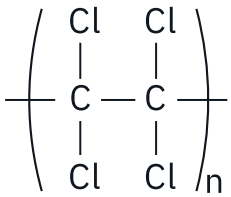
Which represents the structure of poly(chloroethene)?

Tick (✓) **one** box.

 ☐

 ☐

 ☐

 ☐

[1 mark]

06.5 Ethene can be used to produce another polymer called poly(ethene).

Table 3 shows information about poly(chloroethene) and poly(ethene).

Table 3

	Poly(chloroethene)	**Poly(ethene)**
Density in g/cm^3	1.5	0.9
Temperature at which polymer completely melts in °C	260	120

Determine the simplest whole number ratio of the density of poly(chloroethene) : density of poly(ethene).

Simplest whole number ratio = _____ : _____

[3 marks]

06.6 Poly(ethene) **and** poly(chloroethene) can both be used to make pipes.

Suggest why neither polymer is suitable for pipes carrying steam at a temperature of 300 °C.

Use Table 3.

[1 mark]

06.7 Poly(ethene) and paper can both be used to make shopping bags.

Poly(ethene) is produced from crude oil. Paper is produced from trees.

Suggest **one** reason why paper is more sustainable than poly(ethene) for making shopping bags.

[1 mark]

Q4 · June 2025 · Paper 2 Foundation · Q2 · [12 marks]

This question also needs Atomic structure and the periodic table and The rate and extent of chemical change.

Alkanes and alkenes are hydrocarbons.

Hydrocarbon molecules are made up of hydrogen and carbon atoms only.

An alkene has the formula C_3H_6

02.1 Which alkene has the formula C_3H_6?

Tick (✓) **one** box.

Butene	☐
Ethene	☐
Propene	☐

[1 mark]

02.2 How many atoms are there in a molecule of C_3H_6?

Tick (✓) **one** box.

2	☐
3	☐
6	☐
9	☐

[1 mark]

02.3 Which is a use of C_3H_6?

Tick (✓) **one** box.

Making a polymer	☐
Making ammonia	☐
Making glass	☐

[1 mark]

02.4 The percentage (%) by mass of each element in a molecule of C_3H_6 is:

- hydrogen 14%
- carbon 86%.

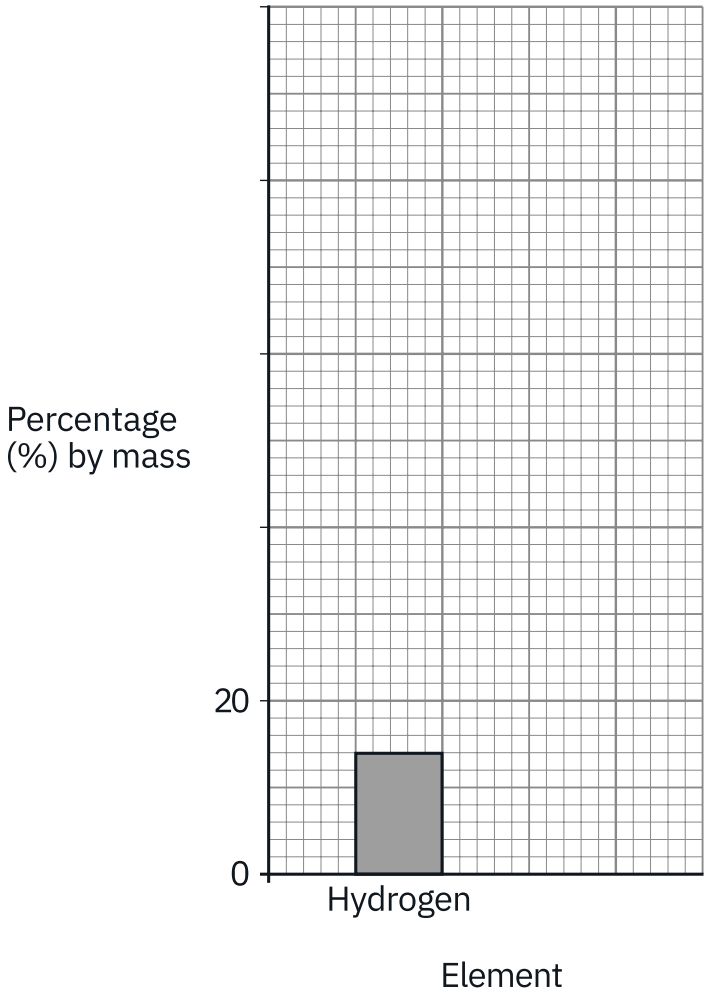
Figure 1 shows the percentage by mass of hydrogen in a molecule of C_3H_6

Complete Figure 1.

You should:

- complete the y-axis scale
- plot the percentage by mass of carbon as a bar
- label the bar plotted for carbon.

Figure 1



[3 marks]

Draw your answer on the figure above.

02.5 Alkanes can be cracked to produce alkenes and smaller alkane molecules.

Describe a test for alkenes.

Give the result of the test.

[2 marks]

Test

Result

02.6 $C_{10}H_{22}$ can be cracked to produce C_3H_6 and an alkane.

Complete the equation for the reaction.

$C_{10}H_{22} \rightarrow C_3H_6 + C_____H_{16}$

[1 mark]

02.7 Complete the sentence.

Choose the answer from the box.

ceramics fertilisers fuels

Smaller alkanes from cracking are useful as _____ .

[1 mark]

02.8 High temperatures between 450 °C and 750 °C are used in cracking reactions.

Which statement describes the molecules at 750 °C compared with the molecules at 450 °C?

Tick (✓) **one** box.

The molecules collide more frequently at 750 °C.	☐
The molecules have less energy at 750 °C.	☐
The molecules move more slowly at 750 °C.	☐

[1 mark]

02.9 How does the rate of reaction at 750 °C compare with the rate of reaction at 450 °C?

[1 mark]

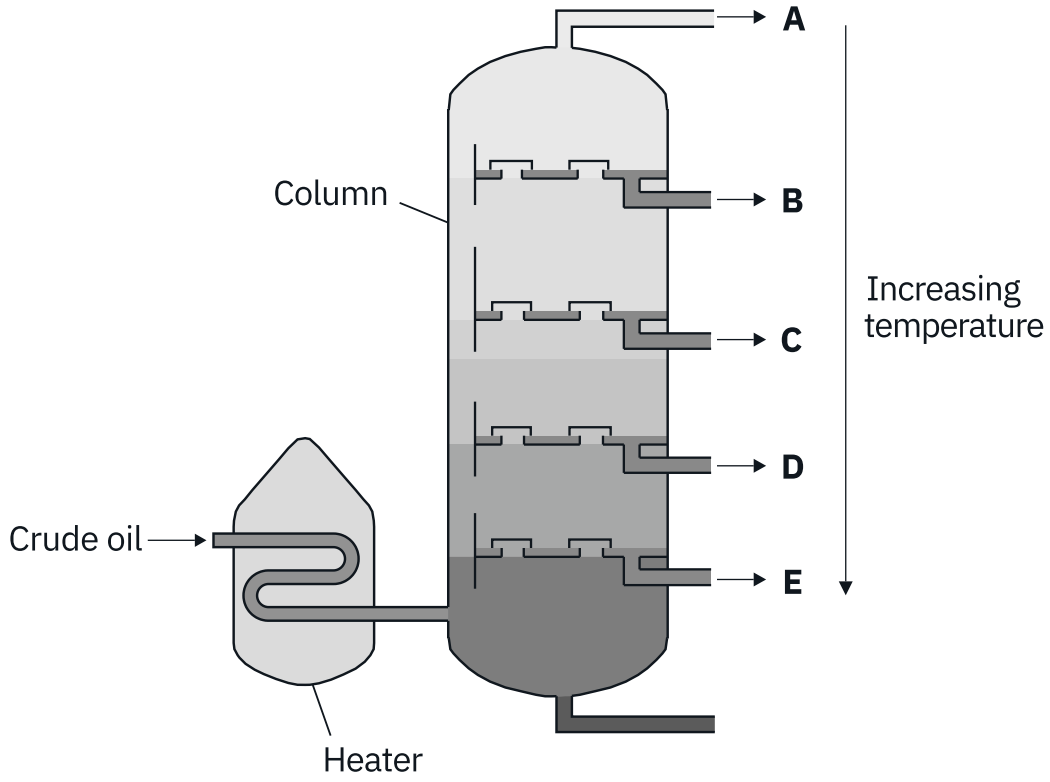
Q5 · June 2025 · Paper 2 Foundation · Q9 · Paper 2 Higher · Q2 · [9 marks]

This question also needs Atomic structure and the periodic table, Bonding, structure, and the properties of matter and Quantitative chemistry.

This question is about hydrocarbon fuels.

Figure 7 represents the process used to separate hydrocarbon fuels from crude oil.

Figure 7



09.1 Name the process represented by Figure 7.

[1 mark]

09.2 Changes of state take place during the process in Figure 7.

Name the change of state taking place in:

- the heater
- the column.

[2 marks]

Heater

Column

09.3 Different fuels are obtained from crude oil at the points on Figure 7 labelled A to E.

Table 4 shows the boiling point ranges of different fuels obtained from the process in Figure 7.

Table 4

Fuel	Boiling point range in °C
Diesel oil	260 – 320
Heavy fuel oil	320 – 400
Kerosene	180 – 260
Petrol	40 – 110
Petroleum gases	Below 30

Which fuel is obtained at B in the column?

Use Figure 7 and Table 4.

[1 mark]

09.4 Fuels with higher boiling point ranges contain larger molecules.

What is the order of increasing flammability of the fuels?

Use Table 4.

Tick (✓) **one** box.

Heavy fuel oil → diesel oil → kerosene	☐
Heavy fuel oil → kerosene → diesel oil	☐
Kerosene → diesel oil → heavy fuel oil	☐
Kerosene → heavy fuel oil → diesel oil	☐

[1 mark]

09.5 Liquified petroleum gases are a mixture of several different hydrocarbons.

Figure 8 shows a model of one of these hydrocarbons.

Figure 8



Write the molecular formula of the hydrocarbon represented by the model in Figure 8.

[1 mark]

09.6 Name the hydrocarbon represented by the model in Figure 8.

[1 mark]

09.7 Petroleum gases also contain a hydrocarbon with the formula C_3H_8

Balance the equation for the complete combustion of C_3H_8

$C_3H_8 + 5O_2 \rightarrow$ _____ CO_2 + _____ H_2O

[2 marks]

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