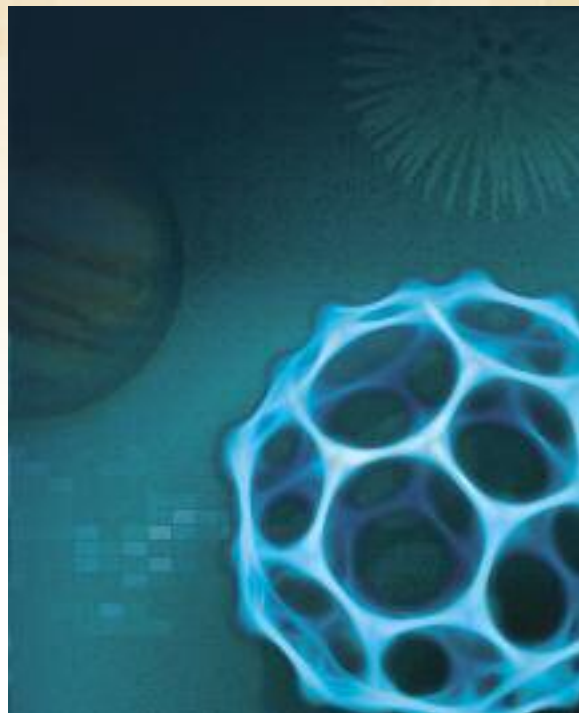


# Welcome



**We are delighted to introduce you to the sample assessment materials for our new GCSEs in Science 2011. At the front of this publication, we have supplied a handy guide containing annotated pages from the accredited Chemistry sample assessment materials that provide you with explanations and insights into their content and structure.**

This introduction is then followed by the accredited sample assessment materials. These sample assessment materials should be used as follows:

- For GCSE Science, use C1
- For GCSE Additional Science, use C2
- For GCSE Chemistry, use C1, C2 and C3.

These materials have been combined with our accredited specifications and sample controlled assessment materials, plus a selection of valuable support materials, to provide you with our Enhanced Specifications Pack. Together, these items have been created to provide you with the information you need to prepare, teach and assess our exciting new qualifications.

Our team of experts are on hand to discuss any questions you may have about the information contained in this pack. You can contact our Science Subject Advisor team, led by Stephen Nugus by calling **0844 372 2188**, or emailing **ScienceSubjectAdvisor@edexcelexperts.co.uk**



# Supporting science, supporting you

The following section contains annotated pages showing extracts from our accredited Chemistry sample assessment materials to help you see quickly and easily how we've made our assessment to understand.

## Clearer papers: designed to support achievement

We carefully design our papers so that all students will find them clear and accessible:

**More readable text**  
so students understand exactly what to do

**Ramp within questions**  
to encourage engagement with each question

**Ramp within papers**  
so all get off to a good start

**Clearer topic focus**  
so there are no surprises

**Better layout**  
for clarity and understanding

**Designed to help your students do as well as they can**

Write your name here

Surname	Other names
Centre Number	Candidate Number
<b>Edexcel GCSE</b>	
<b>Chemistry/Science</b>	
<b>Unit C1: Chemistry in our World</b>	
<b>Foundation Tier</b>	
<b>Sample Assessment Material</b>	Paper Reference
<b>Time: 1 hour</b>	<b>5CH1F/01</b>
<b>You do not need any other materials.</b>	Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

### Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed  
– *you should take particular care with your spelling, punctuation and grammar, as well as the clarity of expression, on these questions.*

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

#### The Examiner explains

This part of the rubric shows candidates how to answer multiple-choice questions.

#### The Examiner explains

Helping the students plan their time is particularly worthwhile.

#### The Examiner explains

The marking of extended writing questions includes aspects of quality of written communication.

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Edexcel GCSE in Chemistry

Sample Assessment Materials

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Turn over ►

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5

### Metals from the Earth

2 Most metals occur in compounds in the Earth's crust. Gold, however, is found uncombined and can be made into jewellery and coins.

- (a) Some gold coins were dug up from the ground.  
They were very old but still shiny.



Rob Bartee / Alamy

- (i) State why the gold coins were still shiny. (1)

- (ii) Suggest another property of gold which makes it suitable for use in coins. (1)

(b) Iron is found as iron oxide in the Earth's crust.

Iron oxide is heated with carbon to form iron.  
In this reaction, oxygen is removed from the iron oxide.

Complete the sentence by putting a cross (X) in the box next to your answer.

The iron oxide is

- A distilled  
 B neutralised  
 C oxidised  
 D reduced

8

Edexcel GCSE in Chemistry

Sample Assessment Materials

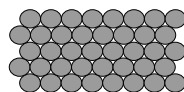
The Examiner explains

The introductory stimulus material will lead students into the question.

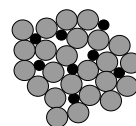
(c) Aluminium, rather than steel, is used to make cans for drinks.

Explain how the properties of aluminium help to reduce transport costs when delivering the cans to shops. (2)

(d) The diagrams show models of the structures of pure aluminium and an alloy of aluminium.



aluminium



alloy of aluminium

Use the diagrams to help you explain why alloys of aluminium are stronger than pure aluminium. (2)

### Fuels

4 There are many different types of fuel.

(a) Many cars use petrol as their fuel.

(i) Petrol is obtained from crude oil.

What is the name of the process used to obtain petrol from crude oil?

Put a cross (X) in the box next to your answer.

- A combustion  
 B cracking  
 C fractional distillation  
 D oxidation

(ii) Petrol is a mixture of liquids with low boiling points.  
The word equation for the complete combustion of petrol is



Use this information to help you explain why petrol is a good fuel.

(1)

(2)

#### The Examiner explains

Note that this question is ramped – all students can get some early marks, but the final parts of the question have slightly increased levels of difficulty.

(b) Burning fuels produces substances that pollute the atmosphere. The photograph shows some trees that have been affected by polluted air.



Simon Fraser/Science Photo Library

(i) What has caused these trees to be damaged?

(1)

(ii) Explain how burning fuels, such as petrol, leads to this atmospheric pollution.

(2)

(c) Biofuels can be used instead of petrol as a fuel in cars.

(i) Ethanol produced from plants is a biofuel.  
Name a plant that is used to produce ethanol.

(1)

(ii) Explain the advantages of using biofuels instead of petrol.

(2)

**(Total for Question 4 = 9 marks)**

### Methane

5 Bunsen burners in chemistry laboratories use natural gas as their fuel. Natural gas contains methane.

(a) Natural gas is a non-renewable, fossil fuel.

Complete the sentence by putting a cross (X) in the box next to your answer.

One other non-renewable fossil fuel is

(1)

- A wood
- B vegetable oil
- C kerosene
- D biodiesel

(b) The formula of methane is CH<sub>4</sub>.

Name the **two** elements which are present in a molecule of methane.

(2)

1 .....

2 .....

(c) When methane is burnt, one of the products is carbon dioxide.

Describe the test to show that this gas is carbon dioxide.

(2)

.....

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.....

.....

**Examiner's teaching tip**  
Extended writing questions also assess quality of written communication.

\*(d) Fuels used in gas fires contain methane.

The complete combustion of methane produces carbon dioxide and water. In faulty gas fires, incomplete combustion of methane can take place.

Discuss the problems that can be caused by both the complete and incomplete combustion of methane in a gas fire.

(6)

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**(Total for Question 5 = 11 marks)**

**The Examiner explains**

The expected answer has been given in the answer column. Alternative answers may also be acceptable. Some of these are also given.

## Sample Mark Scheme

### Unit C1F: Chemistry in our World

Question Number	Answer	Mark
1(a)	C	(1)

Question Number	Answer	Mark
1(b)	oxygen	(1)

Question Number	Answer	Mark
1(c)(i)	B	(1)

Question Number	Answer	Acceptable answers	Mark
1(c)(ii)	an explanation linking the following:  (amount of carbon dioxide) is reduced (1)  (because) carbon dioxide dissolves (into the seawater)(1)		(2)

Question Number	Answer	Mark
1(d)(i)	electrolysis	(1)

Question Number	Answer	Acceptable answers	Mark
1(d)(ii)	an explanation linking the following:  chlorine gas is toxic (1)  (so) you (ventilate to) avoid breathing it in (1)		(2)

Question Number	Answer	Mark
3(a)	an explanation linking the following:  contains fossils (1)  (therefore) the rock is sedimentary (1)	(2)

Question Number	Answer	Mark
3(b)	glass / cement / concrete	(1)

Question Number	Answer	Mark
3(c)	a description including the following in a logical order: heat (1) and pressure (1) (acts on rock) over a very long time (1)	(3)

Question Number	Answer	Mark
3(d)	A	(1)

Question Number	Answer	Acceptable answers	Mark
3(e)(i)	calcium carbonate → calcium oxide + carbon dioxide	accept correct formulae	(1)

Question Number	Answer	Mark
3(e)(ii)	thermal decomposition	(1)

Question Number	Answer	Mark
3(f)	$10 - 5.6 = 4.4$ g	(1)

**The Examiner explains**

This box gives details of possible responses. This is guidance for the examiner and is not exhaustive.

Question Number	Answer	Mark
4(a)(i)	C	(1)

Question Number	Answer	Mark
4(a)(ii)	<p>an explanation linking a pair of the following:</p> <p>volatile/vaporises easily (1) (so) is easy to ignite (1)</p> <p>no solid waste/ash/smoke (1) (so) is convenient to use (1)</p> <p>releases lots of energy when burnt/ high energy content (1) (so) is easy to transport in useful amounts (1)</p> <p>note, other pairs of these points and explanations may be acceptable.</p>	(2)

Question Number	Answer	Mark
4(b)(i)	acid rain	(1)

Question Number	Answer	Acceptable answers	Mark
4(b)(ii)	<p>an explanation linking:</p> <p>sulfur in petrol combusts to form sulfur dioxide (1) (which) dissolves in rain/forms sulfuric acid in rain (1)</p>	produces carbon dioxide, leading to greenhouse effect is worth 1 mark	(2)

Question Number	Answer	Acceptable answers	Mark
4(c)(i)	sugar cane/beet	accept grapes, barley, potatoes or any suitable alternative	(1)

**The Examiner explains**

An 'Explain' question requires candidates to link ideas together.



**The Examiner explains**

Each level descriptor contains a QWC statement. This is used only to decide where in the level the work lies. It is the scientific content that determines the level.

Question Number	Indicative content	Mark
*5(d) QWC	a discussion including references to the following:  complete combustion: <ul style="list-style-type: none"> <li>• gives carbon dioxide</li> <li>• leads to global warming</li> </ul> incomplete combustion: <ul style="list-style-type: none"> <li>• carbon monoxide is formed</li> <li>• carbon monoxide is toxic/toxic gas formed</li> <li>• carbon monoxide combines with haemoglobin</li> <li>• oxygen cannot combine with haemoglobin</li> <li>• carbon monoxide is odourless/colourless</li> <li>• people are not aware of breathing it in</li> <li>• carbon (soot) blocks chimneys/aggravates asthma</li> <li>• may give out less energy.</li> </ul>	(6)
Level	0	no rewardable material
1	1-2	<ul style="list-style-type: none"> <li>• limited ideas about what happens when either completely or incompletely burnt</li> <li>• little development of the ideas (e.g. CO toxic but doesn't explain why)</li> <li>• use of everyday language and the response lacks clarity and organisation</li> <li>• spelling, punctuation and the rules of grammar are used with limited accuracy</li> </ul>
2	3-4	<ul style="list-style-type: none"> <li>• ideas about both complete and incomplete combustion but is not comprehensive</li> <li>• some understanding of the ideas</li> <li>• use of some scientific terms e.g. haemoglobin, global warming, and some focus and organisation</li> <li>• spelling, punctuation and the rules of grammar are used with some accuracy</li> </ul>
3	5-6	<ul style="list-style-type: none"> <li>• a comprehensive overview of problems with both complete and incomplete combustion</li> <li>• good understanding of the ideas e.g. explains why CO is toxic</li> <li>• use of range of scientific terms and good focus and organisation</li> <li>• spelling, punctuation and the rules of grammar are used with considerable accuracy</li> </ul>

**The Examiner explains**

These level descriptors are the likely features of students' work in each mark band.



# Make the most of your Edexcel Enhanced Specifications Pack

In addition to our sample assessment materials, your Enhanced Specifications Pack includes our accredited specifications and sample controlled assessment materials. These too have been produced with annotated introductions. We have also developed the following support materials, which provide valuable tools for your preparation, teaching and assessment of our exciting new specifications.



## Getting started guide

An at-a-glance introduction to our specifications. This guide shows you how easy it is to move to Edexcel, detailing the support available to help you do so. It also offers guidance on teaching each unit, providing suggestions for managing assessment and support with preparing students for extended writing and mathematics.



## Assessment guide

Developed to give you detailed support with managing assessment, the Assessment guide covers ways of scheduling and administering controlled assessment, including suggestions for making entries and choosing tiers. It provides information on ResultsPlus, our free results analysis service that provides unrivalled support with performance analysis, and includes a selection of exemplar answers to exam questions, with comments on how these should be assessed using our mark schemes.



## SupportPlus guide

Providing detailed support with planning and implementation of our specifications, our SupportPlus guide includes exemplar course plans, schemes of work and worksheets, all of which are ready-to-use, or available in editable format on our website.



## GCSE & BTEC Links guide

This guide details the support we provide to make it easy for your students to move between GCSE and BTEC, and choose the learning pathway to which they are best suited.

Now turn to your copy of our accredited Biology sample assessment materials