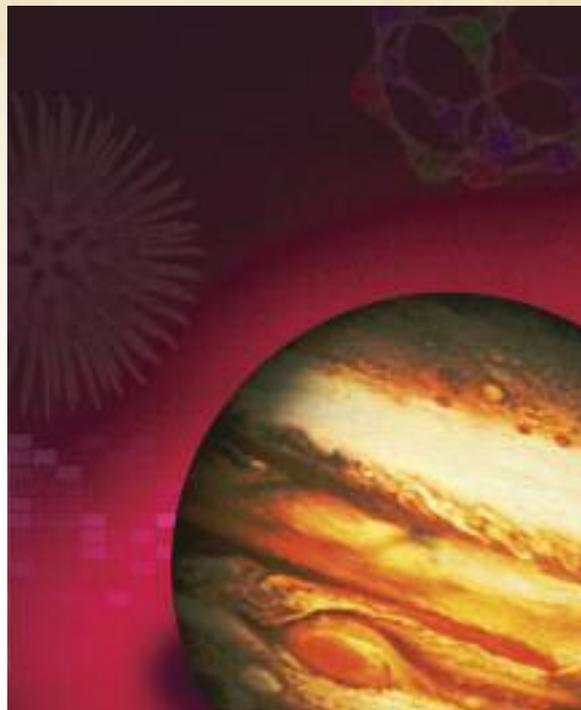


# Welcome



**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 Physics 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 P1
- For GCSE Additional Science, use P2
- For GCSE Physics, use P1, P2 and P3.

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 Biology 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				
[ ][ ][ ][ ][ ]					[ ][ ][ ][ ][ ]				

**Edexcel GCSE**

**Physics/Science**  
**Unit P1: Universal Physics**

**Foundation Tier**

<b>Sample Assessment Material</b>	Paper Reference
<b>Time: 1 hour</b>	<b>5PH1F/01</b>

**You do not need any other materials.**

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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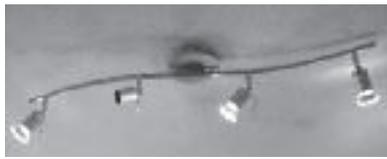
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Turn over ▶

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advancing learning, changing lives

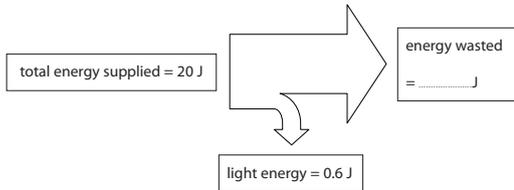
**Lighting in the home**

2 Geeta has a set of low-voltage spotlights in her kitchen.



(a) At the moment, Geeta uses halogen lamps.

The energy transfer in a halogen lamp can be shown by this diagram.



(i) Write the missing value in the right hand box.

(1)

(ii) 
$$\text{efficiency} = \frac{\text{useful energy transferred by the device}}{\text{total energy supplied to the device}} \times 100\%$$

Calculate the efficiency of the halogen lamp.

(2)

**The Examiner explains**  
The introductory stimulus material will lead students into the question.

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

When a lamp is operating, the electrical power input is

(1)

- A the same as the total heat and light power output from the lamp
- B more than the total heat and light power output from the lamp
- C less than the total heat and light power output from the lamp
- D the power of the heat output minus the power of the light output.

(c) Geeta needs to insert a new lamp.

Her local store has halogen lamps and LED cluster lamps. They would both fit and they give out the same amount of light.

The table shows how the two lamps compare.

	halogen lamp	LED cluster lamp
<b>Light source</b>	one hot filament	20 LEDs
<b>Power consumption</b>	20 W	4 W
<b>Expected life</b>	2 500 hours	50 000 hours
<b>Price</b>	£1.75	£6.20

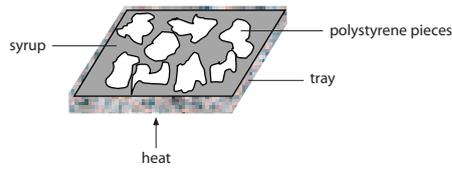
Shutterstock

(i) Explain why Geeta should choose the LED cluster lamp.

(2)

**Inside the Earth**

3 (a) Leroy made a model of the outermost layers of the Earth.



Leroy heated the syrup. The polystyrene pieces moved.  
Look at the diagram below.  
Draw a line from each part of the model to the part of Earth it represents.

(2)

**part of the model**

polystyrene

syrup

**part of the Earth**

core

mantle

ocean

plate

(b) Earthquakes can cause seismic waves in the Earth.  
P-waves are one type of seismic wave. P-waves are longitudinal.  
If a P-wave is moving from left to right, how do the particles in the wave move?  
Put a cross (X) in the box next to your answer.

(1)

A

B

C

D

**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.

(c) Scientists can use seismometers to detect and record seismic waves from earthquakes.

(i) 
$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

P-waves travel at 5 km/s.  
During a recent earthquake, a seismometer 120 km away detected the seismic waves.

Calculate the time, in seconds, it took before the P-wave reached the seismometer.

(2)

time = ..... s

(ii) Earthquakes also produce S-waves.  
S-waves travel more slowly than P-waves.

Describe how seismometer records of P-waves and S-waves can be used to work out where an earthquake happened.

(3)

.....

.....

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(d) Many lives might be saved if we could predict an earthquake happening.

Explain why, even with the use of seismometers, scientists still find it difficult to make accurate predictions.

(2)

.....

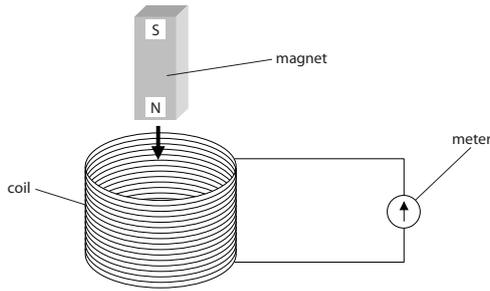
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**(Total for Question 3 = 10 marks)**

(b) Electricity is produced when a magnet moves near a coil of wire.  
Pedro set up an experiment like this.



Pedro let the magnet fall.  
The meter pointer turned to the right.  
Then it returned to the centre.

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

This showed that there was

- A an electromagnetic wave in the meter
- B an alternating current in the meter
- C an alternating voltage across the coil
- D an induced current in the coil

(1)

(ii) Pedro repeated the experiment with a stronger magnet.

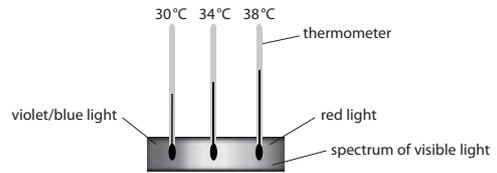
Describe how the reading on the meter would have changed.

(2)

**The Examiner explains**

Some questions in the exam may ask about practical scenarios. These will be based on the practicals embedded within the specification.

\*(b) The diagram shows three identical thermometers placed in a spectrum of visible light.



There is a pattern in the temperature readings shown in the diagram.

The scientist Herschel did a similar experiment and discovered the infrared part of the electromagnetic spectrum.

Describe how Herschel used the pattern to make his discovery.

(6)

**Examiner's teaching tip**

Extended writing questions also assess quality of written communication.

(Total for Question 5 = 12 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 P1: Universal Physics (Foundation Tier)

Question Number	Answer	Mark
1(a)(i)	D	(1)

Question Number	Answer	Mark
1(a)(ii)	B	(1)

Question Number	Answer	Acceptable answers	Mark
1(b)	0.5 × 3 (1) 1.5 (1) m/s (1)	accept Hz.m	(3)

Question Number	Answer	Mark
1(c)	a description including the following:  idea of oscillation/with the wave (1)  vertical direction only/moves up and down (1)	(2)

Question Number	Answer	Acceptable answers	Mark
1(d)	reflected	bounce	(1)

**The Examiner explains**

A 'Describe' question requires candidates to make statements in a logical order.

**The Examiner explains**

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

Question Number	Answer	Mark
2(a)(i)	19.4	(1)

Question Number	Answer	Mark
2(a)(ii)	0.6 ÷ 20 × 100 (1) 3 (%) (1)	(2)

Question Number	Answer	Mark
2(b)	A	(1)

Question Number	Answer	Acceptable answers	Mark
2(c)(i)	an explanation linking any pair of statements:  LED has lower power consumption (1) (so) would cost less to run (1)  LED does not use a filament (1) (so) would not get as hot (1)  LED has longer expected life (1) (so) would need replacing less often (1)  numerical comparison of life and cost of lamp (2)	uses less electricity (1)  wastes less energy (1)  lasts for more hours (1)  lasts 20 times longer but does not cost 20 times as much (1)	(2)

Question Number	Answer	Acceptable answers	Mark
2 (c)(ii)	an answer including the following:  number of hours (she expects the lamp to be used during the year) (1)  cost of 1 kW h (1)	how often she uses the light  cost of electricity  answers may be in either order	(2)

Question Number	Answer	Mark
3(a)	lines linking: polystyrene to plate syrup to mantle	(2)

Question Number	Answer	Mark
3(b)	B	(1)

Question Number	Answer	Mark
3(c)(i)	120 ÷ 5 (1) 24 (s) (1)	(2)

Question Number	Answer	Acceptable answers	Mark
3(c)(ii)	a description including the following in a logical order:  find out the difference between arrival times (of S and P waves) (1)  use tables/charts to find distance from seismometer (to epicentre)(1)  find places which fit in with distances from (at least three) seismometers (1)	examine record to find time(s) when wave(s) arrived(1)  use records from seismometers located at different places (1)	(3)

Question Number	Answer	Acceptable answers	Mark
3(d)	an explanation to include the following:  seismic waves only generated as/after the earthquake happens(1)  (so) can only record/measure after earthquake has happened (1)	answers may combine two ideas in one sentence; for example:  only record the waves from the earthquake once it has happened and then it is too late  would be worth 2 marks	(2)

**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>

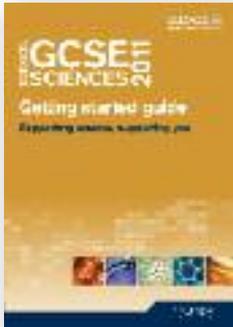
**The Examiner explains**

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



# Make the most of your Edexcel Enhanced Specifications Pack

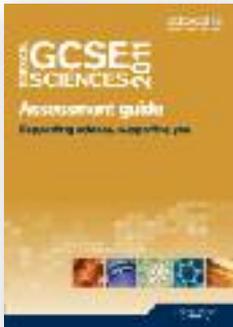
In addition to our sample assessment materials, your Enhanced Specifications Pack includes our accredited specifications and sample controlled assessment materials. These too have been produced with annotated introductions. We have also developed the following support materials, which provide valuable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



## Getting started guide

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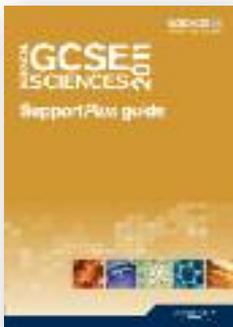
An at-a-glance introduction to our specifications. This guide shows you how easy it is to move to Edexcel, detailing the support available to help you do so. It also offers guidance on teaching each unit, providing suggestions for managing assessment and support with preparing students for extended writing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



## Assessment guide

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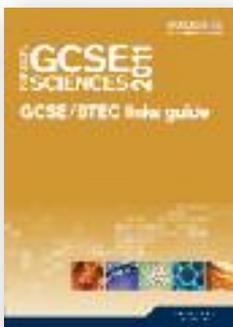
Developed to give you detailed support with managing assessment, the Assessment guide covers ways of scheduling and administering controlled assessment, including suggestions for making entries and choosing tiers. It provides information on ResultsPlus, our free results analysis service that provides 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

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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

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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