

# 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 Biology 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 B1
- For GCSE Additional Science, use B2
- For GCSE Biology, use B1, B2 and B3.

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**

**Biology/Science**  
**Unit B1: Influences on Life**

**Foundation Tier**

<b>Sample Assessment Material</b>	Paper Reference
<b>Time: 1 hour</b>	<b>5BI1F/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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Turn over ▶

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**Cystic fibrosis**

2 About 8 000 people in the UK have the genetic condition called cystic fibrosis. People with cystic fibrosis may take tablets daily and receive regular treatment.

(a) (i) The gene that controls cystic fibrosis is found on chromosome 7. In which part of the cell is a chromosome found? (1)

.....

(ii) Complete the sentence by putting a cross (☒) in the box next to your answer. Genes exist in alternative forms called (1)

- A alleles
- B chromosomes
- C daughter cells
- D DNA

(iii) State **two** symptoms of cystic fibrosis. (2)

1 .....

2 .....

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

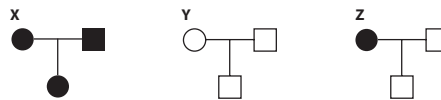
(b) Cystic fibrosis is caused by two recessive alleles. This table shows the genotypes of Susan and Paul.

	Genotype
Susan	Cc
Paul	CC

C – normal allele  
c – cystic fibrosis allele

(i) What word is used to describe Susan's genotype (Cc)? (1)

The diagrams below are called pedigree charts. These can show the inheritance of genetic disorders.



**key**  
 = female without cystic fibrosis      ○ = male without cystic fibrosis  
 = female with cystic fibrosis      ● = male with cystic fibrosis

(ii) Susan and Paul have a baby. Look at the pedigree charts above. Which chart shows Susan and Paul's family tree? (1)

(iii) Explain why Susan and Paul's baby does **not** have the genetic condition cystic fibrosis. (2)

.....

.....

**(Total for Question 2 = 8 marks)**

**Temperature regulation**

3 Pavel investigated how his body temperature changed over one day. He used a digital thermometer like the one shown in the photograph to measure his body temperature and the room temperature every four hours.



Shutterstock

He then compared his body temperature with the room temperature. His results are shown in the table.

Time (24-hour clock)	Body temperature (°C)	Room temperature (°C)
08:00	36.6	15.2
12:00 midday	37.4	23.7
16:00	37.6	24.4
20:00	37.3	22.6
00:00 midnight	36.8	12.1
04:00	36.2	12.0

(a) Use the information in the table to answer questions (i) and (ii).

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

- A 12:00 midday
- B 16:00
- C 20:00
- D 00:00 midnight

(ii) What was the temperature difference between Pavel's body temperature and the room temperature at 04:00?

(1)

**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.

(iii) Explain why Pavel used a digital thermometer instead of a glass thermometer.

(2)

(iv) Explain why Pavel's body temperature did not vary as much as the room temperature.

(2)

(b) When Pavel gets too hot he starts to sweat.

Describe how sweating helps to control Pavel's body temperature.

(2)

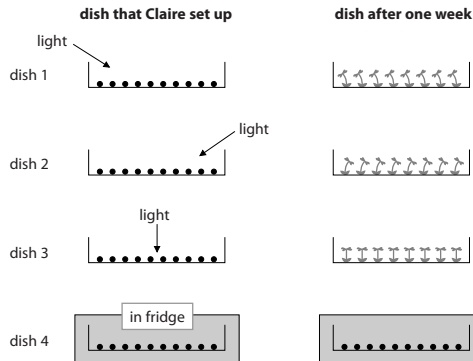
(c) Explain how the body uses hair to regulate temperature.

(2)

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

**Plant hormones**

5 Claire carried out an investigation to find out how light affected the growth of seedlings. She placed 10 cress seeds on damp filter paper in each of the dishes 1, 2, 3 and 4. Claire shone light onto dishes 1, 2 and 3 from different directions. Dish 4 was kept in the fridge. Claire left the dishes for one week. The diagrams show the results of Claire's investigation.



(a) (i) Put a cross (☒) in the box next to your answer. What is the name given to the seedlings' response to light? (1)

- A geotropism
- B homeostasis
- C phototropism
- D respiration

(ii) Explain how the seedlings responded to the light.

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

(iii) Explain why the seeds in dish 4 did not germinate. (2)

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.....

.....

(b) (i) State **one** variable that Claire would have to control when carrying out this experiment. (1)

.....

\*(ii) Claire wrote a prediction before carrying out this experiment. Claire's prediction was: 'All the seedlings will grow straight upwards'. Explain why Claire's prediction was **not** correct. Include the results for all four dishes in your explanation. (6)

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**(Total for Question 5 = 12 marks)**

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

**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 B1F: Influences on Life**

Question number	Answer	Acceptable answers	Mark
1(a)(i)	<p>an explanation linking a pair of the following:</p> <p>large/wide feet give larger surface area (1) (so) less pressure on the ice (1)</p> <p>thick fur (1) (so) insulated against the cold (1)</p> <p>white/translucent fur (1) (so) camouflaged from prey (1)</p> <p>small ears have less surface area (1) (so) lose less heat (1)</p>	<p>(so) less likely to break the ice (1)</p> <p>ignore references to predators</p>	(2)

**The Examiner explains**

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

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

Question number	Answer	Mark
1(a)(iii)	<p>a description linking the following points:</p> <p>through lungs (1) by diffusion across a membrane (1)</p>	(2)

Question number	Answer	Mark
1(b)(i)	<p>both lines needed for 1 mark</p> <pre> graph LR     G[genus] --&gt; U[Ursus]     S[species] --&gt; M[maritimus]                     </pre> <p style="text-align: center;">bear</p>	(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
2(a)(i)	nucleus	(1)

Question number	Answer	Mark
2(a)(ii)	A	(1)

Question number	Answer	Acceptable answers	Mark
2(a)(iii)	any two from the following: thick/sticky mucus in the lungs (1) thick/sticky mucus in the pancreas (1) thick/sticky mucus in the reproductive organs (1) short of breath/coughing (1)	lowered life expectancy/ underweight/increased infections	(2)

Question number	Answer	Acceptable answers	Mark
2(b)(i)	heterozygous	carrier	(1)

Question number	Answer	Mark
2(b)(ii)	Y	(1)

Question number	Answer	Acceptable answers	Mark
2(b)(iii)	an explanation linking the following: Paul is CC/homozygous (1) (so) baby must have inherited a C from Paul/baby does not have two recessive alleles required for CF (1)		(2)

Question number	Answer	Mark
3(a)(i)	B	(1)

Question number	Answer	Mark
3(a)(ii)	24.2	(1)

Question number	Answer	Acceptable answers	Mark
3(a)(iii)	<p>an explanation linking a pair of the following:</p> <p>easier to read (1) (so) less error in his results (1)</p> <p>reaches the final temperature more rapidly (1) (so) less error in his results (1)</p> <p>doesn't contain mercury (1) (so) safer to use (1)</p>	ignore more reliable	(2)

Question number	Answer	Acceptable answers	Mark
3(a)(iv)	<p>an explanation linking the following:</p> <p>internal temperature is controlled (1) (in order to) maintain a constant internal environment/homeostasis (1)</p>	<p>Pavel maintains (warm) body temperature</p> <p>by using respiration</p>	(2)

Question number	Answer	Acceptable answers	Mark
3(b)	<p>a description including the following in a logical order:</p> <p>sweat lies on the surface of hot skin and the water in the sweat evaporates (1)</p> <p>this takes heat from the skin, cooling the body (1)</p>	ignore just sweat produced	(2)

#### The Examiner explains

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



**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(b)(ii) QWC	an explanation to include some of the following: <ul style="list-style-type: none"> <li>• dish 1 and dish 2 seedlings did not grow straight up</li> <li>• correct explanation of dish 1 seedlings including stem bending left towards the light due to auxin building up on shaded part of stem and cell elongation</li> <li>• correct explanation of dish 2 including stem bending right towards the light due to auxin building up on shaded part of stem and cell elongation</li> <li>• correct explanation of dish 3 including stem growing straight upwards towards the light</li> <li>• correct explanation of dish 4 including no germination so no response to light.</li> </ul>	(6)
<b>Level</b>	<b>0</b>	no rewardable material
<b>1</b>	<b>1-2</b>	<ul style="list-style-type: none"> <li>• a limited explanation is given for one dish and its seedlings' response to light</li> <li>• limited scientific knowledge of phototropism</li> <li>• communicates ideas using simple language and little scientific terminology. Spelling, punctuation and grammar are used with little accuracy</li> </ul>
<b>2</b>	<b>3-4</b>	<ul style="list-style-type: none"> <li>• an explanation for two or three dishes and the seedlings' response to light</li> <li>• explanation of some of the scientific reasoning of phototropism</li> <li>• communicates ideas showing some evidence of clarity and organisation and uses some scientific terminology appropriately. Spelling, punctuation and grammar are used with some accuracy</li> </ul>
<b>3</b>	<b>5-6</b>	<ul style="list-style-type: none"> <li>• an explanation for all four dishes</li> <li>• scientific explanation including phototropism, auxins, cell elongation and germination requirements</li> <li>• communicates ideas clearly and uses scientific terminology appropriately. Spelling, punctuation and grammar are used with few errors</li> </ul>

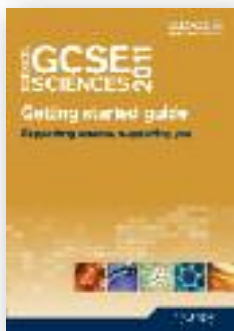
**The Examiner explains**

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



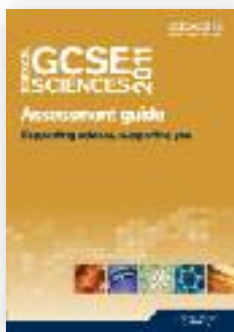
# Make the most of your Edexcel Enhanced Specifications Pack

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