



GCSE Additional Science Biology 2

Foundation Tier

Biology 2F

SPECIMEN MARK SCHEME

Version 1.0

Quality of Written Communication and levels marking

In Question 8(b) candidates are required to produce extended written material in English, and will be assessed on the quality of their written communication as well as the standard of the scientific response.

Candidates will be required to:

- use good English
- organise information clearly
- use specialist vocabulary where appropriate.

The following general criteria should be used to assign marks to a level:

Level 1: basic

- Knowledge of basic information
- Simple understanding
- The answer is poorly organised, with almost no specialist terms and their use demonstrating a general lack of understanding of their meaning, little or no detail
- The spelling, punctuation and grammar are very weak.

Level 2: clear

- Knowledge of accurate information
- Clear understanding
- The answer has some structure and organisation, use of specialist terms has been attempted but not always accurately, some detail is given
- There is reasonable accuracy in spelling, punctuation and grammar, although there may still be some errors.

Level 3: detailed

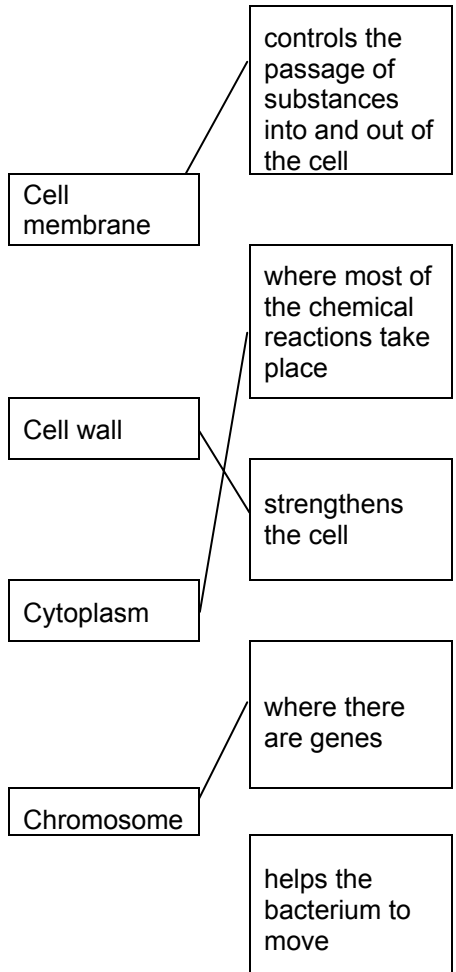
- Knowledge of accurate information appropriately contextualised
- Detailed understanding, supported by relevant evidence and examples
- Answer is coherent and in an organised, logical sequence, containing a wide range of appropriate or relevant specialist terms used accurately.
- The answer shows almost faultless spelling, punctuation and grammar.

In order to attain a mark within a certain level, **both** the science **and** the QWC must be of a standard appropriate to that level.

COMPONENT NUMBER: BL2FP

COMPONENT NAME: GCSE Additional Science Biology 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
1(a)	 <p>controls the passage of substances into and out of the cell</p> <p>Cell membrane</p> <p>where most of the chemical reactions take place</p> <p>Cell wall</p> <p>strengthens the cell</p> <p>Cytoplasm</p> <p>where there are genes</p> <p>Chromosome</p> <p>helps the bacterium to move</p>	<p>all four correct = 4 marks</p> <p>three correct = 3 marks</p> <p>two correct = 2 marks</p> <p>one correct = 1 mark</p> <p>extra line from a statement cancels the mark</p>	4
1(b)	<p>any two from:</p> <ul style="list-style-type: none"> • nucleus • no cell wall • separate chromosomes 		2
1(c)	A		1
1(d)	diffusion		1
Total			8

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question	answers	extra information	mark
2(a)	proteases		1
	amino acids		1
2(b)(i)	14 minutes		1
2(b)(ii)	enzyme Z		1
Total			4

question	answers	extra information	mark
3(a)	place all the quadrats randomly in two different sample areas.	extra boxes ticked cancels the mark	1
3(b)	2.2	correct answer gains 2 marks if answer incorrect, evidence of correct method gains 1 mark allow only 1 mark for a rounded mean	2
3(c)	15 120	correct answer gains 2 marks if answer incorrect, evidence of correct substitution gains 1 mark	2
Total			5

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question	answers	extra information	mark
4(a)	dominant		1
4(b)	recessive		1
4(c)	genes		1
4(d)	gametes		1
Total			4

question	answers	extra information	mark						
5(a)	<table border="1"> <tbody> <tr> <td>(X)</td> <td>(XX)</td> <td>XX</td> </tr> <tr> <td>Y</td> <td>XY</td> <td>XY</td> </tr> </tbody> </table>	(X)	(XX)	XX	Y	XY	XY	1 mark for Y in sperm box 1 mark if XX box correct 1 mark if both XY boxes correct	3
(X)	(XX)	XX							
Y	XY	XY							
5(b)	1:1 or 50% or $\frac{1}{2}$ or 0.5 or 1 in 2 or 1 out of 2 or 50 : 50	do not accept 50/50 accept equal (probability)	1						
Total			4						

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question	answers	extra information	mark
6(a)	as control(s)	ignore fair test	1
6(b)	the same volume of culture solution		1
6(c)	plants with all mineral salts grew best		1
	plants with mineral salts but no nitrate grow better than without any mineral salts		1
Total			4

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question	answers	extra information	mark																					
7(a)(i)	two		1																					
7(a)(ii)	mitosis		1																					
7(b)	<table border="1"> <thead> <tr> <th></th> <th>Adv.</th> <th>Disadv.</th> </tr> </thead> <tbody> <tr> <td>Stem cells can grow into many different kinds of body cells.</td> <td>✓</td> <td></td> </tr> <tr> <td>Stem cells may grow out of control.</td> <td></td> <td>✓</td> </tr> <tr> <td>Large numbers of stem cells can be grown in the laboratory.</td> <td>✓</td> <td></td> </tr> <tr> <td>Stem cells may be used to treat some human diseases.</td> <td>✓</td> <td></td> </tr> <tr> <td>Collecting and growing stem cells is expensive.</td> <td></td> <td>✓</td> </tr> <tr> <td>Patients treated with stem cells need to take drugs for the rest of their life to prevent rejection.</td> <td></td> <td>✓</td> </tr> </tbody> </table>		Adv.	Disadv.	Stem cells can grow into many different kinds of body cells.	✓		Stem cells may grow out of control.		✓	Large numbers of stem cells can be grown in the laboratory.	✓		Stem cells may be used to treat some human diseases.	✓		Collecting and growing stem cells is expensive.		✓	Patients treated with stem cells need to take drugs for the rest of their life to prevent rejection.		✓	<p>1 mark for each correctly ticked advantage up to a maximum of 2 marks</p> <p>1 mark for each correctly ticked disadvantage up to a maximum of 2 marks</p> <p>deduct 1 mark each for every incorrect box ticked in each column up to a maximum of 2 deductions in each column</p>	4
	Adv.	Disadv.																						
Stem cells can grow into many different kinds of body cells.	✓																							
Stem cells may grow out of control.		✓																						
Large numbers of stem cells can be grown in the laboratory.	✓																							
Stem cells may be used to treat some human diseases.	✓																							
Collecting and growing stem cells is expensive.		✓																						
Patients treated with stem cells need to take drugs for the rest of their life to prevent rejection.		✓																						
Total			6																					

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question	answers	extra information	mark
8(a)	increased by about 7 times / from 600 to 4300 / by 3700		1

8(b)			
Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information on page 2.			
0 marks	Level 1 (1-2 marks)	Level 2 (3-4 marks)	Level 3 (5-6 marks)
No relevant content.	There is a brief description of at least two causes of extinction, which has little clarity and detail.	There is a description of some causes of extinction, including both small-scale and large-scale events but there is a lack of clarity and detail.	There is a clear, balanced and detailed description of at least five causes of extinction, including both small-scale and large-scale events.
<p>examples of biology points made in the response</p> <ul style="list-style-type: none"> • changes to the environment / named changes • new competitors • new diseases • new predators • volcanic eruptions • collisions with asteroids 			

Total			7
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question	answers	extra information	mark
9(a)	any three from: <ul style="list-style-type: none"> • oxygen used in aerobic respiration • more energy from aerobic • carbon dioxide and water end products of aerobic • lactic acid end product of anaerobic 		3
9(b)	(Student Y) had <ul style="list-style-type: none"> • the lower resting heart rate • the lower heart rate increase and • the quicker recovery time 		1 1 1
9(c)	(the increased heart rate delivers) <ul style="list-style-type: none"> • more oxygen to muscles and • more glucose to muscles • and results in faster removal of carbon dioxide • and faster removal of lactic acid 		1 1 1 1
Total			10

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question	answers	extra information	mark
10(a)	water	in this order	1
	oxygen		1
10(b)	keep temperature constant		1
10(c)	a factor other than temperature is limiting	do not accept water	1
	eg carbon dioxide		1
10(d)(i)	21/22		1
10(d)(ii)	the rate of photosynthesis is at maximum		1
	for the least heating cost		1
Total			8