



GCSE Further Additional Science

Higher Tier

Unit 1 Biology 3H

**SPECIMEN MARK SCHEME
V1**

Quality of Written Communication and levels marking

In Question 7(b)(ii) 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: Unit 1 Biology 3H

COMPONENT NAME: Further Additional Science

STATUS: Specimen v1

question	answers	extra information	mark
1	D		1
	A		1
	C		1
Total			3

question	answers	extra information	mark
2(a)(i)	(D) greatest loss in mass in a given time		1
2(a)(ii)	(yes) leaves B and C both lost mass		1
2(b)(i)	stomata	accept stoma	1
2(b)(ii)	there are no stomata on upper surface and most water is lost via stomata		1
	so blocking the stomata on leaf B will reduce the water loss compared with leaf C		1
Total			5

COMPONENT NUMBER: Unit 1 Biology 3H**COMPONENT NAME: Further Additional Science****STATUS:** Specimen v1

question	answers	extra information	mark
3(a)	rose to 7.9	allow rose then fell for 1 mark	1
	fell to normal at 120 minutes		1
3(b)	there is a lower maximum / peak in the blood sugar concentration with wholemeal bread		1
			1
	there is also a slower rise in blood sugar concentration with wholemeal bread		1
	because of the above the person needs to take less insulin or is less likely to hyper		
Total			5

question	answers	extra information	mark
4	advantages		
	• useful where no other treatment available / patients near to death		1
	or		
	extends lifespan		
	disadvantages		
	• low success rate		1
	• device has limited lifespan		1
	or		
	battery will need charging		
	• discomfort from heart / battery / controller		1
	• risk of infection		1
Total			5

COMPONENT NUMBER: Unit 1 Biology 3H**COMPONENT NAME: Further Additional Science****STATUS:** Specimen v1

question	answers	extra information	mark
5(a)	forming clot at site of wound		1
5(b)	12 500	correct answer gains 2 marks if answer incorrect, $\frac{100}{0.008}$ gains 1 mark ignore any units	2
5(c)	size of RBC approximately same size as capillary or no room for more than one cell or <u>only</u> one can fit or RBC is <u>too</u> big	allow use of numbers do not accept capillaries are narrow	1
5(d)(i)	in lungs oxygen diffuses (from the alveoli) into the blood		1
	in the red blood cell, oxygen combines with haemoglobin, forming oxyhaemoglobin		1
	in tissues oxyhaemoglobin splits up, releasing oxygen, which diffuses into the cells		1
5(d)(ii)	allows cell to have more haemoglobin for oxygen transport		1
5(e)	thin walls for short diffusion path		1
	narrow, so have a large surface area to volume ratio		1
Total			10

COMPONENT NUMBER: Unit 1 Biology 3H**COMPONENT NAME: Further Additional Science****STATUS:** Specimen v1

question	answers	extra information	mark
6(a)	faeces / manure / plants		1
	broken down by fermentation /anaerobic respiration		1
	into methane		1
6(b)	cools digester		1
	optimum temperature for process less than external temperature		1
6(c)	temperatures in UK usually below optimum for process		1
	heat from fermentation retained in digester to increase rate of reaction		1
Total			7

question	answers	extra information	mark
7(a)	glucose is <u>filtered out</u> of the blood		1
	the filtered glucose is then taken back into the blood / reabsorbed	allow absorbed into the blood but not absorbed unqualified	1
	by active transport		1
7(b)(i)	<i>in a healthy person</i> protein not present because proteins are large (molecules) or because cannot pass through (filter)		1
	<i>in person with disease</i> the 'filter' allows protein through		1

Question 7 continues on the next page....

COMPONENT NUMBER: Unit 1 Biology 3H**COMPONENT NAME: Further Additional Science****STATUS:** Specimen v1**Question 7 continued . . .**

7(b)(ii)			
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 the two methods of treatment. There is at least one disadvantage or advantage from the examples given.	There is a scientific comparison of the two methods of treatment, including at least one advantage and one disadvantage but there is a lack of clarity and detail.	There is a clear and detailed scientific comparison of the two methods of treatment, including at least two advantages and two disadvantages.
examples of biology points made in the response			
<i>advantages of transplant over dialysis</i>			
<ul style="list-style-type: none">• no build-up of toxins / keeps blood concentration constant• prevent high blood pressure• don't need restricted diet / restricted fluid intake or time wasted on dialysis• blood clots may result from dialysis• infection may result from dialysis• with dialysis, blood may not clot properly due to anti-clotting drugs• cost issues (ie transplant cheaper)			
<i>disadvantages of transplant over dialysis</i>			
<ul style="list-style-type: none">• rejection / problem finding tissue match• use of immuno-suppressant drugs leading to other infections• dangers during operation			
Total			11

COMPONENT NUMBER: Unit 1 Biology 3H**COMPONENT NAME: Further Additional Science****STATUS:** Specimen v1

question	answers	extra information	mark
8 (a)	1 reduce the number of stages in food chain	NB responses are in pairs	1
	because there are energy losses at each stage in a food chain		1
	2 keep animals indoors		1
	so that less energy is used in maintaining body temperature		1
	3 restrict the movement of animals		1
	so that less energy is used in movement		1
8(b)(i)	the range of species in a habitat		1
8(b)(ii)	conserved organisms may have future uses		1
8(c)(i)	the total mass of each type of food produced		1
8(c)(ii)	increase by factor of approximately 2 for each		1
8(c)(iii)	greater carbon dioxide output		1
	since takes longer to produce sheep meat		1
8(c)(iv)	change in migration patterns		1
	changes in distribution / loss of habitat		1
Total			14