



AQA Level 1/2 Certificate in Biology

PAPER 1

SPECIMEN MARK SCHEME

Version 1.0

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

- 2.1** In a list of acceptable answers where more than one mark is available ‘any **two** from’ is used, with the number of marks emboldened. Each of the following lines is a potential mark.
- 2.2** A bold **and** is used to indicate that both parts of the answer are required to award the mark.
- 2.3** Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that ‘right + wrong = wrong’.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column.

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(.....) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

4. Quality of communication and levels marking

In Question 6(c) 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.

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology

COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

question	answers	extra information	mark
1(a)	X – cerebral cortex		1
	Y – cerebellum		1
	Z – medulla		1
1(b)(i)	electrical stimulation		1
	MRI (scanning)		1
1(b)(ii)	loss of (some) muscular coordination		1
Total			6

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology

COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

question	answers	extra information	mark
2(a)	fix itself to the wall of the intestine	owtte	1
	surface area		1
	absorption		1
	digestive enzymes		1
2(b)	it has long hind legs		1
	to enable it to jump (from one host to another)		1
Total			6

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology

COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

question	answers	extra information	mark
3(a)	weedkillers		1
	rooting (powders)		1
3(b)	gravity	accept gravitropism / geotropism	1
	caused redistribution of auxin / hormone to <u>lower side</u> of stem		1
	these hormones stimulate growth of cells on the <u>lower side</u> of stem only		1
	so the stem grows upwards		1
Total			6

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology

COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

question	answers	extra information	mark
4(a)(i)	defence	accept specific functions of white cells	1
4(a)(ii)	forming clot at site of wound		1
4(a)(iii)	100 ÷ 0.008	correct answer with or without working gains 2 marks	1
	12 500	ignore any units	1
4(a)(iv)	the size of red blood cell is approximately same size as capillary or red blood cell is <u>too</u> big	allow use of numbers do not accept capillaries are narrow	1
	therefore there is no room for more than one cell or <u>only</u> one can fit		1
4(a)(v)	in lungs oxygen <u>diffuses</u> from the alveoli into the blood	whole statement required	1
	in the red blood cell, oxygen combines with <u>haemoglobin</u> , forming <u>oxyhaemoglobin</u>	whole statement required	1
	in tissues <u>oxyhaemoglobin</u> splits up, releasing <u>oxygen</u> , which <u>diffuses</u> into the cells	whole statement required	1
4(b)(i)	(Student Y) because she had the lower resting heart rate	accept converse for Student X	1
	the lower heart rate increase and		1
	the quicker recovery time		1

Question 4 continues on the next page . . .

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Question 4 continued . . .

question	answers	extra information	mark
4(b)(ii)	when exercising the <u>rate</u> of aerobic respiration in the muscles is higher		1
	(the increased heart rate) increases <u>rate</u> of delivery of oxygen to the (respiring) muscles		1
	and increases <u>rate</u> of delivery of glucose to the (respiring) muscles		1
	and results in faster removal of carbon dioxide and lactic acid		1
Total			16

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology**COMPONENT NAME: Paper 1****STATUS: Specimen Paper V1.0**

question	answers	extra information	mark
5(a)	labels in correct order		1
	pyramid / step shape correct		1
5(b)(i)	44 000 / 4 6000 000	correct answer with or without working gains 2 marks	1
	= 0.0096		1
5(b)(ii)	any two from: <ul style="list-style-type: none">• energy heats up leaves• energy absorbed by non-photosynthetic parts• energy transmitted through leaves		2
5(b)(iii)	because some energy is used by the primary consumers in movement		1
	because some energy is transferred to the surroundings as heat		1
	because some energy lost in waste from primary consumers or not all primary consumer is eaten		1
5(c)	temperature limits rate, when it's cold and bright		1
	light limits rate at dusk / night / dawn		1
	amount of carbon dioxide limits rate when it's warm and bright		1

Question 5 continues on the next page . . .

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology

COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

Question 5 continued . . .

question	answers	extra information	mark
5(d)	because microorganisms feed on / digest / break down leaves / carbohydrates		1
	and when these organisms respire		1
	carbon is released into the atmosphere as carbon dioxide		1
Total			15

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology

COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

question	answers	extra information	mark
6(a)	pathogens		1
	toxins		1
	cells		1
6(b)	dead / weakened microbes		1
	stimulate antibody production		1
	antibody production rapid if microbe enters again		1
6(c)	Marks awarded for this answer will be determined by the quality of communication as well as the standard of the scientific response. Examiners should also refer to the information on page 4 and apply a best-fit approach to the marking.		
0 marks	Level 1 (1–2 marks)	Level 2 (3–4 marks)	Level 3 (5–6 marks)
No relevant content.	There is a basic description of two of: <ul style="list-style-type: none"> introduction of the gene into the bacterium DNA structure in relation to function assembly of amino acids into the protein. 	There is a clear description, but a lack of detail, of: <ul style="list-style-type: none"> introduction of the gene into the bacterium DNA structure in relation to function assembly of amino acids into the protein. 	There is a clear and detailed scientific description of: <ul style="list-style-type: none"> introduction of the gene into the bacterium DNA structure in relation to function assembly of amino acids into the protein.
examples of biology points made in the response:			
<ul style="list-style-type: none"> the gene for (production of the hepatitis) protein / antigen is introduced into bacteria this gene is a section of a DNA molecule this section has specified sequence of bases which act as code for assembly of amino acids in the correct order to produce protein / antigen 			
Total			12

COMPONENT NUMBER: AQA Level 1/2 Certificate in Biology**COMPONENT NAME: Paper 1****STATUS: Specimen Paper V1.0**

question	answers	extra information	mark
7(a)	any two from: <ul style="list-style-type: none">• long / pointed horns and for defence• large ears and to hear predators approaching• appearance blends with background and gives camouflage	allow long legs and to run away or to kick predators allow tall and can see predators a long distance away allow eyes on the sides of their heads and to have all-round vision to spot predators	2
7(b)(i)	evaporation / transpiration		1
7(b)(ii)	19.30 and 08.00		1
7(b)(iii)	this is when the moisture content in grass is highest therefore animal takes in most water if it eats at this time		1 1
7(c)(i)	to reduce water loss (in dry area) / conserve water		1
7(c)(ii)	large surface area of blood vessels / dilation of blood vessels for evaporation / radiation		1 1
7(c)(iii)	intertwining results in close contact of arteries and veins or splitting up of arteries and veins ensures larger surface area in contact cool venous blood cools arterial blood		1 1
Total			11

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question	answers	extra information	mark
8(a)	there is glucose in the dialysis fluid		1
	so that glucose does not go out of the blood or so that blood glucose concentration unaffected / stays constant		1
	there is no urea in the dialysis fluid		1
	so that urea diffuses out of the blood into the dialysis fluid and is removed from the body		1
8(b)	problem may be temporary or problem could be cured by other means		1
	operation / transplants carry risk		1
8(c)(i)	no antigens on (the surface) of red blood cells	dependent on first mark	1
			1
8(c)(ii)	would cause agglutination / clumping if different	allow clotting / coagulation	1
Total			9

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COMPONENT NAME: Paper 1

STATUS: Specimen Paper V1.0

question	answers	extra information	mark
9(a)	parental genotypes Hb ^A Hb ^S Hb ^A Hb ^S	accept explanations in terms of the symbols A and S	1
	gamete genotypes Hb ^A Hb ^S Hb ^A Hb ^S correctly derived		1
	children's genotypes Hb ^A Hb ^A Hb ^A Hb ^S Hb ^A Hb ^S Hb ^S Hb ^S correctly derived		1
	Hb ^S Hb ^S clearly defined as having sickle-cell anaemia		1
9(b)(i)	Hb ^A Hb ^A individuals are more likely to die of malaria		1
	Hb ^S Hb ^S individuals likely to die of condition before maturity		1
	but crosses between heterozygotes keeps frequency of Hb ^S allele high		1
9(b)(ii)	there is <u>partial</u> coincidence between distribution of malaria and sickle-cell allele		1
	but there could be another factor that influences both distributions		1
Total			9