CAMBRIDGE
International Education

Cambridge IGCSE™

BIOLOGY **0610/63**

Paper 6 Alternative to Practical **October/November 2024**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however**;** the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	‘List rule’ guidance For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

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6	Calculation specific guidance Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'. For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values. For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme. Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.
7	Guidance for chemical equations Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme. State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

Mark scheme abbreviations

- **;** separates marking points
- **/** alternative responses for the same marking point
- **R** reject the response
- **A** accept the response
- **I** ignore the response
- ecf error carried forward
- AVP any valid point
- ora or reverse argument
- AW alternative wording
- underline actual word given must be used by candidate (grammatical variants excepted)
- ( ) the word / phrase in brackets is not required but sets the context

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Question	Answer	Marks	Guidance
1(a)(i)	(stays) yellow-brown **;**	**1**	**A** brown / orange-brown / red-brown
1(a)(ii)	table drawn with headings underlined and at least two columns **;** two correct headings including unit **;** three correct results **;**	**3**	(**A**) 60 and (**AT**) 210 and (**T**) (>)270 or 300 **or** (**A**) 90 and (**AT**) 240 and (**T**) (>)270 or 300
1(a)(iii)	(tea) inhibits / reduces / slows / AW (enzyme / amylase activity) **;**	**1**	
1(a)(iv)	presence / concentration / volume / amount, of tea / tannin **;**	**1**	
1(a)(v)	*any one from:* volume of starch **;** temperature **;** equilibration time **;** sampling time **;**	**1**	
1(a)(vi)	to find out, if tea breaks down starch **/** the effect of no amylase / AW **;**	**1**	
1(a)(vii)	to equilibrate (the temperatures of the contents) / AW **;**	**1**	
1(a)(viii)	*error* volumes not the same in all test-tubes / AW **;** *improvement* add 2 cm^3 of <u>water</u> to A and to T **;**	**2**	
1(a)(ix)	add Benedict's (reagent/solution) **;** heat **;**	**2**	

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Question	Answer	Marks	Guidance
1(b)	outline clear and continuous, no shading **;** size greater than 130 mm **;** detail 1: midrib drawn as a double line for at least half its length and continuous with the petiole **;** detail 2: serrations shown and at least 2 veins drawn as Y shapes or loops, one above and one below the midrib **;**	**4**	
1(c)	*independent variable* **1** at least three temperatures **;** *dependent variable **;*** **2** area / amount / intensity of stain remaining on clothes time for stain to be removed **3 and 4** *detail of method* **;;** • method of, changing / maintaining, temperature • method of washing **5**, **6 and 7** *constant variables **;;;*** *max three from:* • volume / concentration, of washing powder • type / brand, of washing powder • size / type / colour, of cloth • time • pH • type of stain • amount of staining / AW **8** two or more replicates at each temperature / repeat the investigation at least two more times **;** **9** relevant safety precaution **;**	**6**	

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Question	Answer	Marks	Guidance
2(a)(i)	line **AB** is 32 mm ±1 mm **;** 0.15 **;;**	**3**	MP1 correct measurement for **AB** MP2 correct manipulation of equation: 32 ÷ 210 MP3 correct rounding of answer to 2 significant figures ecf from previous step if workings shown **AB** of 31 mm gives 0.15 **AB** of 33 mm gives 0.16
2(a)(ii)	*any two from:* *(in Fig. 2.2 the villus has:)* distinct (goblet) cells / pale circular structures around the outside **;** no indentations / smoother outline / has a smaller surface area **;** top is rounded (Fig. 2.1 is pointed / has gaps) **;** more nuclei / black dots **;** is smaller **;** is wider towards the base (Fig. 2.1 is wider towards the top) **;** bends to the left **;**	**2**	AW throughout and correct terminology is not expected for descriptions of the parts
2(b)(i)	axes labelled as type of animal **and** (small) intestine length divided by body length **;** linear scale on one axis and animal names on the other axis, and occupies at least half the grid in both directions **;** <u>all</u> bars plotted accurate to ± half small square **;** bars of equal width **and** not touching **and** with equal space between the bars **;**	**4**	
2(b)(ii)	(small), intestine length <u>and</u> body length / intestine length divided by body length **;**	**1**	**A** ratio of intestine length to body length

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Question	Answer	Marks	Guidance
2(b)(iii)	25.2 **;** m **;**	**2**	MP1 correct calculated value MP2 correct unit
2(b)(iv)	carnivores / animals that eat other animals have a short(er) intestine / herbivores / plant eaters have longer intestine **;** omnivores / animals that eat both plants and animals, have a short(er) intestine than herbivores / AW / have a similar length intestine to carnivores/AW **;**	**2**	
2(b)(v)	*any one from:* (different types of) animals have different body sizes / lengths **;** to be able to compare animals of different sizes / lengths **;**	**1**	
2(b)(vi)	*any two from:* use greater range of animals / use more than five different types **;** take measurements from more than one of each type of animal **;** use more omnivores / AW **;** make sure all animals same age **;** ensure same sex of animals used **;** make sure animals are healthy / AW **;**	**2**	

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