CAMBRIDGE
International Education

Cambridge IGCSE™

BIOLOGY **0610/33**

Paper 3 Theory (Core) **May/June 2026**

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **16** printed pages.

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General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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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	<u>'List rule' guidance</u> 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	<u>Calculation specific guidance</u> 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	<u>Guidance for chemical equations</u> 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.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
✓	correct point or mark awarded
✗	incorrect point or mark not awarded
^	information missing or insufficient for credit
A	allow or accept
I	incorrect or insufficient point ignored while marking the rest of the response
CON	contradiction in response, mark not awarded
BOD	benefit of the doubt given
ECF	error carried forward applied
SEEN	point has been noted, but no credit has been given or blank page seen
✓ 1	correct awarding one mark from marking point or marking group 1. similar numbered ticks are used for marking point or marking groups 2, 3, 4 etc.

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Annotation	**Meaning**
	pages are linked together
	used to highlight part of the response
	used to highlight parts of an extended response
	used to highlight parts of an extended response
PAG	Point already given
MR	Maximum mark reached
	Key point attempted / working towards marking point / incomplete answer / response seen but not credited / blank page seen
MAX	Maximum number of marks for a marking point has been awarded.

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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
max	indicates the maximum number of marks that can be given
MP	marking point

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(a)</td><td>
<table>
<tr><th rowspan="2">biological molecule</th><th colspan="4">element</th></tr>
<tr><th>carbon</th><th>hydrogen</th><th>nitrogen</th><th>oxygen</th></tr>
<tr><td>carbohydrate</td><td>✓</td><td>✓</td><td></td><td>✓</td></tr>
<tr><td>fat</td><td>✓</td><td>✓</td><td></td><td>✓</td></tr>
<tr><td>protein</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
</table>
;;;</td><td>3</td><td>one mark for each correct row</td></tr>
<tr><td>1(b)</td><td>amino acids ;</td><td>1</td><td></td></tr>
<tr><td>1(c)(i)</td><td>stomach ;</td><td>1</td><td></td></tr>
<tr><td>1(c)(ii)</td><td>killing (harmful) microorganisms / bacteria (in food) / AW ;
provides, acidic / suitable, pH for enzymes / AW ;</td><td>2</td><td>A pathogens for microorganisms</td></tr>
</table>

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Question	Answer	Marks	Guidance
2(a)	Water → cannot move through cell walls. Water → is a product of photosynthesis. Water → is a solvent. Water → is absorbed in the colon. Water → moves through partially permeable membranes. Water → uses energy from respiration to move. ;;;	**3**	one mark for each correct line **R** each additional line boxes 3, 4 and 5
2(b)	decreases / AW ; 0.4(%) **and** 0.8(%) ; 70 ;	**3**	either order
2(c)(i)	osmosis ;	**1**	
2(c)(ii)	(they have a) cell wall ;	**1**	

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3(a)(i)</td><td><table><tr><th>cell component feature</th><th>letter from Figure 3.1</th></tr><tr><td>contains the chromosomes</td><td>C ;</td></tr><tr><td>controls substances moving into and out of the cell</td><td>D ;</td></tr><tr><td>contains the cell sap</td><td>E ;</td></tr><tr><td>where most of the chemical reactions take place</td><td>F ;</td></tr></table></td><td>4</td><td></td></tr>
<tr><td>3(a)(ii)</td><td>by (cell) division ;</td><td>1</td><td>A mitosis / meiosis</td></tr>
<tr><td>3(b)(i)</td><td>any three from:
(many) chloroplasts ;
chloroplasts arranged around edge of the cell / AW ;
near, the top of leaf / AW ;
closely packed cells / columnar described ;</td><td>3</td><td>A palisade for G throughout
A chlorophyll</td></tr>
<tr><td>3(b)(ii)</td><td>N ;</td><td>1</td><td></td></tr>
<tr><td>3(b)(iii)</td><td>(J) guard cells ;
(K) stoma(ta) ;</td><td>2</td><td></td></tr>
</table>

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Question	Answer	Marks	Guidance
4(a)(i)	(a substance that) increases the rate of a (chemical) reaction ; is not changed (by the reaction) / is not used up / AW ;	2	**A** can be used again
4(a)(ii)	metabolic ; temperature ; absorbed ;	3	**A** biological **I** chemical **A** concentration of, enzyme / substrate or inhibitors / immobilisation **A** assimilated
4(a)(iii)	label to active site ; label to one or both products ;	2	
4(b)(i)	*any three from :* activity increases and decreases / AW ; 100% / maximum activity / optimum / peak, at pH 7.6 ; enzyme active, between pH 4.2 and pH 10.4; enzyme denatured, below pH 4.2 / above 10.4 ;	3	**A** 7.4 – 7.8 pH
4(b)(ii)	(named) reducing sugar ;	1	
4(c)	amylase ;	1	

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Question	Answer	Marks	Guidance
5(a)(i)	**T / W ;** **Q ;** **R ;**	**3**	
5(a)(ii)	An ECG is one way of monitoring the activity of the heart. ✓ **;** Capillaries pump blood around the body. Coronary arteries supply the heart with carbon dioxide. The walls in arteries are thinner than the walls in veins. Veins return blood to the heart. ✓ **;**	**2**	**R** each additional tick Boxes 1 and 5.
5(b)	196 (bpm) **;** 118 (bpm) **;;**	**3**	MP1 correct calculation of maximum heart rate MP2 correction calculation of rate to any number of decimal places i.e. 117.6 MP3 correct rounding to a whole number **ecf** from previous step
5(c)	adrenaline / **AVP ;**	**1**	e.g. epinephrine / (named excess) thyroid hormone

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Question	Answer	Marks	Guidance
6(a)(i)	glucose → ; lactic acid ;	**2**	max 1 if '=' used instead of an arrow
6(a)(ii)	nutrient ; less ; mitochondria ;	**3**	
6(b)	*any three from:* muscle contraction ; protein synthesis ; cell division ; active transport ; growth ; passage of nerve impulses ; maintenance of a constant body temperature ;	**3**	**I** movement unqualified **A** mitosis / meiosis **A** homeostasis

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Question	Answer	Marks	Guidance
7(a)	receptor ; stimuli / stimulus ; *in either order:* chemicals ; sound ;	**4**	
7(b)	*label:* lens ; label line touching the correct structure ;	**2**	
7(c)(i)	in Figure 7.2, iris is wider / pupil is, smaller or constricted / AW ;	**1**	**ora** throughout for Figure 7.3 **I** contracted
7(c)(ii)	*any one from* : to control the amount of light entering (the eye) ; to, prevent / allow, too much light entering the eye ; to change in, bright / dim, light conditions ; **AVP** ;	**1**	e.g. to prevent damage (to the retina) / protection

Question	Answer	Marks	Guidance
8(a)(i)	plant(s) ;	**1**	
8(a)(ii)	***A*** respiration ; ***B*** combustion ; ***C*** fossil fuel formation ;	**3**	**A** burning **A** fossilisation

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Question	Answer	Marks	Guidance
8(b)(i)	*total of four from:* *sources:* cattle / sheep / livestock / AW **;** rice farming **;** **AVP ;;;** *effects:* enhanced greenhouse effect **;** climate change / global warming **;** loss of habitats **;** organisms may become, extinct / endangered **;** **AVP ;;**	**4**	*max 3 for either section* e.g. decomposition / decay / melting of permafrost (releasing buried methane) / landfill / natural gas extraction / burning fossil fuels **A** heating up the Earth **A** loss of biodiversity e.g. raised sea levels / ice caps melting / extreme weather (events)
8(b)(ii)	The greatest increase in methane concentration was between the years 1600 and 1800. ( ) The maximum methane concentration reached was greater than 1720 ppbv in the year 2000, (✓ **;**) The methane concentration decreased between the years 1400 and 1600. (✓ **;**) The methane concentration passed 700 ppbv between the years 600 and 800. ( ) The overall trend is for the methane concentration to increase. (✓ **;**) The years 600 and 1400 have the same methane concentration. ( )	**3**	**R** each additional tick boxes 2, 3 and 5

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Question	Answer	Marks	Guidance
9(a)(i)	*Capra* ;	**1**	
9(a)(ii)	*any two from:* fur / hair ; external ears / pinnae ; mammary glands ;	**2**	
9(b)	• <u>Less agricultural land is needed.</u> • <u>Livestock grows faster.</u> • Livestock must have food provided for them. • <u>Optimum conditions can be provided.</u> • There is a greater chance of infections being transmitted between animals. • There is a greater chance of environmental damage. ;;;	**3**	*one mark for each correct statement underlined* **R** each additional underlined statement first, second and fourth statements underlined

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