Sample Assessment Material

Cambridge OCR Level 3 Advanced Subsidiary GCE in Biology A

H020/01 Breadth in biology

MARK SCHEME

MAXIMUM MARK 70

Duration: 1 hour 30 minutes

Version – 3.0
Last updated: June 2026

This document consists of 14 pages

Marking Instructions

Preparation For Marking

1. RM Assessor

- Access and complete the on-screen marking training packages: OCR Examiner Training (RMA3).
- Read the mark scheme and question paper for this component or unit.
- The mark scheme and question paper are available in RM Assessor or on your Component Page if you use the Training Platform for standardisation.
- Log in to RM Assessor and mark the **required number** of practice scripts and the **required number** of standardisation scripts.

Marking

2. General Guidance

- Mark strictly to the mark scheme.
- Marks awarded must relate directly to the marking criteria.
- If you are in any doubt about applying the mark scheme, consult your Team Leader by phone, email or via the RM Assessor messaging system.
- It is **essential** that you meet the RM Assessor 50% and 100% batch deadlines. For traditional marking this will be 40% and 100%. If you experience problems, contact your Team Leader without delay.
- Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there, then add the annotation '**SEEN**' to confirm that the work has been seen and mark any responses using the annotations.
- The RM Assessor **comments box** is used by your Team Leader to explain the marking of the practice responses. Use these comments when checking your practice responses. **Do not use the comments box for any other reason.**
- **Before the end of the marking period** send a brief report on the performance of candidates to your Team Leader via email. The report should contain notes on strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

3. No Response and Crossed-out Answers

Using the No Response (NR) option. Only mark as NR if:

- the answer space is blank
- there is only a comment not related to the question (e.g., 'can't do', 'don't know')
- there is only a mark (e.g., a dash, a question mark) which is not an attempt at the question.

Note: Enter 0 marks for an attempt that earns no credit (including copying out the question). Do **not** use NR.

Crossed-out answers

If a candidate has crossed out an answer and written a clear alternative, do **not** mark the crossed-out answer.

If a candidate has crossed out an answer and **not** written a clear alternative, mark the crossed-out answer if it is readable.

4. Responses with more answers than needed

- **Multiple-choice question answers**

  When a multiple-choice question has only **one** correct answer and a candidate has written two or more answers (even if one of these answers is correct), do **not** award a mark.

  When a multiple-choice question asks candidates to select **more than** one option the marking guidance from your Principal Examiner will ensure consistency of approach.

- **Contradictory answers in points-based questions**
  Do **not** award any marks, even if one of the answers is correct.

- **Rubric error answers** – optional questions

  Where candidates have a choice of question/s and they provide more answers than required, all responses are marked and entered into RM Assessor. The highest mark allowable within the rubric will automatically be selected.

- **Questions that ask for a set number (including 1) of short answers or points**
  Mark only the **first set number** of answers/points. (e.g. **two** reasons for something)

  First mark the answers/points against printed numbers on the answer lines. Mark the first answer/point against each printed number. **Second**, if candidates have not followed the printed numbers, mark the answers/points from left to right on each line. **Third,** mark line by line until the set number of answers/points have been marked. Do **not** mark any remaining answers/points.

  Examiners should use their own judgement to decide if a 'second answer' on the same line is adding more detail to the first answer, or if it is a completely separate answer.

- **Short Answer Questions** (requiring a more developed response, worth two or more marks)

  If the candidates are required to provide a description of, for example, three items and four items are provided, mark line by line until the set number of descriptions have been marked (it is unlikely a candidate will provide more than one response on each line in this scenario).

- **Longer Answer Questions** (requiring a developed response)

  If a candidate has written two or more answers to a question that only requires one (developed) answer, only mark the first answer (which has not been crossed out).

5. Questions using levels of response (LOR):

Read through the whole answer from start to finish, using the Level descriptors to help you decide whether it is a strong or weak answer. The indicative scientific content in the Guidance column indicates the expected parameters for candidates' answers, but be prepared to recognise and credit unexpected approaches where they show relevance. Using a 'best-fit' approach based on the skills and science content evidenced within the answer, first decide which set of level descriptors, Level 1, Level 2 or Level 3, best describes the overall quality of the answer.

Once the level is located, award the higher or lower mark:

The higher mark should be awarded where the level descriptor has been evidenced and all aspects of the communication statement (in italics) have been met.

The lower mark should be awarded where the level descriptor has been evidenced but aspects of the communication statement (in italics) are missing.

In summary:

The skills and science content determines the level.

The communication statement determines the mark within a level.

There are no Level of response questions on this paper.

6. Annotations available in RM Assessor

Annotation	Meaning
	Correct response
	Incorrect response
	Omission mark
	Benefit of doubt given
	Contradiction
	Rounding error
	Error in number of significant figures
	Error carried forward
	Level 1
	Level 2
	Level 3
	Benefit of doubt not given
	Noted but no credit given
	Ignore
	Blank page

7. Abbreviations, annotations and conventions used in the mark scheme (including subject-specific conventions).

Abbreviation / Annotation	Meaning
/	alternative and acceptable answers for the same marking point
✓	Separates marking points
DO NOT ALLOW	Answers which are not worthy of credit
IGNORE	Statements which are irrelevant
ALLOW	Answers that can be accepted
( )	Words which are not essential to gain credit
__	Underlined words must be present in answer to score a mark
ECF	Error carried forward
AW	Alternative wording
ORA	Or reverse argument

8. Subject-specific Marking Instructions

Introduction

Your first task is to familiarise yourself with:

- the specification, especially the assessment objectives
- the question paper and any inserts or resource booklets
- the mark scheme, including annotation requirements
- the administrative procedures related to the marking process.

The administrative procedures are set out in the OCR booklet **Instructions for Examiners**.

If you are examining for the first time, please read **Appendix 5 Introduction to Script Marking: Notes for New Examiners**.

All relevant training materials are accessed from the Training Platform.

Please ask for help or guidance whenever you need it. Your first point of contact is your Team Leader.

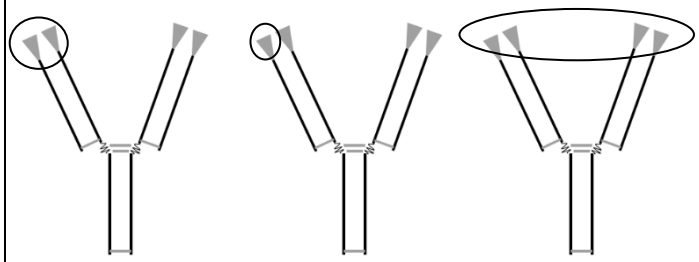
Section A

Question	Answer	Marks	Guidance
1	D	1	
2	D	1	
3	D	1	
4	B	1	
5	D	1	
6	B	1	
7	B	1	
8	D	1	
9	D	1	
10	B	1	
11	A	1	
12	D	1	
13	B	1	
14	D	1	
15	C	1	
16	A	1	
17	D	1	
18	C	1	
19	D	1	
20	D	1	
	Total	**20**	

Section B

Question			Answer	Marks	Guidance
21	(a)	(i)	particles have (their own) kinetic energy ✓ (movement) down concentration gradient ✓	2	**ALLOW** glucose for particles. **ALLOW** from high(er) concentration to low(er) concentration **IGNORE** passive process
		(ii)	ATP ✓	1	**ALLOW** adenosine triphosphate
		(iii)	phospholipids act as a barrier ✓ (glucose) molecules too large ✓	2	**ALLOW** (glucose) not soluble in phospholipid bilayer because of polar –OH groups for 2 marks
	(b)	(i)	volume of ethanol not given ✓ same onion / size of onion epidermis / position of epidermis in onion not stated ✓ need to have specific number of drops of methylene blue stain ✓	Max 1	
		(ii)	20–30% ✓ lowest concentration must be between 20 and 30% ✓ *idea that* 100% blue nuclei is not reached at 20% but is reached at 30% ✓	Max 2	e.g. Between 20% and 30% is the range over which all cells have a blue nucleus. e.g. Between 0-20% there is only up to 80% of cells with blue nucleus e.g. Above 30% all the cells have blue nucleus
		(iii)	*idea of* more accurate determination of permeability ✓ *idea of* looking at the minimum concentration of ethanol ✓	Max 1	
			Total	9	

Question			Answer	Marks	Guidance
22	(a)	(i)	**FIRST CHECK ANSWER ON ANSWER LINE** **If answer =** 1.7 mm **award 1 mark**	1	
		(ii)	**FIRST CHECK ANSWER ON ANSWER LINE** **If answer =** x 49 **award 2 marks** magnification = size of image / size of real object ✓ 83 / 1.7 = 48.823529… ✓	2	**ALLOW** answer in the range of 48–51 **ALLOW** 1 mark for correct working e.g. 83 / 1.7 **ALLOW** ECF from previous question
		(iii)	air spaces give buoyancy ✓ supported by (surrounding) water ✓	2	
	(b)	(i)	*D* *comment about* detail of organelles ✓ *comment about* shapes of cells ✓	2	**No Mark for identification of D** e.g. light microscope would not allow nuclear pores / ribosomes / endoplasmic reticulum / plasmodesmata to be seen e.g. sieve tube elements are angular / hexagonal **ALLOW** C is not a transverse section
		(ii)	the ability to, see more detail / separate two objects ✓	1	
		(iii)	methylene blue ✓ to increase contrast / to make nuclei visible / to show no nuclei in sieve tubes ✓	2	
			Total	10	

Question			Answer	Marks	Guidance
23	(a)		enzyme–substrate complex ✓ active site ✓ tertiary ✓ induced fit ✓ activation energy ✓	5	**ALLOW** substrate-enzyme complex
	(b)	(i)	ring drawn around variable region ✓	1	**ALLOW** 
		(ii)	disulfide ✓ to hold polypeptides/light chain and heavy chain together ✓	2	
	(c)	(i)	abnormal immune response ✓ against tissues normally in the body ✓	2	
		(ii)	nuclear proteins normally, hidden in nucleus / not exposed to tissue fluids ✓	1	
	(d)		plants ✓ microorganisms ✓	2	**ALLOW** named examples, e.g. St John's Wort, frog skin, *Penicillium,* etc.
			Total	13	

Question			Answer	Marks	Guidance
24	(a)	(i)	seed dispersal ✓	1	
		(ii)	(named) economic reason ✓ (named) aesthetic reason ✓	2	e.g. ecotourism
	(b)	(i)	**FIRST CHECK ANSWER ON ANSWER LINE** **If answer =** 3.07 (%) **award 2 marks** (480 - 254) / 254 = 0.8897 x 100 = 88.98% / 29 = 3.06815 ✓✓	2	**ALLOW** one mark if calculation correct but final figure incorrect **ALLOW** 3% or 3.1% and any other decimal place
		(ii)	no evidence of causal effect ✓ the data may be inaccurate as a result of, indirect methods used / unhabituated animals hard to find ✓ annual growth rate higher after 1993 ✓ 3.2% (per year) before 1993 against 3.8% after 1993 ✓ figures may not be accurate due to collection technique ✓	Max 3	
		(iii)	*advantage:* exhibit natural behaviour / less likely to catch disease from humans ✓ *disadvantage:* poaching more likely / could be wiped out by disease / more difficult to count ✓	2	
			Total	10	

Question			Answer	Marks	Guidance
25	**(a)**	**(i)**	units on axes ✓ plotted points ✓ title ✓	**Max 2**	
		(ii)	**FIRST CHECK ANSWER ON ANSWER LINE** **If answer =** 5.25 (mm min^{-1}) **award 2 marks** 21 – 0 / 4 = 5.25 ✓✓	**2**	**ALLOW** answer in range 5.0 to 6.0 **(**mm min^{-1}) **ALLOW** one mark for correct working if final answer incorrect
	(b)		evaporation ✓ from upper leaf surfaces ✓	**2**	
	(c)		not all lower leaf surface covered ✓ leaks in apparatus ✓ shoot not cut under water✓ error in reading position of meniscus✓	**Max 2**	e.g. seal around the plant is not airtight.
			Total	**8**	

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Q20: Drawing of phylogenetic trees © Cambridge OCR copyright

Q22: Picture of pond weed © Dr Keith Wheeler/Science photo library

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