Foundation

GCSE

Biology A Gateway

J247/02: Paper 2 (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2025

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

MARKING INSTRUCTIONS

PREPARATION FOR MARKING

RM ASSESSOR

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *RM Assessor Online Training*; *OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are available in RM Assessor.
3. Log-in to RM Assessor and mark the **required number** of practice responses ("scripts") and the **required number** of standardisation responses.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% (traditional 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, email or via the RM Assessor messaging system.

5. **Crossed-Out Responses**

Where a candidate has crossed out a response and provided a clear alternative then the crossed-out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed-out response where legible.

Rubric Error Responses – Optional Questions

Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM Assessor, which will select the highest mark from those awarded. *(The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)*

Multiple-Choice Question Responses

When a multiple-choice question has only a single, correct response and a candidate provides two responses (even if one of these responses is correct), then no mark should be awarded (as it is not possible to determine which was the first response selected by the candidate).
When a question requires candidates to select more than one option/multiple options, then local marking arrangements need to ensure consistency of approach.

Contradictory Responses

When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

Short Answer Questions (requiring only a list by way of a response, usually worth only one mark per response)

Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. *(The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)*

Short Answer Questions (requiring a more developed response, worth two or more marks)
If the candidates are required to provide a description of, say, three items or factors and four items or factors are provided, then mark on a similar basis – that is downwards (as it is unlikely in this situation that a candidate will provide more than one response in each section of the response space).

Longer Answer Questions (requiring a developed response)
Where candidates have provided two (or more) responses to a medium or high tariff question which only required a single (developed) response and not crossed out the first response, then only the first response should be marked. Examiners will need to apply professional judgement as to whether the second (or a subsequent) response is a 'new start' or simply a poorly expressed continuation of the first response.

6. 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 in section 11.

7. There is a NR (**No Response**) option. Award NR (No Response):

   - if there is nothing written at all in the answer space
   - OR if there is a comment which does not in any way relate to the question (e.g., 'can't do', 'don't know')
   - OR if there is a mark (e.g., a dash, a question mark) which is not an attempt at the question.

   Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).

8. The RM Assessor **comments box** is used by your Team Leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**

9. Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

10. For answers marked by levels of response:

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.

Level of response question on this paper is **19(d)**.

11. 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

12. Abbreviations, annotations and conventions used in the detailed Mark Scheme (to include abbreviations and subject-specific conventions).

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

13. **Subject-specific Marking Instructions**

INTRODUCTION

Your first task as an Examiner is to become thoroughly familiar with the material on which the examination depends. This material includes:

- the specification, especially the assessment objectives
- the question paper
- the mark scheme.

You should ensure that you have copies of these materials.

You should ensure also that you are familiar with the administrative procedures related to the marking process. These are set out in the OCR booklet **Instructions for Examiners**. If you are examining for the first time, please read carefully **Appendix 5 Introduction to Script Marking: Notes for New Examiners**.

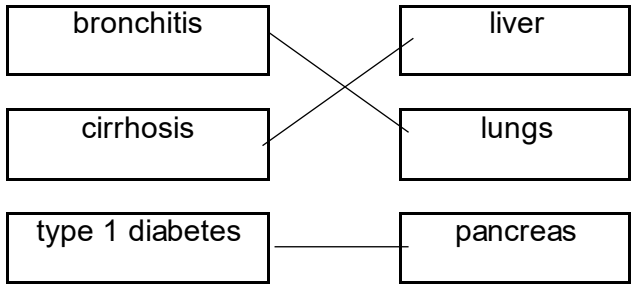
Please ask for help or guidance whenever you need it. Your first point of contact is your Team Leader.

The breakdown of Assessment Objectives for GCSE (9-1) in Biology A:

	Assessment Objective
AO1	**Demonstrate knowledge and understanding of scientific ideas and scientific techniques and procedures.**
AO1.1	Demonstrate knowledge and understanding of scientific ideas.
AO1.2	Demonstrate knowledge and understanding of scientific techniques and procedures.
AO2	**Apply knowledge and understanding of scientific ideas and scientific enquiry, techniques and procedures.**
AO2.1	Apply knowledge and understanding of scientific ideas.
AO2.2	Apply knowledge and understanding of scientific enquiry, techniques and procedures.
AO3	**Analyse information and ideas to interpret and evaluate, make judgements and draw conclusions and develop and improve experimental procedures.**
AO3.1	Analyse information and ideas to interpret and evaluate.
AO3.1a	Analyse information and ideas to interpret.
AO3.1b	Analyse information and ideas to evaluate.
AO3.2	Analyse information and ideas to make judgements and draw conclusions.
AO3.2a	Analyse information and ideas to make judgements.
AO3.2b	Analyse information and ideas to draw conclusions.
AO3.3	Analyse information and ideas to develop and improve experimental procedures.
AO3.3a	Analyse information and ideas to develop experimental procedures.
AO3.3b	Analyse information and ideas to improve experimental procedures.

For answers to Section A if an answer box is blank ALLOW correct indication of answer e.g. circled or underlined.

Question	Answer	Marks	AO element	Guidance
1	C	1	1.1	
2	D	1	1.2	
3	D	1	1.1	
4	B	1	1.1	
5	C	1	1.1	
6	C	1	2.2	
7	B	1	2.1	
8	B	1	2.1	
9	C	1	2.1	
10	B	1	1.1	
11	A	1	1.1	
12	C	1	2.2	
13	A	1	2.1	**ALLOW** 0
14	C	1	2.2	
15	B	1	2.1	

Question			Answer	Marks	AO element	Guidance
16	(a)		 ✓✓	2	2 × 1.1	3 correct lines = 2 marks 1 or 2 correct lines = 1 mark **DO NOT ALLOW** more than 1 line from each box
	(b)	(i)	Smooth line of best fit drawn ✓	1	2.2	**DO NOT ALLOW** sketched lines or ruled lines
		(ii)	77 beats ✓	1	2.2	Value must match candidate's curve **ALLOW** answer rounded to 77
		(iii)	The more exercise/steps a person does then the lower their resting heart rate ✓	1	3.1	**ALLOW ORA**
	(c)	(i)	**Any two from:** More men than women develop CVD ✓ In women there is no link between resting heart rate and CVD ✓ In men there is no link between resting heart rate and CVD up to 80 bpm / In men a resting heart rate of more than 80 increases the risk of CVD ✓	2	2 × 3.2b	
		(ii)	Increases the risk of CVD ✓ Valid ✓	2	2 × 3.3b	
	(d)	(i)	Humans live longer than expected (according to their resting heart rate) ✓	1	3.2a	**ALLOW** idea of humans live longer than animals with the same resting heart rate
		(ii)	Idea of medicine / health care ✓	1	3.1b	

Question			Answer	Marks	AO element	Guidance
17	(a)		Male with SIOD ✓ Heterozygous ✓ Recessive ✓	3	3 × 2.1	
	(b)	(i)	The kidney will contain foreign cells ✓ The patient will make antibodies against the kidney ✓	2	2 × 2.1	If three ticked and two correct = 1 mark If three ticked and one correct = 0
		(ii)	They would be able to attack any pathogens ✓ So would not get diseases / would not get sick ✓	2	2 × 2.1	**ALLOW** named pathogens e.g. bacteria **ALLOW ORA** e.g. if the patient took drugs (to make the immune system less active) then they wouldn't be able to attack foreign pathogens ✓ so they might get sick ✓ If no other marks awarded allow 1 mark for idea of no rejection occurs

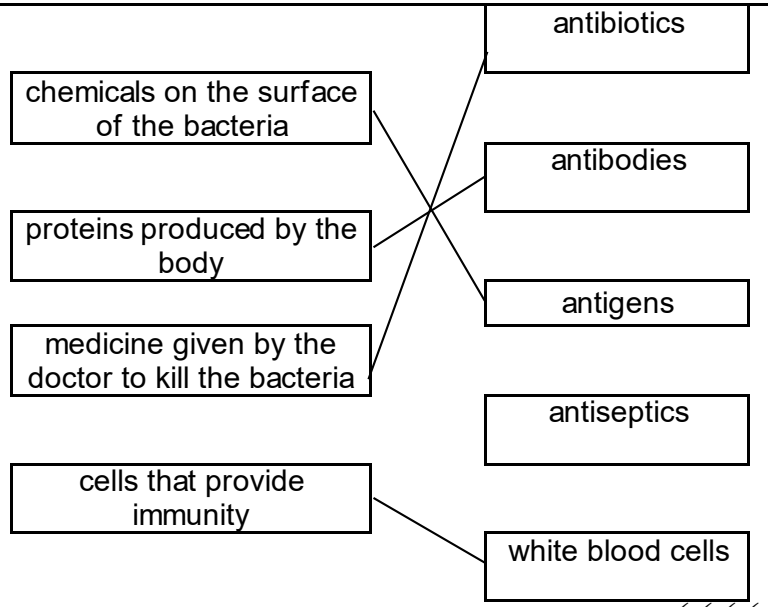
Question			Answer	Marks	AO element	Guidance
18	(a)		Security ✓ Disease / predators ✓ Fertilisers / manure / compost ✓ Hydroponics ✓	4	4 × 1.1	**ALLOW** pests/pathogens/invasive species **ALLOW** nitrates/phosphates **IGNORE** minerals
	(b)	(i)	9 (%) ✓	1	2.1	
		(ii)	Decayed into compost ✓ Buried in the ground to rot ✓	2	2 × 2.1	
		(iii)	6 x 10^7 tonnes ✓	1	1.2	
		(iv)	**First check the answer on the answer line** **If answer = 4.8 award 2 marks** 60 × (8 ÷ 100) ✓ = 4.8 (million tonnes) ✓	2	2 × 2.2	**ALLOW** 4800000 for 1 mark
		(v)	Produces carbon dioxide/smoke/pollution/greenhouse gases ✓ Correct consequence e.g. greenhouse effect ✓	2	2 × 1.1	**IGNORE** carbon monoxide / methane **ALLOW** idea of chemicals being toxic / climate change / global warming / breathing difficulties / rising sea levels **DO NOT ALLOW** references to ozone layer

Question			Answer	Marks	AO element	Guidance
19	(a)		Microscopic plants ✓	1	2.1	
	(b)		Primary consumer **and** secondary consumer ✓	1	2.1	
	(c)		They have no predators ✓	1	3.1a	
	(d)*		Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question. **Level 3 (5–6 marks)** Clear explanation on why plants need light **and** minerals **AND** Detailed explanation on the effect of cloudy water **and** extra minerals on the growth of the microscopic plants *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Level 2 (3–4 marks)** Brief explanation on why plants need light **and** minerals **AND** Brief explanation on the effect of cloudy water **and** extra minerals on the growth of the microscopic plants **OR** Clear explanation on why plants need light **and** a detailed explanation on the effect of cloudy water on the growth of the microscopic plants **OR** Clear explanation on why plants need minerals **and** a detailed explanation on the effect of extra minerals on the growth of the microscopic plants	6	2 x 1.1 4 x 2.1	**AO1.1 Explains why plants need light and minerals** • light is needed for photosynthesis of the microscopic plants • minerals are needed for the microscopic plant to grow/produce different molecules **AO2.1 Explains the effect of cloudy water and extra minerals** • cloudy water will reduce light penetrating the water • less light will be available for microscopic plants • less light will mean less / lower rate of photosynthesis • less photosynthesis means fewer microscopic plants • more minerals available for the plants means they can produce more molecules e.g. proteins • therefore increased number of microscopic plants

Question			Answer	Marks	AO element	Guidance
			There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence. **Level 1 (1–2 marks)** Briefly explains why plants need light **or** minerals **OR** Limited explanation on the effect of cloudy water **or** extra minerals on the growth of the microscopic plants *There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant*. **0 marks** *No response or no response worthy of credit.*			

Question			Answer	Marks	AO element	Guidance
20	(a)		It will make the animals grow bigger/grow faster ✓	1	3.1b	**ALLOW** idea of reverse argument / bacteria are competing for food
	(b)	(i)	**Any three from:** Soak the filter paper discs in antibiotic ✓ Place the discs on the surface of the nutrient agar ✓ Put the dish in the incubator ✓ After a few days look to see if there is a clear area around the disc ✓	3	3 × 1.2	 **ALLOW** any method of putting antibiotic on to the filter paper discs **IGNORE** put antibiotic on to bacteria/petri dish **ALLOW** place the discs onto the petri dish **ALLOW** any reference to a set time **IGNORE** after a few days look to see if bacteria have been killed/affected
		(ii)	Bars correctly drawn ✓ ✓	2	2 × 2.2	Three correct bars = 2 marks, two correct bars = 1 mark **ALLOW** tolerance of +/- half a small square
		(iii)	Bacteria killed by antibiotics is going down in sheep ✓ Therefore, results do not support the idea ✓	2	2 × 3.2a	
	(c)		Mutation ✓ Survive ✓ Natural selection ✓	3	3 × 1.1	

Question			Answer	Marks	AO element	Guidance
21	(a)		Crown gall disease ✓	1	1.1	
	(b)	(i)	(Passed on) from the beetle when they bite into the plant ✓	1	3.1a	
		(ii)	(Bacteria produce sticky glue which) blocks the xylem vessels ✓ Water cannot be transported (up to the leaves) ✓ Plant/leaves wilt ✓	3	3 × 2.1	**ALLOW** plant/leaves droop
		(iii)	(Insecticide will) kill the beetles ✓	1	3.1b	
		(iv)	Biological control ✓	1	1.1	

Question			Answer	Marks	AO element	Guidance
22	(a)		Pathogen ✓	1	1.1	**IGNORE** microbe/fungi/virus/protist/parasite
	(b)	(i)	 ✓✓✓✓	4	4 × 1.1	**DO NOT ALLOW** more than one line from a box
		(ii)	Would not give antibiotics / (would give) an antiviral ✓ (Viruses) are not destroyed by antibiotics ✓	2	2 × 1.1	**IGNORE** vaccine **ALLOW** antibiotics only kill bacteria **ALLOW** viruses are inside cells so antibiotics can't work

Question			Answer	Marks	AO element	Guidance
23	(a)		**Any two from:** Position at random (on the different sections of pitch) ✓ Count the number (of dandelions in a quadrat) ✓ Repeat/use of several quadrats ✓ **AND** (Mean) = divide (total) number of dandelions by number of quadrats ✓	**3**	**3 × 1.2**	**ALLOW** random number generator / grid references/co-ordinates **DO NOT ALLOW** transect line **IGNORE** percentage cover **ALLOW** take more samples/quadrats **ALLOW** correct number of quadrats qualified **IGNORE** references to calculating populations
	(b)		**First check the answers in the table** **If answers = 78.5-79 and 235-237 award 3 marks** 3.14 or π x 5^2 or 25 ✓ = 78.5 ✓ 235.5 ✓	**3**	**3 × 2.2**	**ALLOW** any number in the range of 78.5-79 **ALLOW** any number in the range of 235-237 **ALLOW ECF** for a correctly calculated total number of dandelions from an incorrectly calculated area
	(c)		Community ✓ Compete ✓ Equally ✓	**3**	**3 × 3.2b**	
	(d)		Sample (soil) from each area/around parts of the pitch ✓ Test them with (universal) indicator/a pH meter/probe ✓	**2**	**2 × 3.3a**	**ALLOW** pH paper **IGNORE** litmus paper

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