



...day SAMs20XX – Morning/Afternoon

GCSE (9–1) Combined Science (Biology) A (Gateway Science)

J250/02 Paper 2 (Foundation Tier)

SAMPLE MARK SCHEME

Duration: 1 hour 10 minutes

MAXIMUM MARK 60

DRAFT

This document consists of 16 pages

MARKING INSTRUCTIONS**PREPARATION FOR MARKING****SCORIS**

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *scoris 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 posted on the RM Cambridge Assessment Support Portal <http://www.rm.com/support/ca>
3. Log-in to scoris and mark the **required number** of practice responses (“scripts”) and the **required number** of standardisation responses.

YOU MUST MARK 10 PRACTICE AND 10 STANDARDISATION RESPONSES BEFORE YOU CAN BE APPROVED TO MARK LIVE SCRIPTS.

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 scoris 50% and 100% (traditional 50% 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 scoris messaging system.

5. Work crossed out:
- where a candidate crosses out an answer and provides an alternative response, the crossed out response is not marked and gains no marks
 - if a candidate crosses out an answer to a whole question and makes no second attempt, and if the inclusion of the answer does not cause a rubric infringement, the assessor should attempt to mark the crossed out answer and award marks appropriately.
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 a tick to confirm that the work has been seen.
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 isn't an attempt at the question.
- Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).
8. The scoris **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.** If you have any questions or comments for your Team Leader, use the phone, the scoris messaging system, or email.
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.

11. Annotations

Annotation	Meaning
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

12. 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 Combined Science A (Gateway Science):

	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.

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Mark Scheme

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SECTION A

Question	Answer	Marks	AO element	Guidance
1	A	1	1.1	
2	D	1	1.2	
3	D	1	2.1	
4	A	1	2.1	
5	A	1	1.2	
6	C	1	2.1	
7	A	1	2.2	
8	A	1	2.1	
9	C	1	1.1	
10	D	1	1.1	

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Mark Scheme

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Question		Answer	Marks	AO element	Guidance
11	(a)	the entire genetic material of an organism (1)	1	1.1	
	(b)	may not want to know / idea that it may be used against the individual (1)	1	2.1	e.g. insurance companies / stop them getting a job
	(c)	(i) 15 (1)	1	2.2	
		(ii) 100 ÷ 2 = 50 the 50 th student occurs in the height range 170-174	1 1	3.2a	
	(d)	Genome – idea that they inherit height from parents or height is controlled by genes / DNA / different alleles (1) Environment – idea that diet or disease may affect height (1)	2	2.1	IGNORE just height is controlled by genome IGNORE just height is controlled by environment
	(e)	idea of survival of those best suited to their environment (1)	1	1.1	ALLOW survival of the fittest

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Question			Answer	Marks	AO element	Guidance
12	(a)	(i)	bars drawn at 6 (5.1-6.0) and 1 (6.1-7.0) (1)	1	2.2	
	(a)	(ii)	mode for light is at 5.1-6.0 but 8.1-9.0 for shade (1) value of mode is the same / both modes are 6 (1)	2	1.2 2.2	
	(a)	(iii)	Any one from: (leaves in shade are larger) because there is <i>less</i> light to take in / absorb v (leaves in shade) need to be larger to absorb <i>more</i> light (1) THEN idea of needing to absorb enough light for photosynthesis (1)	2	3.1a 2.2	
	(b)		to check accuracy / larger sample will more accurately represent the total population (1)	1	3.3a	ALLOW so it is easier to identify anomalies
	(c)		collect soil samples from both areas (1) add Universal Indicator solution or paper / use pH paper / use pH probe (1) ideas of comparing values or colours (1)	3	1.2	

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SECTION B

Question		Answer	Marks	AO element	Guidance	
13	(a)	<p>Any four from:</p> <p>use a (sweep) net (1)</p> <p>sweep the net so that it skims the surface of the water/pond (1)</p> <p>sweep the net so that it touches the bottom of the water/pond (1)</p> <p>idea of putting samples collected into different trays (1)</p> <p>sample surface and bottom in different areas of the pond (1)</p>	4	1.2		
	(b)	(i)	matfly nymph and damselfly nymph (1)	1	2.2	Both needed for mark
	(b)	(ii)	<p>dragonfly nymph (1)</p> <p>six legs (1)</p> <p>no tail (1)</p>	3	2.2	

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Question			Answer	Marks	AO element	Guidance
14	(a)	(i)	3 (%) (1)	1	2.2	
	(a)	(ii)	11 (1)	1	2.1	ALLOW 10 IGNORE 10.5
	(b)		eat healthy diet / change diet (1) not smoking (1) eat healthy diet this is the biggest cause of cancer / food we eat can affect the body / being overweight may cause cancer / some foods can protect us from cancer (1) not smoking chemicals or tar in cigarette smoke cause cancer (1)	4	3.1a 3.1a 2.1 2.1	IGNORE references to nicotine
	(c)		Mitosis is cell division (1) Cancer is when cells divide and grow out of control (1)	2	1.1	Idea that cancer is when mitosis is out of control (2)

Question	Answer	Marks	AO element	Guidance
15*	<p>Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question.</p> <p>Level 3 (5–6 marks) Analyses the information and gives evidence for and against mistletoe being a parasite, drawing on their wider knowledge of biology (e.g. talking about photosynthesis and transpiration). Clearly understands the concept of parasitism.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p>Level 2 (3–4 marks) Analyses the information and gives evidence either for or against mistletoe being a parasite. Understands parasitism, includes ideas about how mistletoe gains its nutrition.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p>Level 1 (1–2 marks) Uses the information to make a simple statement about how mistletoe gains nutrients.</p> <p><i>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.</i></p> <p>0 marks <i>No response or no response worthy of credit.</i></p>	6	1 x 3.2a 2 x 2.1 3 x 1.1	<p>AO3.2a: Judgement as to whether mistletoe is a parasitic or not</p> <ul style="list-style-type: none"> • A suitable judgement is made as to the parasitic nature of mistletoe which is backed up by a suitable scientific explanation • How mistletoe collects water from the xylem rather than the soil • This can harm/reduce fitness of the host plant • Mistletoe benefits at expense of host plant • How mistletoe makes its sugars • Has chlorophyll • Can photosynthesise • Mistletoe does not gain the majority of its sugars from the host plant/gets some sugars from the host • Via the phloem <p>AO2.1: Apply knowledge and understanding of parasitism and give a reason why mistletoe may be considered a parasite</p> <ul style="list-style-type: none"> • Takes minerals / water from host • Does not get water / minerals from soil • Removes available water/minerals for plant host • Reduces fitness of host/harms host

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Question	Answer	Marks	AO element	Guidance
				<ul style="list-style-type: none"> • Mistletoe benefits from the association • 'roots' are attached to host • Penetration of host can cause disease <p>AO1.1: Demonstrate knowledge of parasitism</p> <ul style="list-style-type: none"> • A simple definition of parasitism • Harms host • Parasite benefits at expense of host • Reduces biological fitness of host • Adapted to live in host

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Question		Answer	Marks	AO element	Guidance
16	(a)	antibodies attach to antigens (on pathogens) (1) idea that antibodies on pathogens help the white blood cells to identify the pathogens (1) white blood cells <i>engulf</i> the pathogens (1)	3	1.1	for extra marking points ALLOW idea that antibodies are specific to antigens ALLOW higher level ideas of white blood cells being memory cells / multiplying quickly
	(b)	1958 or 1965 (1) Big drop in the number of cases / initial drop followed by fewer cases over time (1)	1 1	3.1b 3.2a	ALLOW 1965
	(c) (i)	415 (3)	3	1.1 2.2 2.1	if incorrect then ALLOW : πr^2 (1) or identifying radius as 11.5 (1) $\pi \times 11.5 \times 11.5$ (2)
	(c) (ii)	Correct in that it does have the largest area / clear zone (1) But only correct for the antibiotics tested (1) Idea that results are not valid as very close together or idea that results are not valid because he has only tested them once / not done any repeats (1)	3	3.2b 3.3a 3.3a	ALLOW comment on specific bacterial infections / don't know which bacteria were used in this test / may get different results for different bacteria