Foundation

GCSE

Combined Science Biology A Gateway Science

J250/01: Paper 1 (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 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 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 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.

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 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.**

   If you have any questions or comments for your Team Leader, use the phone, the RM Assessor 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.

Level of response question on this paper is **14(b).**

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**.

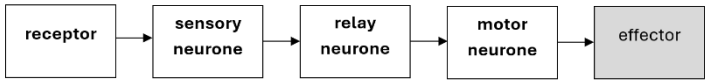
Please ask for help or guidance whenever you need it. Your first point of contact is your Team Leader.

The breakdown of Assessment Objectives for GCSE (9-1) in Combined Science 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.

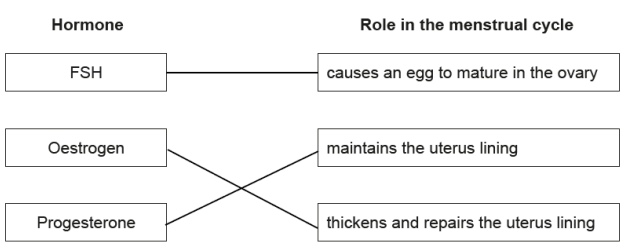
Question	Answer	Marks	AO element	Guidance
1	B	1	1.1	
2	A	1	1.1	
3	B	1	1.1	
4	A	1	1.1	
5	A	1	1.1	
6	C	1	1.1	
7	D	1	1.2	
8	B	1	2.2	
9	D	1	1.1	
10	C	1	2.1	

Question			Answer	Marks	AO element	Guidance
11	(a)		Fast ✓ Doesn't require thought/does not involve the brain ✓	2	2 × 2.1	**ALLOW** through the spinal cord **ALLOW** unconscious/automatic/involuntary/subconscious
	(b)		**Any three from:** Receptor immediately before sensory neurone ✓ Sensory neurone immediately before relay neurone ✓ Relay neurone immediately before motor neurone ✓ Motor neurone immediately before effector ✓ 	3	3 × 1.1	

Question			Answer	Marks	AO element	Guidance
12	(a)		**Any two from:** To protect the lens/specimen ✓ Prevent the onion epidermal cells from drying ✓ Hold it in place ✓	**2**	**2 × 1.2**	
	(b)		Nucleus ✓ Contains DNA/Controls the Cell ✓	**2**	**2 × 1.1**	 **ALLOW** contains genetic material **IGNORE** brain (of the cell)
	(c)		**Any three from:** Water enters the cell/vacuole ✓ By <u>osmosis</u> ✓ As the cell/vacuole had less water (potential)/higher solute concentration ✓ Movement of water is across a semi/partially permeable membrane ✓	**3**	**3 × 2.2**	 **ALLOW** cell has become more swollen/turgid **ALLOW** water absorb(ed) **IGNORE** active transport **ALLOW** water moves from an area of high-water concentration/more <u>water</u> particles to an area of low <u>water</u> concentration/fewer <u>water</u> particles **ALLOW** water moves from low concentration to high concentration **DO NOT ALLOW** water moves from a high concentration to low concentration

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO element</th><th>Guidance</th></tr>
<tr><td>13</td><td>(a)</td><td></td><td>Differentiation ✓</td><td>1</td><td>1.1</td><td></td></tr>
<tr><td></td><td>(b)</td><td></td><td><table><tr><th>Stem cell features</th><th>Adult stem cells only</th><th>Embryonic stem cells only</th><th>Both embryonic and stem cells</th></tr><tr><td>Only found in the embryo</td><td></td><td>✓</td><td></td></tr><tr><td>Can form specialised cells</td><td></td><td></td><td>✓</td></tr><tr><td>Can form many types of cells</td><td></td><td>✓</td><td></td></tr></table>✓✓✓</td><td>3</td><td>3 × 2.1</td><td></td></tr>
<tr><td></td><td>(c)</td><td></td><td>Function: Absorption/diffusion/osmosis/active transport ✓

Adaptation: Increased/large surface area/more mitochondria ✓</td><td>2</td><td>2 × 2.1</td><td>ALLOW takes in water/minerals/ions
IGNORE moisture</td></tr>
<tr><td></td><td>(d)</td><td></td><td>Active (transport) ✓</td><td>1</td><td>1.1</td><td></td></tr>
</table>

Question			Answer	Marks	AO element	Guidance
14	(a)		 ✓ ✓	2	2 × 1.1	All three correct = 2 marks 1 or 2 correct = 1 mark
	(b)*		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)** Detailed and fully accurate explanation of how hormones prevent pregnancy **AND** Detailed reasons suggested for the contraceptives' effectiveness *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)** Clear explanation of how hormones prevent pregnancy **AND** Clear reason suggested for the contraceptives' effectiveness *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)** Limited explanation of how hormones prevent pregnancy	6	3 × 2.1 3 × 3.2b	**AO2.1 Apply knowledge and understanding of how hormones can be used to prevent pregnancy:** • keeps levels of (progesterone and oestrogen) hormones high • combined pill mimics pregnancy • inhibits the production of FSH • no egg matures • no egg is released • combined pill thins uterus lining • thickens mucus of the cervix • may reference the implant (operates in a similar way to the mini pill) • Contraceptive implant is progesterone only and prevents implantation/thins uterus lining/prevents ovulation **AO3.2b Analyse the data and ideas to draw conclusions about data in the table:** • compare hormonal and non-hormonal

			OR Reason suggested for the contraceptives' effectiveness *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.*			• additional advantages e.g., condoms stop the spread of infection • compare percentages and calculate the differences in percentages • link the percentages to the number of people that could become pregnant e.g. in 1000 people this would mean • implant more effective than the combined pill as provides constant protection (compared to taking the combined pill daily and being impacted by various illnesses/ can't forget to take it) • condoms can tear/burst/leak/slip off • combined pill and condom effectiveness lower as affected by human using/taking it inaccurately

Question			Answer	Marks	AO element	Guidance
15	(a)		Prevent backflow (of blood)/keep blood moving in one direction ✓	1	1.1	
	(b)		**Any two from:** The left and right sides both pump blood ✓ Left side pumps blood to the body ✓ Right side pumps blood to the lungs ✓ Blood passes through the heart twice per loop of circulation ✓	2	2 × 1.1	**ALLOW** one side pumps blood to the body and one side pumps blood to the lungs **ALLOW** deoxygenated blood pumped to lungs and oxygenated blood around the body
	(c)		**Any three (in a correct sequence) from:** Right ventricle ✓ Pulmonary Artery ✓ Lungs ✓ Pulmonary Vein ✓ Left atrium ✓	3	3 × 2.1	**IGNORE** blood flow through the heart e.g. from right atrium to right ventricle. If no other marks awarded then allow 1 mark for lungs within the answer

Question			Answer	Marks	AO element	Guidance
16	(a)		At low temperatures there are fewer successful collisions between enzymes and substrates ✓ Enzymes are denatured at high temperatures ✓	2	2 × 2.1	
	(b)		**Any three from (ORA):** Type 1: Develops earlier in life ✓ Type 1 diabetes is permanent/irreversible ✓ Involves pancreas cells being destroyed/less or no insulin production ✓ Does not involve cells being desensitised to insulin ✓ Type 2: Treated with diet/lifestyle changes ✓ Linked to obesity/poor diet/unhealthy eating ✓	3	3 × 2.1	Assume unqualified answers are referring to type 1 diabetes **IGNORE** from birth/genetics/heredity **ALLOW** lacking insulin **ALLOW** type 2 diabetes does not respond to insulin/less sensitive to insulin. **ALLOW** treated by healthy eating/exercise/weight loss

Question			Answer	Marks	AO element	Guidance
17	(a)	(i)	Potometer ✓	1	1.2	
		(ii)	Measure the initial position and final position of bubble ✓ distance moved (by bubble) time taken ✓	2	2 × 3.1a	**ALLOW** measure distance moved by bubble / measure change in distance of bubble **IGNORE** idea of just measuring final position **ALLOW** measure how far the bubble moves in 1 minute = 2 marks
		(iii)	Idea of increasing accuracy ✓	1	3.3b	**ALLOW** to reduce effect of errors **IGNORE** to find an average/mean
		(iv)	**Any one from:** Compare results with someone else (such as another student) ✓ Repeat the experiment with different equipment ✓	1	3.3a	 **IGNORE** reproduce the experiment and compare the results **IGNORE** repeat and see if the results are similar **ALLOW** repeat the experiment with a different type of shoot
		(v)	Put leaf on graph paper and draw around it ✓ Count the number of squares inside the leaf outline ✓	2	2 × 3.2a	 If no other marks awarded then allow for 1 mark measure height and width and multiply / find radius and use π x r^2 (to calculate area)

	(b)		**First check the answer on the answer line** **If answer = 29 award 2 marks** Mean = 28 + 26 + 33 = 87 ✓ = 87 ÷ 3 = 29 ✓	**2**	 **2.2** **1.1**	 **ALLOW ECF** from incorrect addition **ALLOW** for two marks an answer of 27 if evidence seen that candidate has discounted 33 as an anomaly
	(c)	**(i)**	1.9 ✓	**1**	**3.1a**	**ALLOW** 1.8 – 2(.0)
		(ii)	Lower surface has more stomata than upper surface ✓ The more stomata, the higher/faster the transpiration rate ✓	**2**	**2 × 3.2b**	**IGNORE** directly proportional **IGNORE** numbers **ALLOW** more stomata means more/faster transpiration so more occurs on the lower leaf = 2 **ALLOW** lower surface has a higher/faster rate of transpiration because it has more stomata = 2 If no other marks awarded allow for 1 mark idea of lower surface transpiring more

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