Foundation

GCSE

Biology B Twenty First Century Science

J257/01: Breadth in Biology (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2024

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

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 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 a tick to confirm that the work has been seen.

7. Award No Response (NR) if:
   - there is nothing written in the answer space

   Award Zero '0' if:
   - anything is written in the answer space and is not worthy of credit (this includes text and symbols).

   Team Leaders must confirm the correct use of the NR button with their markers before live marking commences and should check this when reviewing scripts.

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.

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.

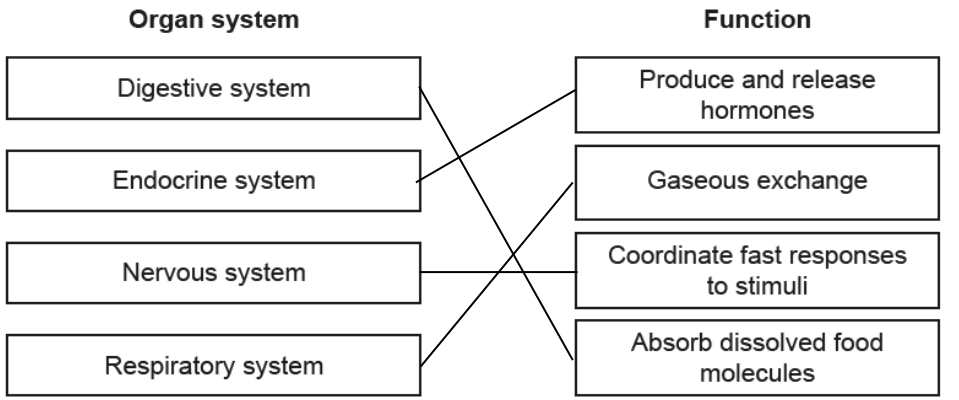
You should ensure that you have copies of these materials.

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 B:

	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.

Question			Answer	Marks	AO	Guidance
1	(a)		 ✓✓✓	3	1.1	4 correct lines = 3 marks 2 or 3 correct lines = 2 marks 1 correct line = 1 mark
	(b)		Nucleus ✓	1	1.1	
	(c)		Gene ✓	1	1.1	

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO</th><th>Guidance</th></tr>
<tr><td>2</td><td>(a)</td><td></td><td>
<table>
<tr><th></th><th>True</th><th>False</th></tr>
<tr><td>A bigger proportion of men died of dementia and Alzheimer's than women.</td><td></td><td>✓</td></tr>
<tr><td>A bigger proportion of women died of cancer than men.</td><td></td><td>✓</td></tr>
<tr><td>The same proportion of men and women died of other causes.</td><td>✓</td><td></td></tr>
<tr><td>The same proportion of men and women died of respiratory disease.</td><td>✓</td><td></td></tr>
</table>
✓✓</td><td>2</td><td>3.2b</td><td>4 correct = 2 marks
2 or 3 correct = 1 mark</td></tr>
<tr><td></td><td>(b)</td><td></td><td>Any two from
Smoking ✓
Alcohol ✓
Obesity/being overweight ✓

Named example of poor diet e.g. high fat/salt/sugar/refined carbohydrate ✓

Lack of exercise ✓
Stress ✓
Recreational drugs ✓</td><td>2</td><td>1.1</td><td>IGNORE drinking
ALLOW being underweight
IGNORE poor/unhealthy diet unqualified/eating bad things/not a balanced diet
IGNORE eating fatty/salty/sugary foods

ALLOW named example e.g. Ecstasy</td></tr>
<tr><td></td><td>(c)</td><td></td><td>blood ✓
capillaries ✓
valves ✓</td><td>3</td><td>1.1</td><td></td></tr>
<tr><td></td><td>(d)</td><td></td><td>Urea ✓
Water ✓</td><td>2</td><td>1.1</td><td></td></tr>
</table>

Question			Answer	Marks	AO	Guidance
3	(a)		There are more stomata on the lower surface of the leaf. ✓	1	3.2a	
	(b)		**Any two from** Water (vapour) is lost through stomata ✓ All stomata/stomata on both surfaces were blocked/covered (in grease) ✓ So less water lost ✓	2	3.1b	**ALLOW** moisture for water **ALLOW** water (vapour) moves through stomata **DO NOT ALLOW** water (vapour) enters and leaves through stomata **ALLOW** openings for stomata **ALLOW** the stomata were not exposed **ALLOW** no water lost **ALLOW** for 2 marks water was not able to leave through the stomata
	(c)		(Method) don't cover either side of leaf (in grease) ✓ (Result) wilting ✓	2	3.3a	**ALLOW** get a leaf and do nothing to it **ALLOW** shrivel/droop

Question			Answer	Marks	AO	Guidance
	(d)		<table><tr><th></th><th>True</th><th>False</th></tr><tr><td>Mineral ions move into the leaf via the stomata.</td><td></td><td>✓</td></tr><tr><td>Stomata allow water to enter the leaf.</td><td></td><td>✓</td></tr><tr><td>Stomata are needed for the exchange of gases.</td><td>✓</td><td></td></tr><tr><td>The size of the stomata is controlled by guard cells.</td><td>✓</td><td></td></tr></table> ✓✓	2	1.1	4 correct = 2 marks 2 or 3 correct = 1 mark
	(e)		Photosynthesis ✓	1	1.1	
	(f)		Xylem ✓	1	1.1	

Question			Answer	Marks	AO element	Guidance
4	(a)		Charles Darwin and Alfred Russel Wallace ✓	1	1.1	
	(b)		**A D C E B** ✓✓✓✓	4	2.1	A before D = 1 mark D before C = 1 mark C before E = 1 mark E before B = 1 mark
	(c)		Transport oxygen ✓	1	1.1	**ALLOW** carry/move/transfer oxygen **IGNORE** provide oxygen **DO NOT ALLOW** nutrients

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO</th><th>Guidance</th></tr>
<tr><td>5</td><td>(a)</td><td></td><td>Male gametes Z and Z ✓

Female gametes Z and W ✓

Offspring ZZ, ZZ, ZW, ZW ✓</td><td>3</td><td>2.1</td><td><table><tr><td></td><td></td><td>Sperm cells
Z</td><td>Z</td></tr><tr><td></td><td>Z</td><td>ZZ</td><td>ZZ</td></tr><tr><td>Egg cells</td><td>W</td><td>ZW</td><td>ZW</td></tr></table>ALLOW ECF in the offspring if male gametes are ZZ and female gametes are Z and one other (incorrect) letter e.g. T</td></tr>
<tr><td></td><td>(b)</td><td></td><td><table><tr><th></th><th>Only birds</th><th>Only humans</th><th>Both birds and humans</th></tr><tr><td>Sex is determined by two different chromosomes.</td><td></td><td></td><td>✓</td></tr><tr><td>Males are produced when there are two copies of the same chromosome.</td><td>✓</td><td></td><td></td></tr><tr><td>In females, sex is determined by the presence of two different chromosomes.</td><td>✓</td><td></td><td></td></tr></table>✓✓</td><td>2</td><td>2.1</td><td>3 correct = 2 marks
1 or 2 correct = 1 mark</td></tr>
</table>

	(c)		**Any three from** Y chromosome (important in development of male characteristics) ✓ (SRY) gene (on the Y chromosome) ✓ (Causes the development of) testes ✓ (Male characteristics develop) due to male sex hormone ✓	**3**	**1.1**	**ALLOW** males have XY chromosomes **IGNORE** just males are XY with no mention of chromosomes in answer **DO NOT ALLOW** males are YY/have two Y chromosomes **ALLOW** testosterone
	(d)		Sugar ✓ Phosphate ✓	**2**	**1.1**	**ALLOW** answers anywhere in the response area **IGNORE** double helix

Question			Answer	Marks	AO	Guidance
6	**(a)**		C ✓	**1**	**1.1**	
	(b)		B ✓	**1**	**1.1**	
	(c)		Transmits nerve impulses to the brain ✓	**1**	**1.1**	
	(d)		Makes the lens cloudy ✓ **Any one from** (Cloudy lens) reduces light entering ✓ Idea of (cloudy lens causing) blurred/misty/impaired vision ✓	**2**	**1 x 1.1** **1 x 2.1**	**ALLOW** creates a cloudy film over the lens **ALLOW** blindness/sight loss **ALLOW** sensitive to light **IGNORE** short/long sightedness

	(e)		**Any two from** (Yes) The treatment restored eyesight/was successful (in the babies in the study) ✓ The treatment worked quickly ✓ Idea of (the study having a) high success rate e.g. 100%/all babies/12 out of 12 ✓ (No) Only tested on 12 babies ✓ Long term/future effects not known ✓ Idea of risk associated with surgery / complications after surgery ✓	**2**	**2.2**	**ALLOW** a mixed response **ALLOW** (other babies offered treatment) would have improved vision/would be able to see/have improved sight **IGNORE** babies would have a better quality of life **ALLOW** the idea that 0%/no babies/0 out of 12 did not re-grow a lens **ALLOW** for 2 marks the treatment was 100% successful **ALLOW** more testing/research is needed **IGNORE** surgery is dangerous **IGNORE** surgery is risky because it may leave stem cells behind **ALLOW** for 2 marks the outcome outweighs the risk of surgery **ALLOW** for 1 mark idea that even if the new lens developed a cataract again, vision would not be worse than before the operation

Question			Answer	Marks	AO element	Guidance
7	(a)		**Any one from** Bacteria ✓ Fungi ✓ Protist ✓	1	1.1	
	(b)		**Any one from** Prevent (further) spread ✓ Reduce the chance of contact between susceptible/ healthy and infected animals ✓ To eradicate the virus quickly as possible ✓ Idea of minimal treatment options e.g. antibiotic treatment would not work ✓ Reduce economic losses ✓ Food security concerns ✓ Prevent animals suffering ✓ Minimise impact on international trade ✓ Prevent infection of wild animals ✓	1	3.2a	**IGNORE** just to reduce the number of cases **ALLOW** to reduce the number of new cases **IGNORE** to kill the virus quickly
	(c)	(i)	**Any two from** Observe animals for signs of disease ✓ Idea of testing (to establish a diagnosis) ✓ Isolate/prevent contact between (infected) animals ✓ Wash hands between animals ✓ Wear (disposable) gloves/clothing ✓ Clean/disinfect boots/clothes before touching different animals ✓ Clean/disinfect equipment between animals/do not share equipment between animals ✓ Clean/disinfect the environment e.g. pens/sheds ✓	2	2.1	**ALLOW** do not share food/water/bedding between animals **IGNORE** just use chemicals **IGNORE** vaccination

		(ii)	**Any one from** Wash hands between farm visits ✓ Wear protective clothing/gloves ✓ Clean/disinfect boots/clothing (when entering and leaving farms) ✓ Clean/disinfect equipment used on animals ✓ Clean/disinfect machinery/car ✓ Prevent unnecessary visits to farms ✓	**1**	**2.1**	**ALLOW** shower between farms **ALLOW** change clothes between farms **IGNORE** the vet can be vaccinated against Foot and Mouth
	(d)		**Any three from** Vaccine contains safe form of virus/pathogen **OR** antigen for foot and mouth/virus/pathogen ✓ (Body produces more) white blood cells ✓ (White blood cells produce) antibodies ✓ (If infected with actual virus) white blood cells/antibodies are produced quickly ✓ Idea of production of memory cells ✓	**3**	**2.1**	**ALLOW** dead/inactive/weakened virus/pathogen **IGNORE** small dose of the pathogen **IGNORE** denatured/harmless pathogen **IGNORE** small/weak dose of the disease **IGNORE** cells/part of the virus/bacteria **IGNORE** vaccines contain antibodies **ALLOW** plasma cells/lymphocytes **IGNORE** white blood cells if linked to phagocytosis **IGNORE** antibodies produce white blood cells
	(e)		**Any one from** Idea it would take time to build immunity ✓ Idea the vaccine would not help (prevent the disease) if animals were already infected ✓ Idea vaccines are (only) used to prevent disease ✓	**1**	**3.2a**	**IGNORE** just that the disease had already spread

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO element</th><th>Guidance</th></tr>
<tr><td>8</td><td>(a)</td><td></td><td>
<table>
<tr><th></th><th>Describes meiosis</th><th>Describes mitosis</th></tr>
<tr><td>Cells formed are gametes.</td><td>✓</td><td></td></tr>
<tr><td>Cells formed contain half the number of chromosomes.</td><td>✓</td><td></td></tr>
<tr><td>Cells formed contain identical genetic information.</td><td></td><td>✓</td></tr>
<tr><td>There are two cell divisions.</td><td>✓</td><td></td></tr>
</table>
✓✓
</td><td>3</td><td>1.1</td><td>4 correct = 3 marks
2 or 3 correct = 2 marks
1 correct = 1 mark</td></tr>
<tr><td></td><td>(b)</td><td></td><td>Any two from
Site of cellular respiration ✓

Produce ATP ✓
ATP needed for movement/swimming ✓</td><td>2</td><td>2.1</td><td>ALLOW mitochondria release energy/mitochondria needed for (release of) energy

IGNORE because sperm need energy to swim

DO NOT ALLOW mitochondria produce/make energy

ALLOW sperm need ATP to get to the egg</td></tr>
</table>

	(c)		**Any two from** Idea of geographical separation (described) ✓ Mutations (in individuals of the separate populations) ✓ Environment/habitat/conditions/resources different (either side of the canyon) ✓ Natural selection/the populations of squirrels became adapted to the different environments ✓ Over time the squirrels became so different could no longer reproduce/breed ✓ Separate species as they could no longer breed/reproduce to produce fertile offspring ✓	**2**	**2.1**	**ALLOW** squirrels unable to mix with each other / are isolated **IGNORE** the environment changed **IGNORE** each side is different **IGNORE** the squirrels adapted to their environment
	(d)		Population will reduce ✓	**1**	**3.2a**	**ALLOW** idea of endangered or extinction

Question			Answer	Marks	AO element	Guidance
9	(a)		**Any one from** Idea they would know if the dog was ill because its temperature would be too low/too high/abnormal/different (from normal) ✓ Idea that as dog's body temperature is a range, an individual dog may be normally at the higher or lower end of the range ✓	1	2.1	**IGNORE** so they would know if the dog was ill **IGNORE** if the dog had a high temperature they would need to know
	(b)	(i)	**First check the answer on answer line** **If answer = 38.8 award 3 marks** 38.7 + 38.9 + 38.7 / 116.3 ✓ 116.3 ÷ 3 / 38.76666... ✓ = 38.8 to 1 d.p.✓	3	1.2	**ALLOW** small misread from the table e.g. 1 decimal incorrect if working shown but **DO NOT ALLOW** this as an **ECF** for marking point 2 **ALLOW** correct conversion of an incorrect number to 1 d.p. for 1 mark **ALLOW** 38.76(666...) / 38.7 / 39 for 2 marks
		(ii)	**Any one from** Idea that temperature fluctuates ✓ Idea of identifying outliers/anomalies ✓ To calculate a more accurate mean ✓ Idea of repeatability (to check precision) ✓	1	2.1	**IGNORE** accurate or precise unqualified **IGNORE** reliability **IGNORE** in case there is a fault with the thermometer **IGNORE** in case you make a mistake when you record a reading

	(c)		(No because) **Any two from** (Temperature) is not consistently over 40 (°C) / is only over 40 (°C) for 1/1-2/2 hour(s) / is 40 (°C) (or above) twice / only goes 0.1 above 40 (°C) / only over 40 (°C) once / most readings/5/5 hours are under 40 (°C) / does not remain over 40 (°C) for long ✓ (After hour 4) the temperature decreases ✓ (By the end/ 7th hour) temperature had returned to normal ✓ The mean temperature was 39.4 (°C) / the dog's mean temperature does not exceed 40 (°C) ✓ Dog might have a high normal temperature / normally have a temperature that is higher than the normal range ✓	**2**	**3.2a**	**IGNORE** the temperatures are consistently over the normal range
	(d)		**Any two from** Enzymes/proteins/active sites (of enzymes) change/lose shape ✓ Idea of enzyme function being adversely affected ✓ Metabolic reactions affected ✓ (Pant/sweat more so) may dehydrate ✓	**2**	**2.1**	**ALLOW** denatured **ALLOW** chemical reactions slow down **ALLOW** named metabolic reaction

Question			Answer	Marks	AO element	Guidance
10	(a)	(i)	Idea that the distance between the lamp and pondweed/(boiling) tube is altered ✓ (Count) the number of bubbles produced by the plant over a set/stated period of time ✓ **Any one from** Idea that will control or keep the same:- (Piece/type/species/size/length) pondweed ✓ External light sources ✓ Temperature ✓ Carbon dioxide concentration ✓ Volume/stated volume of water ✓ pH of water ✓	3	1.2	**ALLOW** stated distances **ALLOW** change the intensity of the bulb/lamp/light source **IGNORE** amount of light **ALLOW** time how long it takes to count stated number of bubbles **IGNORE** ref to rate unqualified **IGNORE** record the speed of the bubbles **ALLOW** use same mass/volume/concentration of sodium hydrogen carbonate **ALLOW** use the same light bulb/lamp if this is not what has been changed
		(ii)	**Any two from** Idea that bubbles/gas/oxygen enters/is collected in the syringe/equipment **OR** bubbles/gas/oxygen can't escape ✓ Idea that syringe/equipment measures volume (of gas/oxygen) ✓ Bubbles have different sizes/vary in volume ✓ Idea of counting errors of bubbles ✓ Rate can be calculated as volume over time ✓	2	3.3b	**IGNORE** references to reliable / accurate / precise Must be clear that that the gas is going into the syringe/equipment not the boiling tube **IGNORE** air/names of gas if incorrect **ALLOW** the syringe measures the volume of gas/oxygen = 2 marks

Question			Answer	Marks	AO element	Guidance
	(b)		Section **A** ✓	**1**	**3.1a**	

Question			Answer	Marks	AO	Guidance
11	**(a)**		A population ✓	**1**	**1.1**	
	(b)		2 ✓ 3 ✓ 3 ✓	**3**	**2.1**	
	(c)		**First check the answer in table / on answer line** **If answer = 91.5% award 3 marks** 75 ÷ 82 / 0.914(63415) ✓ 0.91463415 x 100 / 91.4(63415) ✓ to 3 sig figs = 91.5% ✓	**3**	**2.1**	**ALLOW** 91.4 (and any correct evaluated number) for 2 marks **ALLOW** if MP1 is not awarded, credit any number below 1 multiplied by 100. **ALLOW** an incorrect evaluated number correctly rounded to 3 sig figs
	(d)	**(i)**	Biuret ✓	**1**	**1.2**	**ALLOW** sodium hydroxide and copper sulfate
		(ii)	Fatty acids ✓ Glycerol ✓	**2**	**1.1**	
		(iii)	Ratio of 67.5:50 / 50 ÷ 50 = 1 ✓ 67.5 ÷ 50 = 1.35 ✓	**2**	**1.2**	**ALLOW** 50 ÷ 1 = 50 **ALLOW** 1 x 50 = 50 **ALLOW** 1.35 x 50 = 67.5 **ALLOW** 67.5 ÷ 1.35 = 50

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