Higher

GCSE

Biology B Twenty First Century Science

J257/04: Depth in Biology (Higher 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.

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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 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. 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.

8. 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.

9. 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.

10. 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.

11. 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 questions on this paper are **2(a)** and **4(e)(ii)**.

12. Annotations available in RM Assessor

Annotation	Meaning
	Correct response
	Incorrect response
	Omission mark
BOD	Benefit of doubt given
CON	Contradiction
RE	Rounding error
SF	Error in number of significant figures
ECF	Error carried forward
L1	Level 1
L2	Level 2
L3	Level 3
NBOD	Benefit of doubt not given
SEEN	Noted but no credit given
I	Ignore

13. 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

14. **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.

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO element</th><th>Guidance</th></tr>
<tr><td>1</td><td>(a)</td><td></td><td>
<table>
<tr><th></th><th>Only aerobic</th><th>Only anaerobic</th><th>Both</th><th>Neither</th></tr>
<tr><td>Is exothermic</td><td></td><td></td><td>✓</td><td></td></tr>
<tr><td>Produces lactic acid</td><td></td><td>✓</td><td></td><td></td></tr>
<tr><td>Requires glucose</td><td></td><td></td><td>✓</td><td></td></tr>
<tr><td>Requires oxygen</td><td>✓</td><td></td><td></td><td></td></tr>
</table>
</td><td>4</td><td>1.1</td><td></td></tr>
<tr><td></td><td>(b)</td><td></td><td>more than ✓</td><td>1</td><td>1.1</td><td></td></tr>
</table>

Question			Answer	Marks	AO element	Guidance
2	(a)*		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)** Method includes references to named apparatus **AND** how to use apparatus to collect data **AND** how to avoid bias in the field. *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)** Method includes how to use apparatus to collect data **AND** references to named apparatus **OR** how to avoid bias in the field. *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)** Describe/name apparatus needed **OR** how to use apparatus to collect data **OR** how to avoid bias in the field. *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.*	6	2 x 2.2 4 x 3.3a	**AO2.2 Applying knowledge of fieldwork to identify appropriate apparatus to collect the data** For example: • quadrat(s) for each small square • identification key/app to identify snowdrops • tape measure / trundle wheel / metre rule • random number table/generator / other suitable apparatus eg on a computer or calculator **AO3.3a Developing an appropriate method to collect the data** For example: • place quadrats/squares on the field/ground • use identification key/app to identify snowdrops • count/record number of snowdrops in each square/quadrat • idea of repeating / doing it 6/multiple times • ref. to safe working e.g. placing quadrats using random coordinates is safer than throwing • avoid trampling/picking snowdrops/flowers inside squares/quadrats **AO3.3a How to avoid bias in the data** • measure area / (length and width of) the field divide field into a grid • label grid with numbers or letters / coordinates • use random number table/generator/coordinates to decide where to place the squares/quadrats • place squares/quadrats randomly **OR** evenly/regularly across the field **IGNORE** idea of transect / squares next to each other

Question			Answer	Marks	AO element	Guidance
2	(b)		**FIRST CHECK THE ANSWER ON ANSWER LINE** **If answer = 5 award 2 marks** 5 + 8 + 2 + 9 + 0 + 6 = 30 ÷ 6 ✓ = 5 ✓	2	2.2	
	(c)		**FIRST CHECK THE ANSWER ON ANSWER LINE** **If answer = 2400 award 2 marks** 600 ÷ 0.25 ✓ = 2400 ✓	2	2.2	
	(d)		(5 x 2400) = 12000 ✓	1	3.2b	**ALLOW ECF** from candidate's answers to parts (b) and (c)
	(e)		**Any one from:** haven't counted / can't count all the snowdrops / would take too long to count them all ✓ idea that it's only a (small) sample of the snowdrops/field / only a small area ✓	1	3.2a	
	(f)		bigger sample/area **OR** more squares/quadrats / idea of repeating **OR** larger squares/quadrats ✓	1	3.3b	**IGNORE** "collect more data" unexplained

Question			Answer	Marks	AO element	Guidance
3	(a)		glucose **AND** digestive ✓ oxygen **AND** carbon dioxide ✓ urea **AND** excretory ✓	3	1.1	**DO NOT ALLOW** reversed order
	(b)	(i)	**Any two from:** structure A pumps blood to the whole body ✓ so needs (more muscle) to pump with higher force/pressure ✓ whereas structure B only pumps blood to the lungs ✓	2	1.1	**ALLOW** Structure A = 'it' **ALLOW** around the body **IGNORE** withstand pressure
		(ii)	blood would flow backwards / the wrong way / into the atrium (when structure A / the ventricle contracts) ✓ less blood would get to the body / blood pressure in the body would be lower ✓	2	2.1	Ensure correct chamber quoted **ALLOW** other reasonable suggestions of consequences, e.g. body cells/tissues/organs would receive less blood/oxygen/glucose
	(c)		count the number of beats (in the 20 seconds) ✓ multiply by 3 to convert to beats per minute ✓	2	2.2	**DO NOT ALLOW** "measure pulse rate" (in question stem)
	(d)	(i)	fitness ✓	1	2.2	**ALLOW** "fit and unfit" **DO NOT ALLOW** answers that describe the test
		(ii)	age/sex/ethnicity/these variables might affect pulse rate ✓ idea that keeping them the same enables the effect of fitness (alone) to be compared / gives valid conclusion ✓	2	2.2	**DO NOT ALLOW "**to make it a fair test" without further explanation **ALLOW** for 2nd mark **"**so that fitness is the only variable" oe

Question			Answer	Marks	AO element	Guidance
3		(iii)	**Any one from:** body mass ✓ smoker/non-smoker ✓ amount of rest (before the test) ✓ caffeine intake (before the test) ✓ water intake (before the test) ✓ food/sugar/carbohydrate/protein intake (before the test) ✓	1	3.3a	**DO NOT ALLOW** fitness/health, age/sex/ethnicity or duration of exercising on the bike, as these are given in the question **ALLOW "**weight" **IGNORE "**height" / "lifestyle" **DO NOT ALLOW** "diet" unqualified
	(e)	(i)	**Any three from:** pulse rate increases (over the period of exercise after exercise begins) ✓ from 98 to 166 bpm +/- 1 / by 68 bpm +/- 2 ✓ most rapid for first one/two/three minutes ✓ figures quoted for one/two/three minutes ✓ increases less rapidly as exercise continues ✓ figures quoted for three/four/five minutes ✓	3	3.1a	**ALLOW** quotes 166bpm +/- 1 as highest

Question			Answer	Marks	AO element	Guidance
3		(ii)	**Any two from:** heart beats faster to transfer more oxygen(ated blood) around the body / to transfer more glucose around the body ✓ to supply muscle (cells) (oxygen/glucose) for (aerobic) respiration ✓ (more) respiration in (contracting/working) muscle cells provides ATP/energy ✓ to remove carbon dioxide produced by respiration (in muscle cells) ✓	2	2.1	**DO NOT ALLOW** ''energy produced / made / created''
		(iii)	**Any one from:** person B's resting/normal pulse rate is lower (than person A's) ✓ person B's maximum pulse rate is lower (than person A's) / it increases less during the exercise period ✓ person B's pulse rate returns to its resting/normal value faster (than person A's) / person B's recovery rate is faster ✓	1	3.1b	**ORA** for person B throughout Statements must be comparative **ALLOW** uses figures to show this **ALLOW** heart rate for pulse rate

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO element</th><th>Guidance</th></tr>
<tr><td>4</td><td>(a)</td><td></td><td>phytoplankton ✓</td><td>1</td><td>2.1</td><td></td></tr>
<tr><td></td><td>(b)</td><td></td><td>phytoplankton are at the start of the food chain / they don’t eat other organisms ✓

phytoplankton must make their own food / they must be photosynthetic ✓</td><td>2</td><td>3.1b</td><td></td></tr>
<tr><td></td><td>(c)</td><td></td><td>zooplankton eat phytoplankton / zooplankton are (primary) consumers ✓

zooplankton are not at the start of the food chain /zooplankton are in the second trophic level ✓</td><td>2</td><td>3.1b</td><td></td></tr>
<tr><td></td><td>(d)</td><td></td><td><table><tr><th></th><th>True</th><th>False</th></tr><tr><td>Fig. 4.1 shows how many…</td><td></td><td>✓</td></tr><tr><td>The food chain has three…</td><td></td><td>✓</td></tr><tr><td>There are four populations…</td><td>✓</td><td></td></tr></table></td><td>2</td><td>2.1</td><td>Three correct ticks = 2 marks
Two correct ticks = 1 mark</td></tr>
<tr><td></td><td>(e)</td><td>(i)</td><td>FIRST CHECK THE ANSWER ON ANSWER LINE
If answer = 0.6 award 3 marks

(0.1 ÷ 17.70) × 100 ✓
= 0.56(497175) ✓

= 0.6 (% to 1 sig. fig.) ✓</td><td>3</td><td>2 x 2.2

1.2</td><td>ALLOW ECF if the correct values from the figure are chosen but used incorrectly for the second and third MPs</td></tr>
</table>

Question			Answer	Marks	AO element	Guidance
4	(e)	(ii)*	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)** **Full explanation across all three areas:** Interpretation of the biomass data. An understanding of biomass transfer to explain the trend. Why the food chain can only support 5 large fish. *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)** **Limited explanation across all three areas or full explanation of two areas:** Interpretation of the biomass data. An understanding of biomass transfer to explain the trend. Why the food chain can only support 5 large fish. *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)** **Explanation includes:** Interpretation of the biomass data **OR** an understanding of biomass transfer to explain the trend **OR** why the food chain can only support 5 large fish. *There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.*	**6**	**2 x 3.1a** **4 x 2.1**	**AO3.1a Interpreting the biomass data** For example: • the amount of biomass decreases in each higher bar/trophic level • not all of / only a small amount of the biomass is transferred from each level to the next • discussion of efficiency of energy transfer • idea that phytoplankton must be very small / have low biomass • explains shape of biomass pyramids **AO2.2 Applying understanding of biomass transfer to explain the trend** For example: • some biomass is used in cellular respiration in producer / phytoplankton • not all organisms are eaten • not all parts of organisms are eaten/digested (e.g. bones) • some ingested biomass is used in cellular respiration / used to provide energy / used to warm the body / surroundings in consumers • some ingested biomass is egested / excreted (e.g. faeces, carbon dioxide) **AO2.2 Applying understanding of biomass transfer to explain why food chain can only support 5 large fish** For example: • very little biomass reaches the large fish • only about 0.5% reaches top • percentage/efficiency of biomass transfer is low

Question			Answer	Marks	AO element	Guidance
			0 marks *No response or no response worthy of credit.*			• gives figure of 10% transfer between each level • more large fish would require greater numbers of all other organisms / more efficient biomass transfer

Question			Answer	Marks	AO element	Guidance
5	(a)	(i)	idea that none of them are 100% effective / maximum effectiveness is less than 100% ✓	1	3.1a	
		(ii)	(hormone) injection ✓ **And any one from:** one injection lasts 8-13 weeks / don't have to take it daily / don't have to remember to insert it into the vagina before sex ✓ high(est) effectiveness / 99% maximum / 94% during normal use ✓	2	3.2a	
	(b)		condom prevents transmission/spread ✓ (of) sexually-transmitted infections / diseases / pathogens / viruses / bacteria / fungi **OR** named example ✓	2	1.1	**ALLOW** "protects against / from …. / reduces risk" **ALLOW** "STI's / STD's" e.g. HIV/AIDS, chlamydia, gonorrhoea, HPV, genital warts, herpes, syphilis
	(c)		FSH ✓ oestrogen ✓ LH ✓ progesterone ✓	4	1.1	

Question			Answer	Marks	AO element	Guidance
5	(d)		**Any three from:** thick cervical mucus produced (less likely for implantation to occur) ✓ thins lining of uterus (to reduce chance of implantation occurring) ✓ progesterone stops/reduces the production of FSH ✓ progesterone stops/reduces the production of LH ✓ (without FSH) follicle will not mature ✓ (without LH) egg will not be released / ovulation is prevented ✓	3	1.1	**ALLOW** "prevents uterus lining from thickening" **IGNORE** references to oestrogen in the combined pill

Question			Answer	Marks	AO element	Guidance
6	(a)	(i)	selective breeding ✓	1	2.1	
		(ii)	**Any two from:** more food (can be grown to feed people / animals) / increases yield ✓ the world's population is increasing (so more food is needed) ✓ idea that farmers will sell more / supports their livelihood / more profit ✓ increased food security ✓	2	2.1	
	(b)		DBAC ✓✓✓	3	1.1	D before B ✓ B before A ✓ A before C ✓
	(c)		**Any three from:** growing (pea) plants releases less carbon dioxide/greenhouse gas than farming animals / ORA ✓ (because) plants absorb/remove carbon dioxide from the atmosphere for <u>photosynthesis</u> ✓ (and) animals release carbon dioxide into the atmosphere due to <u>respiration</u> ✓ (and) animals release methane which is another greenhouse gas into the atmosphere ✓ (it's better to reduce levels of) greenhouse gases because they cause climate change / global warming / biodiversity loss / habitat loss ✓	3	2.1	**IGNORE** arguments about health benefits of eating more plants/less meat, and arguments about animal welfare/ethics, as the question asks for benefits to the *environment*

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>AO element</th><th>Guidance</th></tr>
<tr><td>7</td><td>(a)</td><td></td><td><table><tr><th>Substance</th><th>Process</th></tr><tr><td></td><td rowspan="2">photosynthesis ✓</td></tr><tr><td>Carbon dioxide ✓</td></tr><tr><td></td><td><u>aerobic</u> respiration ✓</td></tr></table></td><td>3</td><td>1.1</td><td>ALLOW CO_2 / CO2 but DO NOT ALLOW CO^2 or Co</td></tr>
<tr><td></td><td>(b)</td><td>(i)</td><td>FIRST CHECK THE ANSWER ON ANSWER LINE
If answer = 10 award 2 marks

5 ÷ 50 = 0.1 ✓
x 100 = 10 (%) ✓</td><td>2</td><td>2.1</td><td>ALLOW ECF for their value for MP1 X 100</td></tr>
<tr><td></td><td></td><td>(ii)</td><td>Any two from:

water was lost by <u>transpiration/evaporation</u> ✓

water was lost through (open) <u>stomata</u> ✓

some of the water taken in was used for <u>photosynthesis</u> ✓

idea that the plant’s mass increased by less than 5 g due to excretion of other substances (e.g. carbon dioxide) ✓</td><td>2</td><td>2.1</td><td>ALLOW idea that parts of the plant may have been eaten / removed / fallen off</td></tr>
<tr><td></td><td>(c)</td><td>(i)</td><td>mineral ions ✓</td><td>1</td><td>1.1</td><td></td></tr>
<tr><td></td><td></td><td>(ii)</td><td>nitrate – proteins ✓

phosphate – nucleotides ✓</td><td>2</td><td>1.1</td><td>DO NOT ALLOW more than one line from left hand side boxes except IGNORE line from nitrate to nucleotides</td></tr>
</table>

Question			Answer	Marks	AO element	Guidance
7	(d)		it is an exchange surface ✓	1	2.1	
	(e)	(i)	**Any three from**: amount of nitrate taken in would decrease ✓ (because) nitrate/mineral ions are taken in by active transport ✓ ATP/energy for this is provided by respiration in the mitochondria ✓	3	2.1	**DO NOT ALLOW** ''energy produced / made / created''
		(ii)	amount of water taken in will not be affected ✓ *(because)* water is taken in by osmosis / this does not require energy/ATP from respiration/mitochondria / only requires diffusion / only requires a concentration gradient / it is a passive process ✓ **OR** amount of water taken in will decrease ✓ *(because)* idea that there will be less nitrate in cytoplasm / lower concentration gradient, so less osmosis/diffusion of water into cell ✓	2	2.1	

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