

# GCSE Examiners' Report

Biology  
GCSE  
Summer 2025

© WJEC CBAC Ltd. 2025



## Introduction

Our Principal examiners' report provides valuable feedback on the recent assessment series. It has been written by our Principal Examiners and Principal Moderators after the completion of marking and moderation, and details how candidates have performed in each unit.

This report opens with a summary of candidates' performance, including the assessment objectives/skills/topics/themes being tested, and highlights the characteristics of successful performance and where performance could be improved. It then looks in detail at each unit, pinpointing aspects that proved challenging to some candidates and suggesting some reasons as to why that might be.<sup>1</sup>

The information found in this report provides valuable insight for practitioners to support their teaching and learning activity. We would also encourage practitioners to share this document – in its entirety or in part – with their learners to help with exam preparation, to understand how to avoid pitfalls and to add to their revision toolbox.

## Further support

Document	Description	Link
Professional Learning / CPD	WJEC offers an extensive programme of online and face-to-face Professional Learning events. Access interactive feedback, review example candidate responses, gain practical ideas for the classroom and put questions to our dedicated team by registering for one of our events here.	<a href="https://www.wjec.co.uk/home/professional-learning/">https://www.wjec.co.uk/home/professional-learning/</a>
Past papers	Access the bank of past papers for this qualification, including the most recent assessments. Please note that we do not make past papers available on the public website until 12 months after the examination.	<a href="#">Portal by WJEC</a> or on the WJEC subject page
Grade boundary information	Grade boundaries are the minimum number of marks needed to achieve each grade. For unitised specifications grade boundaries are expressed on a Uniform Mark Scale (UMS). UMS grade boundaries remain the same every year as the range of UMS mark percentages allocated to a particular grade does not change. UMS grade boundaries are published at overall subject and unit level.  For linear specifications, a single grade is awarded for the subject, rather than for each unit that contributes towards the overall grade. Grade boundaries are published on results day.	For unitised specifications click here: <a href="#">Results, Grade Boundaries and PRS (wjec.co.uk)</a>

---

<sup>1</sup> Please note that where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

Exam Results Analysis	WJEC provides information to examination centres via the WJEC Portal. This is restricted to centre staff only. Access is granted to centre staff by the Examinations Officer at the centre.	<a href="#">Portal by WJEC</a>
Classroom Resources	Access our extensive range of FREE classroom resources, including blended learning materials, exam walk-throughs and knowledge organisers to support teaching and learning.	<a href="https://resources.wjec.co.uk/">https://resources.wjec.co.uk/</a>
Bank of Professional Learning materials	Access our bank of Professional Learning materials from previous events from our secure website and additional pre-recorded materials available in the public domain.	<a href="#">Portal by WJEC</a> or on the WJEC subject page.
Become an examiner with WJEC.	We are always looking to recruit new examiners or moderators. These opportunities can provide you with valuable insight into the assessment process, enhance your skill set, increase your understanding of your subject and inform your teaching.	<a href="#">Become an Examiner   WJEC</a>

## Contents

	<b>Page</b>
Executive summary	5
Unit 1: Biology 1- Foundation tier	6
Unit 1: Biology 1- Higher tier	9
Unit 2: Biology 2- Foundation tier	12
Unit 2: Biology 2- Higher tier	14
Unit 3: Practical Assessment	18
Supporting you – useful contacts and links	21

## Executive Summary

The majority of the cohort for this qualification sit the higher tier. This includes some very able candidates. The easing of the foundation tier papers which has occurred for a number of series continued to have an effect on the accessibility of those papers and it is pleasing to see the majority of candidates attempting most of the paper. Again this year, it was noted that some candidates entered for higher tier would have benefitted from sitting the foundation tier paper.

Recall of knowledge (AO1 questions) continues to be an issue for many candidates – especially at foundation tier. The recall of definitions were a particular issue for questions assessing knowledge of potometers and invasive species.

Better scoring candidates were able to use all the information given to them in the form of text, images and tables in order to describe trends and explain biological ideas / processes (AO2) and also to reach conclusions (AO3). However, this was not true for a significant number of candidates. Candidates should be reminded to try and interact with all the information given to them. It is there to help them, and they should try and use it in their answers. Candidates should be encouraged to use the axes labels given to them when describing trends. Many marks were lost due to candidates making up their own labels which were then too vague to be given credit.

Mathematical skills of candidates were generally good, especially where the formulae were provided. However, many struggled to identify the correct denominator in percentage change calculations. Most calculations either state the way they would like the answer to be expressed or request that it is added to a given table. When adding results to a table the answer should be given in a similar format to the results already present. Many candidates again lost marks as they did not take heed of what they had been asked to do.

Once again, this year the literacy skills of many candidates made it difficult to award them credit. Handwriting was often very difficult to read and many candidates struggled to communicate clearly and effectively. The use of correct biological terminology was lacking in a significant number of candidates, and many responses were too vague to be creditworthy.

The performance in QER questions varied across the units and was seen to be better in unit 2 than in unit 1. This may be down to the greater maturity and exam experience of the candidates sitting unit 2. There has been a lot more scaffolding provided in the foundation tier assessments over the last few years. Candidates should make sure they interact with the information given as this will enable them to at least access a few points of indicative content in their answers.

Performance in practical questions on the theory written papers was not as good at times as in the Unit 3 assessment. Interestingly if these questions had appeared in the practical task it is likely they would have coped with them well, e.g. variables, anomaly, repeatability etc. It is the transfer of skills which is the issue. However, interacting with graphs in a practical context was well done.

Our digital resources website offers blended learning lessons and knowledge organisers, among other materials. Please ensure you are accessing the correct site with legacy resources (link [here](#)) and not the sister site for the new Made-for-Wales qualifications.

# BIOLOGY

## GCSE

Summer 2025

### UNIT 1: FOUNDATION TIER

#### Overview of the Unit

Unit 1 assesses the candidates on some of the fundamental areas of Biology. The topics covered are cells and movement across membranes, respiration and the respiratory system in humans, digestion and the digestive system in humans, circulatory system in humans, plants and photosynthesis, and ecosystems, nutrient cycles and human impact on the environment.

The demand of the questions was comparable to those of previous papers and the paper was a suitable and fair test for candidates at Foundation level. In general, later questions in the paper proved more challenging than the earlier ones. It was important that all the questions were read very carefully, especially taking time to analyse data in tables and graphs.

The following topics were well understood or well-answered:

- Cell structure and function (Q1)
- Labelling of the human digestive system (Q2a and Q2b)
- Labelling axes on a line graph (Q6bi)
- Naming photosynthesis in the carbon cycle (Q7aii)

Candidates found the following areas challenging:

- Describing trends in graphs (Q2ci & Q6c)
- Showing clear workings for calculations (Q2civ & Q6b)
- Recall of the word equation for aerobic respiration (Q3b)
- Recall of potometer (Q6a)
- Recall of lock and key model (Q8a)

#### Comments on individual questions/sections

Q.1 Part (a)(i) was done very well by the candidates who attempted it, with most candidates obtaining the mark. However, almost 25% of candidates missed out the question completely. This would suggest that most of these candidates have not seen the question. It is vital that candidates read the whole question paper, and not scan, looking for a line to write an answer on, and then read the question above.

Many candidates did not get the mark in (c)(i) due to a lack of recall.

The rest of question 1 was answered well, with most candidates obtaining high marks.

Q.2 This was answered well overall. However, (c)(i) caused some problems. The main issue was candidates not using the axes labels from graph 2.2 in their description. They turned the labels into their own words. This often caused the marks to be lost.

Part (c)(ii) also caused an issue for many candidates. For this question, it was mostly a literacy issue that caused the mark to be lost.

Many candidates performed well on (c)(iv), however some are still struggling to work out a percentage.

Q.3 The performance on part (a)(iii) was a little disappointing as it was a very basic and fundamental recall question. Questions (c) and (d) were also poorly answered by most candidates. In (c), responses often failed to link heat released to respiration. Part (d) was answered poorly for two main reasons, either there was a lack of recall, or candidates' literacy skills prevented the mark being given. There were lots of responses stating the disinfectant got rid of/removed the bacteria. The term 'killed' was needed.

Q.4 Part (a) was answered well by most candidates. However, most struggled with the rest of question 4. Part (b) required candidates to state that the stent keeps the artery open, which few did. In (c)(i) – most candidates could not link the fact that the blood brings oxygen and glucose to the heart muscle. These are then used for respiration to provide the energy (ATP) for muscle contraction. The candidates seemed unable to link these points.

Q.5 This was the QER question. It was good to see this question attempted by almost 80% of candidates. However, a mean score of almost 2 out a maximum 6 marks was disappointing. Many candidates did not use the information in the question as the basis of their answer, or if they did, they missed many points out. Only the best responses successfully managed to link the photosynthesis word equation to Image 5. Literacy skills cost many candidates marks, either through a lack of the most basic of skills, or by writing sentences that lacked detail.

Q.6 Part (a) was a basic recall question. The answer was potometer. Very few candidates could recall the name. The question was left out by just under half the candidates.

On a positive note, question (b)(i) (the scale on the line graph), was done very well.

Part (b)(ii) (the plotting) was done well by most, however some candidates used plots that were too big. A small, neat cross would be sufficient. Part (b)(iii) was a little disappointing. This was the mark for joining the plots with a ruler. There were lines that missed the plots, double lines, very thick lines that went beyond the plots.

Part (c) gave credit for describing the trend in the graph. Just over half of the candidates that attempted this obtained the mark. If candidates had used the axes labels on the graph in their descriptions, far more would have achieved this mark.

Part (d) was not done well by many candidates. This was a numeracy question. If more time had been spent understanding the results table (table 6.2), more marks would have been given for this question.

Many candidates were able to give correct answers for (e)(i). Part (e)(ii) was about checking if the experiment was reproducible. The majority of candidates did not understand this concept.

Part (f) assessed changing the variables to do a follow up investigation. The identification of the variables was not well understood.

Q.7 This was an overlap question on the carbon cycle. Apart from parts (a)(ii) and (b), this was not answered very well. There was a lack of recall of the carbon cycle, indicating many candidates had not prepared thoroughly for the assessment.

Q.8 Apart from parts (b) and (d)(i) this was a challenge for many candidates. There was a lack of recall on the lock and key model of enzyme action. Following on from this, most candidates found it difficult to explain the results.

# BIOLOGY

## GCSE

Summer 2025

### UNIT 1: HIGHER TIER

#### Overview of the Unit

This year's paper covered a wide range of topics from the unit 1 biology specification. Questions on these topics tested candidates' ability to recall facts, apply knowledge and understanding and use a range of information to evaluate and reach conclusions. Presentation of work by many candidates posed a challenge to examiners, with the standard of handwriting and quality of expression making it difficult to identify creditworthy responses.

Candidates performed well in the following topics/skills:

- Questions requiring recall were answered well (Q2di, Q.4aai, Q.4aiv, Q8ai).
- Generally questions assessing mathematical skills were answered well (Q1bi, Q2b, Q4aai, Q4bi).

Some candidates found the following topics/skills challenging:

- Questions requiring candidates to demonstrate understanding of practical skills (Q2cii, Q2dii, Q7aai, Q7aiii).
- In general, questions requiring longer responses (Q5, Q6b, Q6ci and Q8bi) were not answered well, answers were often unclear and lacked precise use of biological terminology.

#### Comments on individual questions/sections

- Q.1 The first part of this question assessed candidates understanding of the carbon cycle. In (a) (i) and (ii) candidates were asked to identify processes shown in the image. These parts were generally answered well, however, a common error seen was incorrect identification of D as digestion. Part (iii) posed more of a challenge, a common incorrect response seen was carbon dioxide. In (b) (i) had one of the highest facility factors on the higher tier paper indicating it was one of the most accessible questions and in (ii) many candidates were able to list substances that could increase the yield of strawberries. In some cases, candidates stated nitrogen instead of nitrate which did not gain credit.
- Q.2 Many candidates were unable to recall the name 'lock and key' as the model for enzyme action. In general (b) was answered correctly, with most candidates correctly identifying the percentage of starch remaining after 5 minutes from the graph. Part (c) (i) posed more of a challenge, where a number of candidates incorrectly identified 60°C as the optimum.

In (ii) few candidates gained full credit and many did not gain any marks as a common misconception was that simply repeating the experiment or testing temperatures above 60°C or below 20°C would help identify the optimum temperature. This was the least accessible question on the overlap section with as it had the lowest facility factor. In (c) (iii) candidates were required to give a longer response to explain the result at 60°C. Whilst many higher tier candidates could identify that no starch was digested because the enzyme had been denatured few went on to explain that this would mean that the substrate will no longer fit into the active site. In (d) candidates could identify that iodine solution is used to test for the presence of starch, but few could predict the colour and explain their reasoning. Many candidates stated that iodine solution is orange/ brown when there is no starch and changes to blue/ black if starch is present. Whilst this is correct, it is not answering the question so did not gain credit. Very few could explain that the starch molecules are too big to fit through the pores in the tubing making this one of the least accessible questions on the overlap.

- Q.3 Many candidates could state the function of the cell membrane, but a number did not label the cell membrane in image 3. Both parts were required for a mark. In (ii) many correct answers were seen, but it is worth noting that candidates should always show their working out as they can gain some credit for workings with an incorrect final answer. In (iii) a number of candidates correctly identified the process as diffusion but a significant number stated 'gas exchange'. This did not gain credit as it was in the question stem. Part (b) was answered well by many candidates, but poor quality of written communication prevented some from gaining marks. For example, 'air moves in causing the ribs to move up and out' the incorrect statement of air causing movement of the ribs means that the candidate was not awarded a mark.
- Q.4 This question had some of the highest and lowest facility factors on the paper. Part (a) (i) was one of the least accessible questions on the paper with few candidates gaining credit. However, (a) (ii), (iii) and (iv) were answered well by many candidates. In (iv) the most common reason candidates did not gain credit was due to them incorrectly stating there was no energy left. Part (b) (i) was the most accessible question on the paper, with the highest facility factor. In (ii) many candidates successfully drew the pyramid of biomass to scale.
- Q.5 The mean mark for the QER was in the bottom band, it proved to be one of the more challenging questions on the paper. In some cases, answers given were vague and did not contain enough detail. For example, stating the roots take up mineral ions was not enough detail to gain point E in the indicative content, candidates were required to state that mineral ions are taken up into root hairs. Some candidates incorrectly identified that mineral ions were taken up by osmosis. Whilst many candidates were able to list the effects of a deficiency of each mineral ion on plants, a number did not address this section of the QER, others did not give the correct symptom for the deficiency.
- Q.6 In part (a) candidates were required to recall the names of key blood vessels and then use image 6.1 to give evidence that the ventricles were contracting. Part (i) was answered well, but in (ii) fewer candidates could identify that the atrioventricular valves were closed and the semi lunar valves were open. Part (b) assessed candidates' ability to demonstrate their understanding of AO3 in a longer response.

Most answers were vague and lacked detail which meant the mean mark for this question was 1. In (c) (i) candidates were required to apply their knowledge to an unfamiliar context. Answers frequently lacked detail and, in some cases, incorrectly referred to blockage of blood entering the heart chambers. In (ii) the low facility factor reflects that many candidates found this question inaccessible. In comparison (c) (iii) was answered well, with many correctly naming the procedure and then describing angioplasty. In many cases candidates correctly referred to the use of a stent but in a few cases, candidates incorrectly described the inflation of the stent, presumably mixing it up with the balloon that is inserted.

- Q.7 This required candidates to demonstrate their understanding of respiration and photosynthesis in an unfamiliar practical context. Part (a) (i) I & II were answered well with both parts gaining a high facility factor. In (a) (i) III the facility factor was lower as candidates generally either referred to photosynthesis or respiration, but few referred to both. Part (ii) had the lowest facility factor and was the least accessible question on the paper. Few candidates recognised that plants respire and simply referred to snails producing carbon dioxide faster than plants use it therefore not gaining a mark. Part (iii) and (b) assessed candidates understanding of practical procedures. A common error seen in (iii) was reference to tubes D and H being controlled variables. In (b) whilst many correct responses were seen, a common error was incorrect use of the term 'amount' instead of 'volume'.
- Q.8 Part (a) (i) and (ii) assessed candidates' ability to meet AO1 and were generally answered well. However, in (ii) vague answers such as 'better magnification' failed to gain credit. The calculation in (iii) was challenging for many, as few recognised that 114 million was 40% and so were unable to correctly complete the calculation to gain three marks. Quality of written communication proved to be an issue in (b) (i) as vague answers lacking detail were commonly seen. Part (b) (ii) was answered well, with many candidates demonstrating their ability to meet AO3. In part (c) some candidates did not gain credit as they restated the question without further detail.

# BIOLOGY

## GCSE

Summer 2025

### UNIT 2: FOUNDATION TIER

#### Overview of the Unit

This year's paper covered a range of topics from the biology specification. As usual the paper had a higher accessibility on the first few questions, which are generally more scaffolded. Candidates did particularly well on the maths based questions later on in the paper. The paper included questions which were set in a mix of familiar and unfamiliar contexts, including practical based questions. The majority of candidates attempted questions throughout the paper, but this fell slightly on the overlap questions showing that they found these common questions more challenging. As in previous years, at times examiners struggled to decipher some responses with difficult to read handwriting and expression on longer answers was sometimes poor.

#### Candidates performed well in the following topics/skills:

Completing Punnett square questions  
Calculations, especially when scaffolded  
Graph skills – both drawing and interpreting

#### Some candidates found the following topics/skills challenging:

Recall of definitions  
Answers that require a response in a longer answer

#### Comments on individual questions/sections

- Q.1 Most candidates attempted part (a) (ticking boxes for mitosis and meiosis), but there was some confusion evident between the two types of cell division. Fewer candidates were able to answer part (b) where they had to think of the answer 'cancer' with no scaffolding.
- Q.2 Candidates performed relatively well on this question of a practical nature. Most candidates attempted all parts of the questions. Candidates performed particularly well on parts (a) I and II, completing the labels on a graph and plotting points. Usually where candidates lost marks on (a)I, it was for failing to add units to the labels. Some candidates struggled to identify the anomalous result on this unfamiliar graph and struggled to express why they chose their value. Candidates were able to describe the trend and understood the concept of fair test. However, part (b) was very poorly answered, and candidates were unable to recall the definition of variation.

- Q.3 Despite the scaffolding, candidates found it difficult to explain the immune response with the words given. However, candidates did recognise the need to antibodies to be complimentary to antigens and could pick out the correct antibody. Candidates were able to use information given and their own knowledge to give arguments for and against vaccination but were less able to conclude that antibiotics would not work on the flu virus.
- Q.4 Candidates were competent at labelling the parts of the skin and describing the responses to those parts of the skin when too hot and too cold, with the support of the scaffolding from the question. However, candidates were less able to explain why these changes in the skin occur and therefore were less successful with part (b).
- Q.5 Candidates were able to confidently show where the urine is stored on a diagram of the urinary system. They were also able to successfully identify that urea is the waste product, either from their own knowledge or by using data from the table provided. Candidates were less successful in recognising the direction of blood flow through the renal artery and knowing the signs of kidney disease.
- Q.6 Candidates were not very successful at recalling the definition of invasive species. Risk assessments remain answered without the details required and were poorly done by most students, most notably by not adding an action to the risk section. Candidates performed particularly well on the maths elements of this question, with most candidates attempting these questions and most gaining credit. Candidates were less confident in the concepts of confidence in results, avoiding bias and fair test in this practical which may have been of an unfamiliar nature.
- Q.7 Candidates used the visual material provided and more attempted the QER than they have historically. Candidates were able to describe the general structure of DNA, with many able to name the shape as the double helix, but their answers lacked enough detail to get them credit in the top band. Candidates were most successful in describing the complimentary base pairing rule.
- Q.8 & 9 Overall, candidates struggled with the higher demands of the common questions. Fewer candidates attempted them and those that did were less successful. However, candidates were relatively more able to complete Punnett square questions and gained some credit for error carried forward even if they used the incorrect gametes. Candidates could also use graphs to be able to describe trends and deduce the optimum temperature and time for the penicillin extraction.

# BIOLOGY

## GCSE

Summer 2025

### UNIT 2: HIGHER TIER

#### Overview of the Unit

This year's paper covered a wide range of topics from the biology specification and had a greater degree of accessibility compared to the previous year's paper. The questions were a mix of familiar topics and practical work set in applied or contemporary contexts. All supporting images and graphs required to answer the questions were clearly identified. Presentation of work by many candidates posed a challenge to examiners, with the standard of handwriting and expression making it difficult to tease out any creditworthy responses.

Candidates performed well in the following topics/skills:

- Completing Punnett squares to predict genetic crosses (1b)
- Evaluating secondary data, (1c, 3aii)
- Extracting information from question stems (4bii)
- Using formulas for calculations (6ai)
- Demonstrating knowledge of reflex arcs (8aii)

Some candidates found the following topics/skills challenging:

- Using the correct denominator in percentage change calculations (10bi)
- Drawing valid conclusions from data (10c)
- Providing detailed explanations (10bii, 3aii, 4bi)
- Writing comparative responses (9c)
- Explaining why antibiotics are ineffective against viruses (10di)

Areas for improvement include:

- Addressing misconceptions during teaching (4bi, 5bii, 9aii)
- Encouraging sense-checking of calculation answers (6aii)
- Understanding nephron structure and ultrafiltration (7ai)
- Developing comparative response skills (9c)

#### Comments on individual questions/sections

Q.1 Most candidates performed well on this question. In item (a)(ii), a generous interpretation of the mark scheme allowed marks for candidates who demonstrated an understanding of the term gene. However, many candidates struggled with defining allele, often incorrectly describing it as a "different type of gene" as opposed to the correct definition of, "different type of *the same* gene."

In item (b)(I), marks were commonly lost due to incorrect gametes, with the most frequent error being the crossing of two heterozygous genotypes. Some candidates did not attempt item (b)(ii), a recurring issue with questions lacking designated answer lines - highlighting the need for greater care. For item b(iii), the most common mistake was giving 25% as the answer after crossing two heterozygous individuals. This showed a superficial understanding of inheritance, as candidates failed to apply the information from the stem indicating that the ability to taste is a dominant allele.

Most candidates gained at least one mark from item (c) across both foundation and higher tiers.

- Q.2 In item (b)(ii), although the answer lines were scaffolded, candidates often confused the factor with the explanation. However, they were not penalised, and responses were assessed holistically. Many who correctly identified a factor lost marks by explaining why it was controlled rather than how, as required by the question.

Most candidates gained marks in (c)(I). Common errors included failing to clearly describe the levelling off between days 3 and 6 or incorrectly referring to the penicillin line—for example, stating that the mass increased to 100 au.

- Q.3 The least accessible item was (a)(ii). A common error was stating that spines deter predators, which was clearly incorrect in the context of the question. Other unqualified responses, such as "protects the tree from animals," also failed to gain marks. Candidates needed to explain how the spines protect the tree, e.g., by preventing animals from eating or feeding on it.

- Q.4 Common errors in item (a) included identifying A as "hair effector muscle" and B as "sweat duct."

In item (b)(i), misconceptions about vasoconstriction included statements like "blood vessels move further from the skin" or vague references such as "blood vessels go narrower." Candidates often failed to specify that less blood flows to the surface of the skin and that it is the width of the blood vessels that decreases.

Regarding "hairs stand up," many candidates simply stated that "a layer of insulation is formed." To gain credit, they needed to explain that the hairs trap a layer of air, which insulates the body. Mentioning insulation alone or saying it "traps heat" was insufficient.

Although the question focused on changes in the skin, many responses incorrectly referred to shivering - a common misconception, as it is the skeletal muscles, not skin muscles, that shiver. The least common correct response was a description and explanation of reduced sweating.

Item (b)(ii) was accessible, with most candidates gaining a mark. To support responses to questions using the command word suggest, relevant information is typically provided in the question stem. In this case, Image 4.2 contained the necessary details. Candidates were expected to interpret the image and extract the most relevant information to answer the question effectively.

- Q.5 This was a question of two halves. Items (a) and (b) were accessible, while (b)(ii) served as the main discriminator, requiring candidates to apply their knowledge of protein synthesis in the context of gene mutation.

Item (a)(i) lacked an answer line, and as with Item 1(b)(ii), a number of candidates did not attempt it.

The attempt rate for item (b)(ii) was lower than for most of the paper. However, some excellent responses demonstrated strong application of scientific understanding. The quality of answers on this topic has improved over time, suggesting it is now well embedded in teaching. The most common misconception related to the second mark point: candidates often stated that a change in the triplet code produced different amino acids, rather than coded for them.

- Q.6 Item (a)(i) posed little challenge for most candidates and had the highest facility factor on the paper. In (a)(ii), candidates used the given units to guide their calculations. Marks were typically lost due to incorrect calculation of the sample area. However, showing working allowed some candidates to gain partial credit for correctly calculating the area, even if the final population density was incorrect. Sense-checking answers—such as questioning a result of 1,760,000 topshells/m<sup>2</sup>—would have helped some candidates identify errors.

In (b)(i), a common misconception was that topshells were evenly distributed. For (b)(ii), answers often lacked qualification. For example, “don’t use colourful paint” was insufficient, whereas “don’t use colourful paint that would increase the chance of predation” was creditworthy.

- Q.7 Item (a)(i) was among the most challenging on the paper. The most common error related to the second mark point, where candidates failed to mention either the size of the molecule or the direction of movement.

In (b)(i), many candidates omitted the need to heat Benedict’s reagent. In (b)(ii), the spelling of Biuret was often incorrect, though phonetic spelling is currently accepted. A number of candidates did not attempt (b)(ii), but those who did generally gained credit.

- Q.8 Item (a)(ii) was the QER. Many candidates gave excellent responses, showing strong recall of the structures involved in the reflex arc and good sequencing. However, only a small number identified indicative point H - the spinal cord as the coordinator. Similarly, few recognised heat as the stimulus or correctly identified the skin as the receptor or the location of receptor cells. Some candidates included detailed explanations of synapse function, such as the conversion of electrical impulses to chemical signals. While informative, this level of detail exceeds GCSE requirements. In some cases, time spent on synapses came at the expense of covering indicative points that would have earned higher marks.

Q.9 Items (a)(i) and (a)(ii) were straightforward for well-prepared candidates. In (a)(ii), unqualified responses such as “to avoid any confusion” were common. At higher tier, candidates are expected to specify what confusion is avoided. A common misconception was the idea that scientific names are a “universal language.” While they are universally recognised, they are not a language.

Item (b) was generally well answered. A frequent error was citing “2 gametes produced” as evidence of mitosis, instead of the correct “2 daughter cells.” Spelling errors in meiosis and mitosis were occasionally seen; phonetic spelling is not accepted for these terms.

Item (c), set in an unfamiliar context, was the most challenging on the paper. Some candidates gave excellent responses using all the information from the image and stem. However, many failed to make the required comparison between male and female chromosome numbers and thus did not gain credit despite accurate individual descriptions.

Item (d) was also set in an unfamiliar context, but most candidates successfully used the information from the stem and Image 9.4. Some responses were too vague, e.g., “the same number of chromosomes,” which lacked sufficient explanation.

Q.10 In item (b)(i), common errors included using the wrong denominator (e.g. 3800 instead of 2000) or failing to calculate the change (e.g. giving 3800/2000). In (b)(ii), many responses lacked detail and did not explain what the mask does, as required by the question stem. Vague answers like “the mask stops the flu” were insufficient. Some candidates incorrectly referred to bacteria, despite the question clearly stating that flu is caused by a virus. Others omitted how flu is spread - i.e., through the air or airborne droplets.

In (c), many candidates failed to address whether the programme was a success. For example, stating that “the elderly group had more than 75% vaccinated” did not conclude if this met the success criteria. Others claimed success without evidence, such as referencing the WHO target without stating it was met.

Item (d)(i) was challenging for most. Responses like “attack” or “work on” were too vague for higher tier. A common misconception was that antigens mutate - confusing this with vaccines. Some repeated the stem (“antibiotics are not effective against viruses”) without explaining why. Stronger responses showed deeper understanding, e.g., that viruses are not living cells or lack structures targeted by antibiotics.

The generous mark scheme for (d)(ii) allowed most candidates to gain at least one or two marks. To do so, they needed to describe the primary or secondary immune response in context. Simply naming terms like “memory cells” or “antibodies” was not enough without explanation. Common misconceptions included stating that vaccines contain antibodies or memory cells. Marks were often missed for not explaining the role of antigens in triggering the primary response, or that memory cells produce antibodies more quickly during the secondary response. Phrases like “fight it more quickly” were too vague, and some incorrectly stated that antibodies are stored in memory cells

# BIOLOGY

## GCSE

Summer 2025

### UNIT 3: PRACTICAL ASSESSMENT

#### Overview of the Unit

In this unit candidates are assessed on their practical skills including, forming hypotheses, recognising and preventing hazards and risks, recording and presenting data, understanding the variables that are involved in experiments, evaluating the success of the experiment and planning improvements. There was evidence that candidates are familiar with practical work and the analysis of practical results, although in some areas candidates' skills were not as well-developed as in previous series, this was particularly evident in graph plotting.

The nature of experimental work means that, on occasions, centres may feel the need to provide candidates with unformatted results to us in section B for graph plotting. This happens in a small number of cases each year. This year it was notable that many centres who gave their candidates results did not explain that they had done so and did not include a copy with the scripts. It is imperative that in such circumstances centres provide a copy of the original results to ensure that markers can accurately evaluate and award credit for correct data plotting.

The tasks all proved to be accessible for most candidates who usually attempted all sections. As in previous series, candidates were largely successful in making hypotheses and in identifying variables. Notable areas that candidates found challenging were scaling graphs and plotting points with accuracy. Lines of best fit were often very poor.

#### Comments on individual questions/sections

##### Section A – Hypotheses and risk assessments

Most candidates were able to make a sensible hypothesis in each of the 9 tasks, which linked the independent and dependent variables. The exception to this was in the investigating the effect of glucose concentration task where many candidates failed to link the independent and dependent variables and instead just predicted that a colour change would occur. In producing risk assessments, the most successful candidates linked the risk with a particular action in the method, such as burning your hand if you touch a hot beaker and were able to suggest a sensible control measure for that risk. Less successful candidates often did not link the risk to an action, for example, stating simply that apparatus can burn you with no reference to either the action of touching or the affected body part. It was also very common for candidates to create a risk for experiments when there were no significant risks such as in the impact craters task.

##### Section A - Tables of results

Most candidates produced well-structured tables with all the data recorded. Whilst most candidates only include units in the table headings it was more common than in previous series to see units in the body of the table. The unit for hydrogen peroxide concentration (vol) did cause issues in one task. In the glucose task many candidates confused the heading, concentration, with the unit, percentage.

Incorrect abbreviations of units (e.g. secs for s / seconds) was commonly seen. Candidates should be reminded that they should always calculate a mean from their repeats as they will not be prompted to do this. The conversion of time from minutes to seconds in the glucose task posed issues for a significant minority of candidates which then led to errors in graph plotting.

### **Section B – Variables**

Each of the 9 tasks included a section on variables. Candidates were usually able to identify the independent and dependent variables, and most were able to state the range of these variables when required. Many of the tasks explored how certain variables were controlled, and in common with previous series this was not well answered, with no clear indication of the apparatus used or the required measurement of that variable. For example, in the glucose task candidates needed to identify that the volume of Benedict's solution was measured to be 2 cm<sup>3</sup> with a pipette. In the impact craters task candidates were asked to explain why an identified controlled variable was controlled. This was poorly answered with many responses referring to making it fair, rather than focussing on the effect that this would have on the diameter of the impact crater.

### **Section B – Graphs**

The most successful candidates obtained most of the available marks in this section. However, a significant number of candidates displayed very weak graph plotting skills, more so than in previous series.

Even where suitable scales were chosen, many candidates struggled with the accuracy of their plotting. Scales were also often poor with multiples of 3 commonly seen, these are not accepted. In tasks where the data range was narrow, candidates often did not truncate and this made plotting the data difficult and the drawing of a suitable line of best fit. Whilst candidates were not penalised for not truncating scales, there were numerous candidates who incorrectly truncated by not starting the scale with a suitable number and either omitted a zero on the *y*-axis or did not indicate truncation had taken place.

Lines of best fit continued to be problematic as many candidates simply joined the first and last point with no consideration of the spread of data above and below the line. Joining point-to-point is only usually acceptable in Biology tasks but this was seen commonly in all tasks.

In all tasks candidates are often asked to identify the relationship between the plotted variables and this was usually done well. Whilst most candidates were able to describe a relationship between the independent and dependent variables in the graph, a description of the shape of the graph, where it was required for the second mark, was poor.

### **Section B – Evaluation of results**

In many of the tasks, candidates were asked to evaluate accuracy, validity of the experiment, closeness to the true value, repeatability and / or reproducibility of their results of given data. Whilst it is evident that the terminology is familiar and broadly understood, the clarity of candidates' responses often limited the marks attained. When considering repeatability candidates should make clear reference to the closeness of repeat readings; it was common to see vague responses referring to all the results being close which gained no credit. Of the candidates correctly referring to repeats, few went on to use the data to support their judgment.

When evaluating the reproducibility of given data in the glucose experiment, many candidates were able to recognise that the reproducibility was poor because the results were different between groups. Very few recognised that all groups had the same pattern in their results.

### **Section B - Improvements**

Identifying inaccuracies and corresponding improvements was poorly done by many this year. Candidates should be encouraged to consider what they found difficult in carrying out an experiment and base their responses around this. In the glucose task, many suggested that the timing was inaccurate and considering using a stopwatch with a better resolution as an improvement, rather than describing how difficult it was to judge when the endpoint had been reached. Similarly, in the craters task many discussed the levelness of the sand which gained no credit.

### **Section B – Plans**

Where tasks included a plan at the end, these were generally better answered than in previous years. In the electrolysis task most candidates attained marks for stating that the current would be measured and describing how the solution would be heated. In common with other plans, candidates did not always state at least 4 values of the independent variable or list at least two controlled variables.

## Supporting you

### Useful contacts and links

Our friendly subject team is on hand to support you between 8.30am and 5.00pm, Monday to Friday.

Tel: **029 2240 4252**

Email: [science@wjec.co.uk](mailto:science@wjec.co.uk)

Qualification webpage: [GCSE Biology](#)

See other useful contacts here: [Useful Contacts | WJEC](#)

### CPD Training / Professional Learning

Access our popular, free online CPD/PL courses to receive exam feedback and put questions to our subject team, and attend one of our face-to-face events, focused on enhancing teaching and learning, providing practical classroom ideas and developing understanding of marking and assessment.

Please find details for all our courses here: <https://www.wjec.co.uk/home/professional-learning/>

### WJEC Qualifications

As Wales' largest awarding body, WJEC supports its education community by providing trusted bilingual qualifications, specialist support, and reliable assessment to schools and colleges across the country. This allows our learners to reach their full potential.

With more than 70 years' experience, we are also amongst the leading providers in both England and Northern Ireland.



WJEC  
245 Western Avenue  
Cardiff CF5 2YX  
Tel No 029 2026 5000  
Fax 029 2057 5994  
E-mail: [exams@wjec.co.uk](mailto:exams@wjec.co.uk)  
website: [www.wjec.co.uk](http://www.wjec.co.uk)