

Examiners' report

A LEVEL

BIOLOGY B

(ADVANCING BIOLOGY)

**OCR Level 3 Advanced GCE in Biology B
(Advancing Biology)**

H422

For first teaching in 2015

H422/01 Summer 2025 series

Contents

Introduction	4
Paper 1 series overview	5
Section A overview	6
Question 2	6
Question 3	6
Question 6	7
Question 7	7
Question 8	8
Question 21	9
Question 26	10
Question 30	10
Section B overview	11
Question 31 (a)	12
Question 31 (b) (i)	13
Question 31 (b) (ii)	14
Question 31 (b) (iii)	14
Question 32 (a)	15
Question 32 (b) (i)	15
Question 32 (b) (ii)	16
Question 32 (c) (i)	17
Question 32 (c) (ii)	18
Question 32 (c) (iii)	18
Question 32 (c) (iv)	19
Question 32 (d)*	19
Question 33 (a) (i)	20
Question 33 (a) (ii)	21
Question 33 (a) (iii)	22
Question 33 (b) (i)	23
Question 33 (b) (ii)	24
Question 33 (c)	25
Question 34 (a) (i)	26
Question 34 (a) (ii)	27
Question 34 (a) (iii)	28
Question 34 (a) (iv)	28

Question 34 (b)*	29
Question 35 (a) (i)	30
Question 35 (a) (ii)	31
Question 35 (a) (iii)	31
Question 35 (b) (i)	32
Question 35 (b) (ii)	33
Question 35 (c)	33
Question 36 (a) (i)	34
Question 36 (a) (ii)	34
Question 36 (b) (i)	35
Question 36 (b) (ii)	35
Question 36 (c)	36
Copyright information	37

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

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.

A full copy of the question paper and the mark scheme can be downloaded from [Teach Cambridge](#).

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Paper 1 series overview

Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
• could apply their knowledge of nucleotides to the structure of ATP in Question 3 • demonstrated good knowledge of the advantages of a closed circulatory system in Question 6 • compared the autonomic and somatic (nervous system X), explaining how they differed in Question 31 (b) (ii) • clearly explained how HIV can be transferred between mother and baby in Question 32 (a) • could accurately draw conclusions and suggest limitations in the investigation in Question 35 (b) (i) • could explain why DNA methylation was not an example of a DNA mutation in Question 36 (b) (ii).	• incorrectly identified the part of the chloroplast required in the light independent reaction of photosynthesis in Question 19 • had difficulty calculating the estimated surface area of each lung in Question 8 • had difficulty comparing transmission electron microscopes to light microscopes and scanning electron microscopes in Question 34 (b) • incorrectly calculated the number of juxtamedullary nephrons in an adult human in Question 35 (a) (iii) • had difficulty explaining the importance of calculating Standard deviation in Question 35 (b) (ii) • had difficulty applying their knowledge of Alzheimer's to frontotemporal dementia in Question 36 (a) (ii).

Section A overview

This section of the paper consisted of 30 multiple-choice questions covering a range of topics across all modules of the Biology B specification. In general, candidates seemed to find all of the multiple-choice questions accessible and performed well in this section.

A very high standard of answers was seen this year across most candidates. There were some candidates that gave multiple answers. An answer with two letters cannot be given credit. Candidates should be encouraged to state their preferred option clearly. If an alternative answer is given later in the exam, the original answer should be crossed out and the new answer clearly written.

Question 2

2 Which technique uses fluorescent markers to tag cells so they can be counted and identified when passed through a laser beam?

- A Differential staining
- B Flow cytometry
- C Gel electrophoresis
- D Haemocytometry

Your answer

[1]

Candidates answered this question well. The most common incorrect answer was option C, although few candidates made this mistake. The many correct answers indicates that candidates understand these key terms very well. The correct answer is option B.

Question 3

3 Which statement about ATP is **not** correct?

- A It can be hydrolysed to form AMP.
- B It contains the pentose sugar, ribose.
- C It contains the pyrimidine nitrogenous base, adenine.
- D It is a phosphorylated nucleotide.

Your answer

[1]

Candidates had difficulties with this question. All incorrect options were seen in approximately equal numbers with slightly more candidates giving the incorrect answer A.

Question 6

6 Which of the following statements about the advantages of a closed circulatory system is/are correct?

- 1 Deoxygenated and oxygenated blood are separated.
- 2 Higher blood pressure is maintained in both pulmonary and systemic circuits.
- 3 Low blood volumes can maintain movement in the circulatory system.

- A** 1, 2 and 3 are correct
- B** Only 1 and 2 are correct
- C** Only 2 and 3 are correct
- D** Only 1 is correct

Your answer

[1]

Candidates found this question difficult. The most common incorrect answer was option A. This was likely because candidates assumed statement 3 to be a plausible answer. The correct answer is option B.

Question 7

7 Alveoli are structures found in the mammalian gaseous exchange system.

Which cells would be present in the walls of alveoli?

- A** Ciliated epithelial cells
- B** Goblet cells
- C** Muscle cells
- D** Squamous epithelial cells

Your answer

[1]

Candidates answered this question well. The most common incorrect answer was option A. This was likely due to the candidates correctly linking ciliated epithelial cells to the gas exchange system but not identifying that the question required 'in the walls of the alveoli' specifically. The correct answer is option D.

Question 8

- 8 The surface area provided by a single alveolus is approximately $300\,000\mu\text{m}^2$.

A person was estimated to have 250 million alveoli in each lung.

What is the estimated gas exchange surface area in m^2 for this person?

- A 7.5×10^1
B 1.5×10^2
C 7.5×10^7
D 1.5×10^8

Your answer

[1]

Candidates found this question difficult. The most common incorrect answer was option C. This was likely because candidates correctly calculated $300\,000\mu\text{m}^2 \times 250$ million but did not work this out in m^2 and did not factor in that people have two lungs. The correct answer is option B.

Calculation:

$$300,000\,\mu\text{m}^2 \times 250,000,000 = 75,000,000,000,000\,\mu\text{m}^2$$

$$75,000,000,000,000\,\mu\text{m}^2 \times 2 \text{ (lungs)} = 150,000,000,000,000\,\mu\text{m}^2$$

Convert μm^2 to m^2

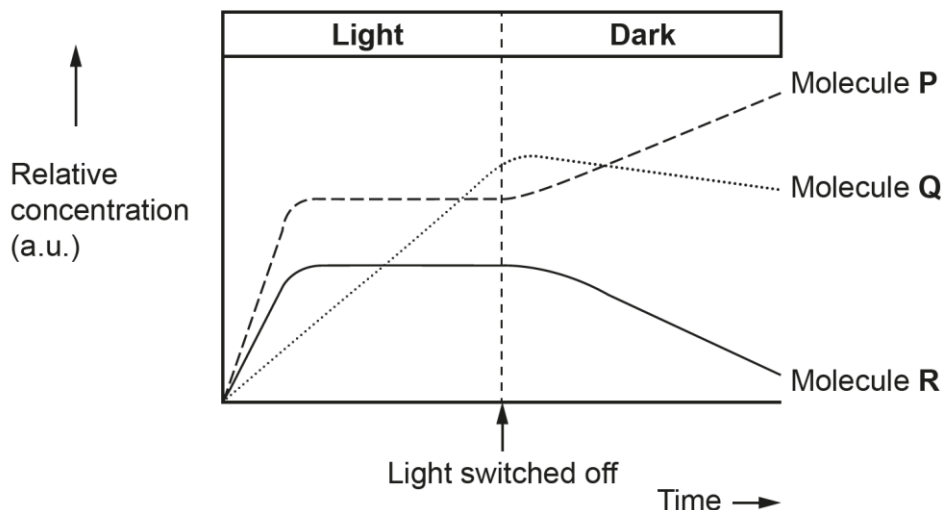
$$150,000,000,000,000 / 1,000,000,000,000 = 150 = 1.5 \times 10^2$$

Question 21

- 21** The diagram shows the results of an investigation into the effect of periods of light and dark on photosynthesising cells.

The relative concentrations are shown for glucose, glycerate-3-phosphate (GP) and ribulose biphosphate (RuBP) over time.

These have been labelled on the diagram as molecules **P**, **Q** and **R**.



The table shows possible identities for molecules **P**, **Q** and **R**.

	Molecule P	Molecule Q	Molecule R
A	glucose	GP	RuBP
B	GP	RuBP	glucose
C	GP	glucose	RuBP
D	RuBP	glucose	GP

Which row is correct?

Your answer

[1]

Candidates found Question 21 to be one of the more challenging multiple-choice questions on the exam. There was an equal spread of answers between all four options, suggesting that candidates did not know what the graph showed, although they seemed to have a strong knowledge of the light independent reaction. Option C is the correct answer.

Question 26

26 Cicadas are large insects. Two species of cicada live in the same habitat. Members of the two species are capable of interbreeding.

- The breeding season of one species occurs every 13 years.
- The breeding season of the other species occurs every 17 years.

Which of the following statements is/are correct?

- 1 The two species are reproductively isolated.
- 2 The two species are geographically isolated.
- 3 The cicadas are actually two populations because they can still interbreed.

- A** 1, 2 and 3 are correct
- B** Only 1 and 2 are correct
- C** Only 2 and 3 are correct
- D** Only 1 is correct

Your answer

[1]

Candidates answered this question well, with most candidates correctly realising that statement 2 was incorrect and so the only answer is option D.

Question 30

30 There are two types of diabetes mellitus, type I and type II.

Which option is true for both type I **and** type II diabetes mellitus?

- A** If left untreated, they result in the presence of glucose in the urine.
- B** They are caused by destruction of β cells in the liver.
- C** They are caused by reduced sensitivity of β cells to insulin.
- D** They are known as insulin-dependent diabetes.

Your answer

[1]

Candidates answered this question well, with most candidates giving the correct answer of option A.

Section B overview

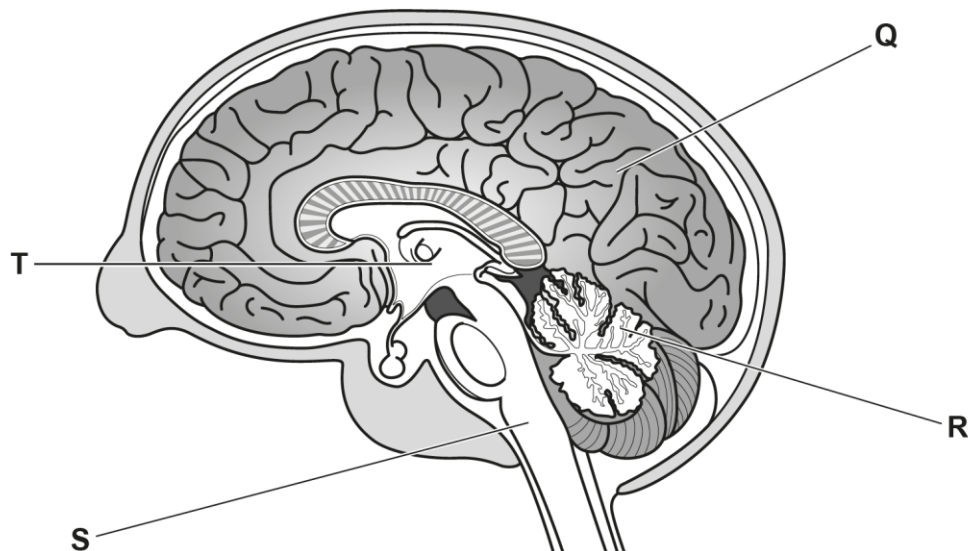
This section featured questions covering a broad spectrum of topics from the syllabus, with a range of difficulty levels that tested various exam skills. This structure allowed candidates to demonstrate their knowledge and gain marks, even on some of the more challenging parts of the course.

Performance on the mathematical elements of the paper showed a clear improvement on previous years. Many candidates performed strongly in the mathematical areas. There also appeared to be an improvement in the quality of responses particularly in longer answer questions.

Question 31 (a)

31 The human brain is divided into structures which have specific functions.

This is a diagram of a section through the human brain. Some structures of the brain have been labelled.



(a) Use the diagram to complete the table about some of the structures of the human brain and their functions.

Structure	Function	Letter
Cerebellum		
.....	Controls activities such as heart rate and blood pressure.	
.....		T

[3]

Most candidates correctly identified 'medulla and S' to get 1 mark. Some candidates confused the cerebrum and cerebellum and/or incorrectly identified the hypothalamus as the pituitary gland.

Misconception

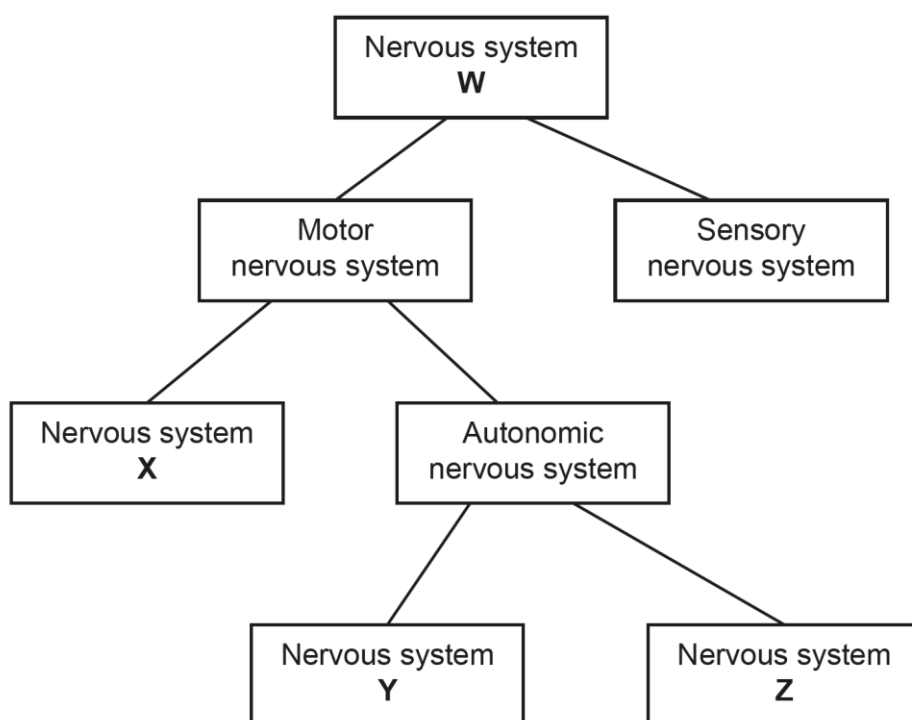


This question highlights that there is a misconception between the different brain structures and their functions. The cerebrum is the largest part of the brain, while the cerebellum is smaller and located under the cerebrum.

Question 31 (b) (i)

(b) A group of students are making revision notes about nervous control in humans.

One of the students draws the flow diagram below showing the organisation of part of the nervous system in humans.



(i) Identify nervous systems **W** and **X** in the flow diagram.

W

X

[1]

The most common incorrect answer given for one of the nervous systems **W** or **X** was 'central nervous system' meaning one of the two answers was incorrect and so no marks could be given for the answer.

Question 31 (b) (ii)

- (ii) In the autonomic nervous system, motor neurons carry impulses to smooth muscle and endocrine glands, whereas in nervous system **X** impulses are carried to skeletal muscles.

Using your knowledge, state **two other** ways in which the autonomic nervous system differs from nervous system **X**.

1

.....

2

.....

[2]

Candidates were often given 2 marks for this question. Incorrect answers normally confused the hormone adrenaline as a neurotransmitter or incorrectly stated that the brain and spinal cord are part of different nervous systems.

Question 31 (b) (iii)

- (iii) The branches of the autonomic nervous system, **Y** and **Z**, are antagonistic.

Using your knowledge and an appropriate example(s), explain how this feature helps to maintain a constant internal environment.

.....

.....

.....

.....

.....

.....

[3]

This question was well-answered, with many candidates getting at least 2 marks. Candidates that did not get 3 marks often only stated or described one of the nervous systems.

Question 32 (a)

32 Mothers infected with the human immunodeficiency virus (HIV) are usually discouraged from breastfeeding as the virus can be transmitted from mother to baby during breastfeeding.

(a) Apart from breastfeeding, suggest **and** explain **one other** way in which HIV can be transmitted from an HIV-positive mother to their baby.

.....

.....

.....

.....

..... **[2]**

Many candidates got 1 mark for the 'explain' part of the question. The most successful responses made a clear suggestion and followed it up with an explanation.

Question 32 (b) (i)

(b) The role of breastfeeding in providing temporary immunity against other diseases is recognised as being extremely beneficial to newborn babies.

In 2010, the World Health Organisation (WHO) issued guidelines recommending the breastfeeding of babies born to HIV-positive mothers for at least one year, using antiretroviral therapy (ART) to minimise the risk of transmission.

(i) Name the type of immunity acquired by breastfeeding.

..... **[1]**

This was a well-answered question, with many candidates getting the mark.

Question 32 (b) (ii)

- (ii) ART involves taking a combination of medicines every day. These medicines often include an inhibitor of the enzyme reverse transcriptase.

Explain how this inhibitor can minimise the risk of HIV transmission.

.....

.....

.....

.....

..... [2]

Candidates made good links between their knowledge of inhibitors and how viruses replicate. Incorrect responses often discussed 'viral cells' which was not given marks.

Misconception

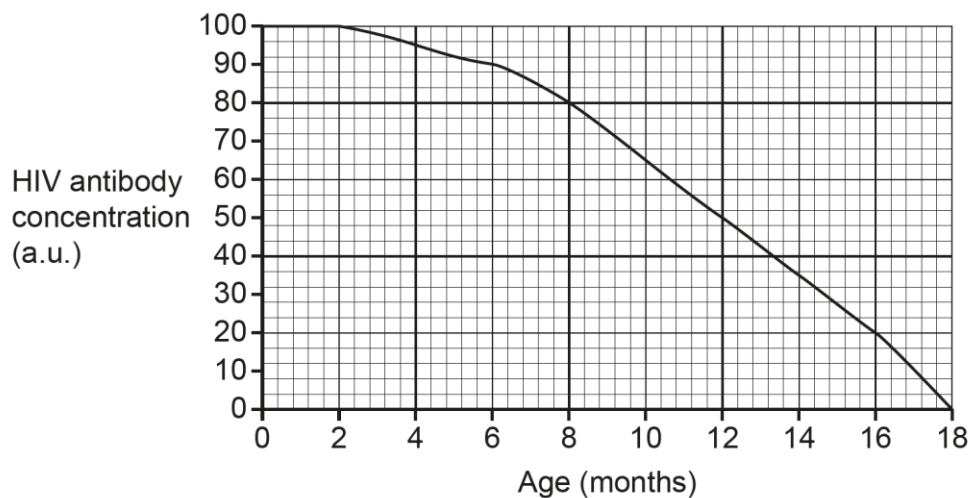


Candidates incorrectly believe that viruses are cells or have their own cellular structure (e.g. referring to 'viral cells').

Question 32 (c) (i)

(c) HIV testing can be used to determine the presence of HIV.

The graph shows the results for an HIV-exposed baby who is born without HIV infection and remains uninfected throughout breastfeeding.



(i) Outline a method used to test for HIV infection.

.....

.....

.....

.....

.....

.....

[2]

Candidates had a very good understanding of the methods to test for HIV infection. Many candidates got both marks on this question.

Question 32 (c) (ii)

- (ii) Calculate the mean rate of decrease in HIV antibody concentration, per day, for the first year after being exposed to HIV.

Give your answer to **2** significant figures.

Mean rate = a.u. per day [2]

Many candidates got marks on this question. The most common mistake was not realising that the question required the rate per day and so the calculation should have included $50 \div 365$.

Calculation:

First year (i.e., 12 months) HIV antibody concentration is 50a.u.

$50/365 = 0.13698... = 0.14$ (in 2 sig. fig.)

OCR support



OCR [maths for biology resources](#), include tutorial and quizzes for every math skill required for A Level Biology.

Question 32 (c) (iii)

- (iii) Sketch a line **on the graph** to suggest the expected HIV antibody concentration for an HIV-exposed baby who is **not** infected with HIV at birth but was infected during breastfeeding at 10 months of age.

[1]

Many candidates correctly answered this question. Those that answered incorrectly often showed the HIV antibody concentration increasing from 0 a.u. at age 10 months.

Question 32 (c) (iv)

- (iv) Research shows that HIV testing cannot be used to definitively diagnose infection in young babies and that babies under 18 months of age may record a false-positive test for HIV infection.

Explain why a false-positive test may be recorded in babies under 18 months of age.

.....

.....

..... [1]

Candidates that did not get the mark for this question often stated that the false positive result is as a result of babies having a weak immune system.

Question 32 (d)*

- (d)* Developing a vaccine that can prevent HIV infection in uninfected people is the highest HIV research priority given its potential for controlling and ultimately ending the HIV/AIDS pandemic.

Discuss the biological **and** ethical issues associated with the development and use of vaccines for preventing diseases such as those caused by HIV infection.

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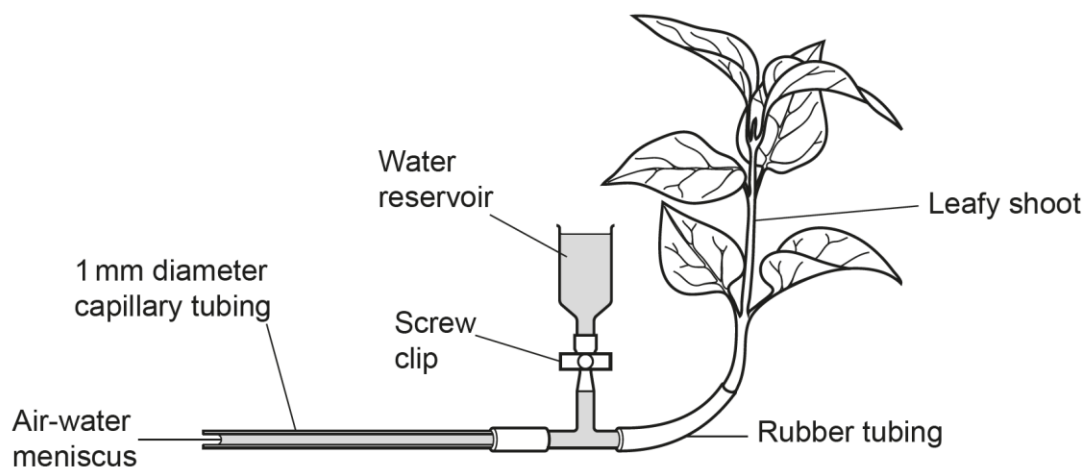
..... [6]

Candidate did well on this question, with many achieving Level 2. The most successful responses clearly stated the issues surrounding biological development, biological use, ethical development and ethic uses. Less successful ones tended to have little structure to the response or were primarily ethics based.

Question 33 (a) (i)

33

(a) The diagram shows the apparatus used to estimate the rate of transpiration in plants.



(i) A student wants to use the apparatus to investigate the effect of wind speed on the rate of transpiration.

Explain **two** modifications to the apparatus that will enable the student to obtain data and estimate the rate of transpiration in their investigation.

- 1
- 2

[2]

Most candidates got 1 mark, with very few getting 2 marks. Incorrect responses stated that a fan was required to measure the wind speed or explained how the leafy shoot should be prepared under water.

OCR support



A common mistake was that candidates could not explain modifications to the practical and instead just stated a modification. Support is available in developing practical skills on page 22 of the [Biology Practical Skills Handbook](#).

Question 33 (a) (ii)

(ii) This is the raw data recorded by the student.

Results after 30 minutes			
20 cm	1) 15 mm	2) 16 mm	3) 14 mm
	Mean = 15.0		
40 cm	1) 13 mm	2) 14 mm	3) 12 mm
	Mean = 13.0		
60 cm	1) 10 mm	2) 9 mm	3) 9 mm
	Mean = 9.3		
80 cm	1) 8 mm	2) 7 mm	3) 7 mm
	Mean = 7.3		
100 cm	1) 5 mm	2) 6 mm	3) 4 mm
	Mean =		

In the space below present the data in a suitable table with appropriate headings.

Include the missing mean value in your table.

[4]

This question was well-answered, with more than half of the candidates getting 4 marks. Common errors were the use of units in the body of the table or column headings that were not appropriate, e.g. 'distance' instead of 'distance moved by the meniscus/mm'.

OCR support



In the [drawing skills handbook](#), page 18, there is a checklist that candidates can use to help them remember what to use in their tables. This can be used in their practical activities as well.

Question 33 (a) (iii)

- (iii) Use the information from the student's investigation and the equation below to estimate the mean rate of transpiration from the results at 20 cm.

Use the formula: Volume of cylinder = $\pi r^2 h$

Mean rate of transpiration = mm³hr⁻¹ [2]

Many candidates had difficulty with this question. The most common error seen was the use of 1 mm as the radius of the capillary tube instead of 0.5 mm.

Calculation:

$$r = 1\text{mm} / 2 = 0.5\text{ mm}$$

$$\text{Volume} = \pi (0.5)^2 (15) = 11.78097245 \text{ in 30 mins}$$

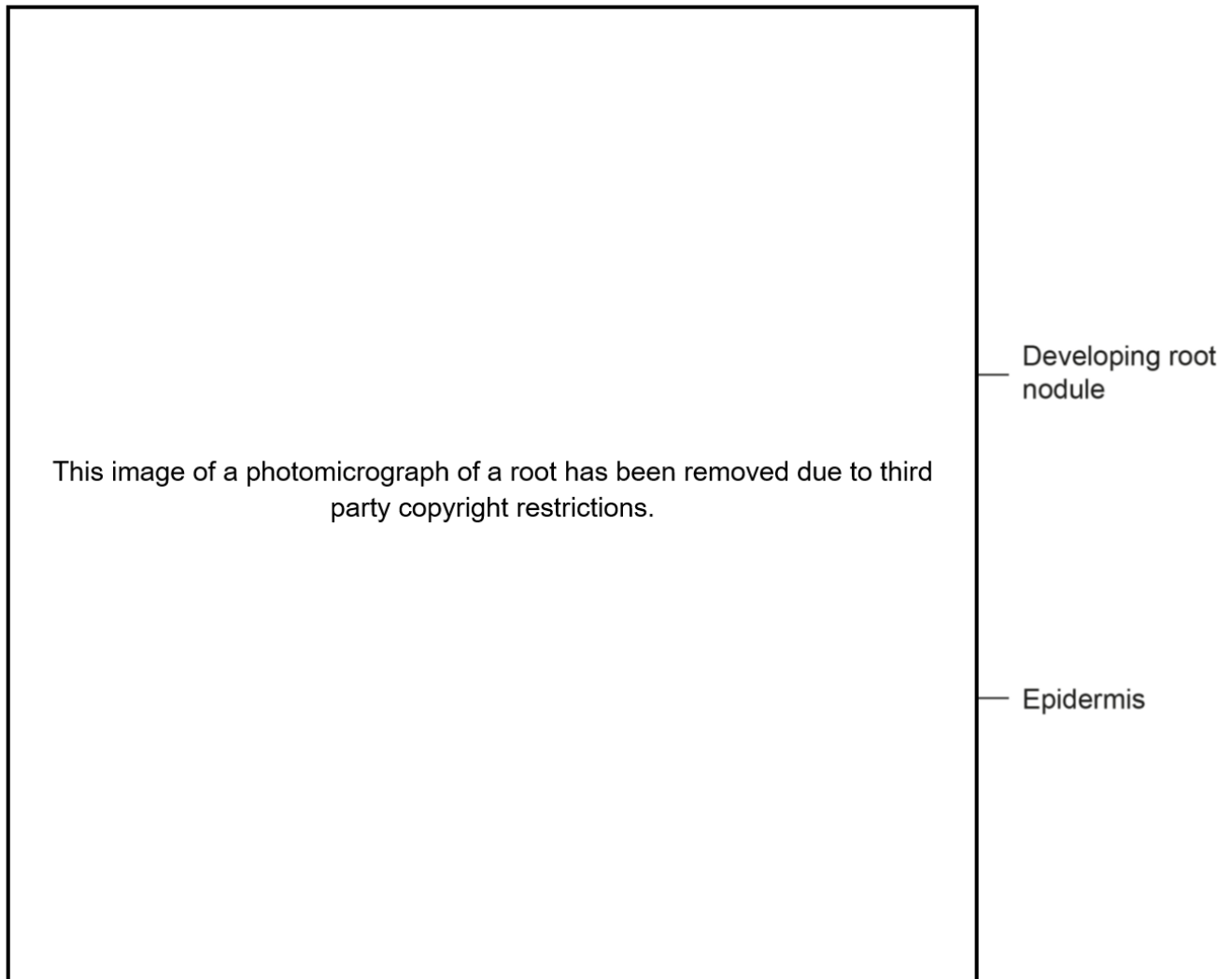
$$\text{in one hour} = 11.78097245 \times 2 = 23.5619446$$

$$\text{Round up} = 23.56 \text{ mm}^3 \text{ hr}^{-1}$$

Question 33 (b) (i)

(b) Plant species take in water through their roots.

This is a photomicrograph of a transverse section through a root of a soybean plant.



(i) Use the photomicrograph to identify whether the soybean plant is classified as dicotyledonous or monocotyledonous. Explain your choice.

.....

.....

.....

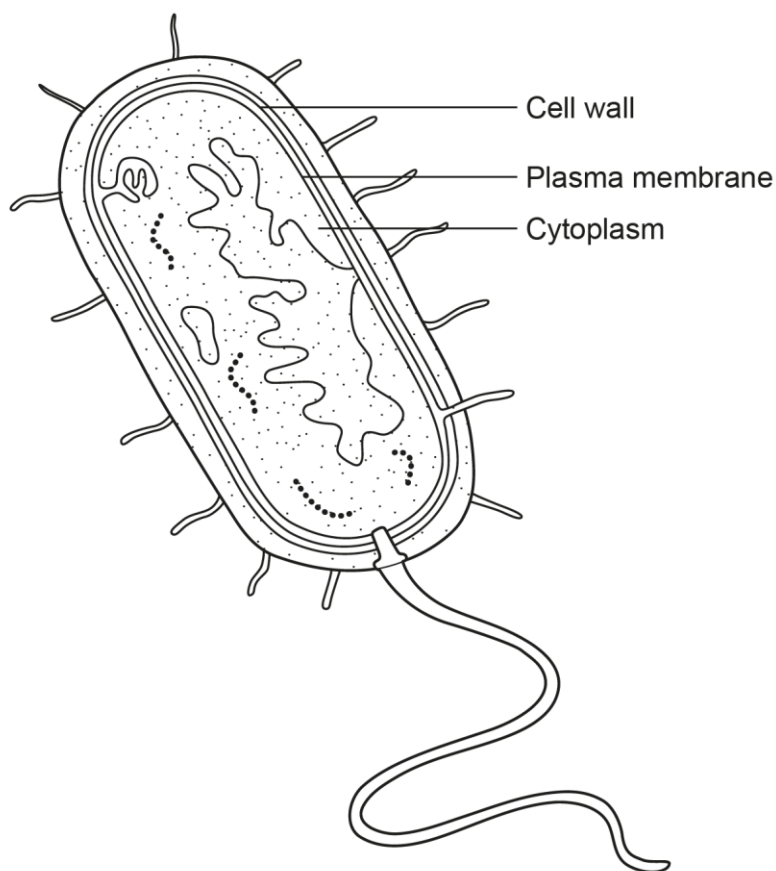
.....

..... [2]

Candidates showed a good understanding of dicotyledonous plants, with many candidates getting at least 1 mark. Some candidates correctly stated the shape and position of the xylem but incorrectly stated that it was a monocotyledonous plant, meaning that they could not be given marks for their response.

Question 33 (b) (ii)

- (ii) The diagram below shows a type of cell that was extracted from the developing root nodule labelled in the photomicrograph.



Discuss the similarities and differences in structure between this cell and a root hair cell extracted from the epidermis labelled in the photomicrograph.

.....

.....

.....

.....

.....

..... [4]

Candidates used the scaffolding of eukaryotic and prokaryotic cells provided via the diagram to good effect, meaning that many candidates got 3 or 4 marks.

Question 33 (c)

(c) Explain how soybean plants benefit from having root nodules.

.....

.....

.....

.....

..... [2]

Many candidates had difficulty making the link between root nodules and the nitrogen fixing bacteria found there. This meant that they could not make the link to the idea that plants benefit by making proteins.

Question 34 (a) (i)

- 34** Researchers investigating the effects of spaceflight on skeletal muscle prepared samples of muscle tissue for viewing under a transmission electron microscope (TEM).

The two photomicrographs show samples of skeletal muscle taken from an astronaut before and after spaceflight.

Before spaceflight**After spaceflight**

Magnification = 10 000×

(a) The banded pattern shown in the photomicrographs is formed by the arrangement of protein filaments in myofibrils. Some parts of the banded pattern have been labelled on one of the micrographs.

(i) Identify the parts of the banded pattern labelled **E** and **F**.

E

F

[2]

Candidates had difficulty with this question. Many incorrect answers were given, including sarcomere, M-line, H-band and I-band. Some candidates would have benefited from greater use of electron micrographs of sarcomeres.

Assessment for learning



Candidates could practice labelling different images of sarcomeres on a regular basis. This interpretation of diagrams, photomicrographs and electron micrographs can also be used to help meet maths skills M0.1, M0.2, M1.1, M1.2, M1.8.

Question 34 (a) (ii)

(ii) The same myofibril has been labelled **G** on both micrographs.

Calculate the actual diameter of myofibril **G** before **spaceflight**.

Diameter = μm [2]

This question was well-answered by many candidates.

Question 34 (a) (iii)

(iii) Spaceflight is thought to limit the production of RNA in cells.

Explain how limiting RNA production may result in the change to myofibrils seen after spaceflight.

.....

.....

.....

.....

.....

..... [3]

This was a challenging question for many candidates. Relatively few responses included references to the replacement of muscle fibres. However, many were credited for referring to less protein synthesis.

Question 34 (a) (iv)

(iv) Suggest reasons for the changes to fat droplets in the samples of skeletal muscle taken before and after spaceflight.

.....

.....

.....

.....

..... [2]

This was also a challenging question for candidates. Many correctly identified that the number of fat droplets would increase, but this was linked to the inactivity of astronauts and the storage of fats.

Question 34 (b)*

(b)* The photomicrographs were obtained using a transmission electron microscope (TEM). The researchers also obtained photomicrographs of the skeletal muscle using a light microscope and a scanning electron microscope (SEM).

They stated that the TEM micrographs would be better than both other types of microscopes for studying the protein filaments in the skeletal muscle.

Evaluate this statement.

.....

.....

.....

.....

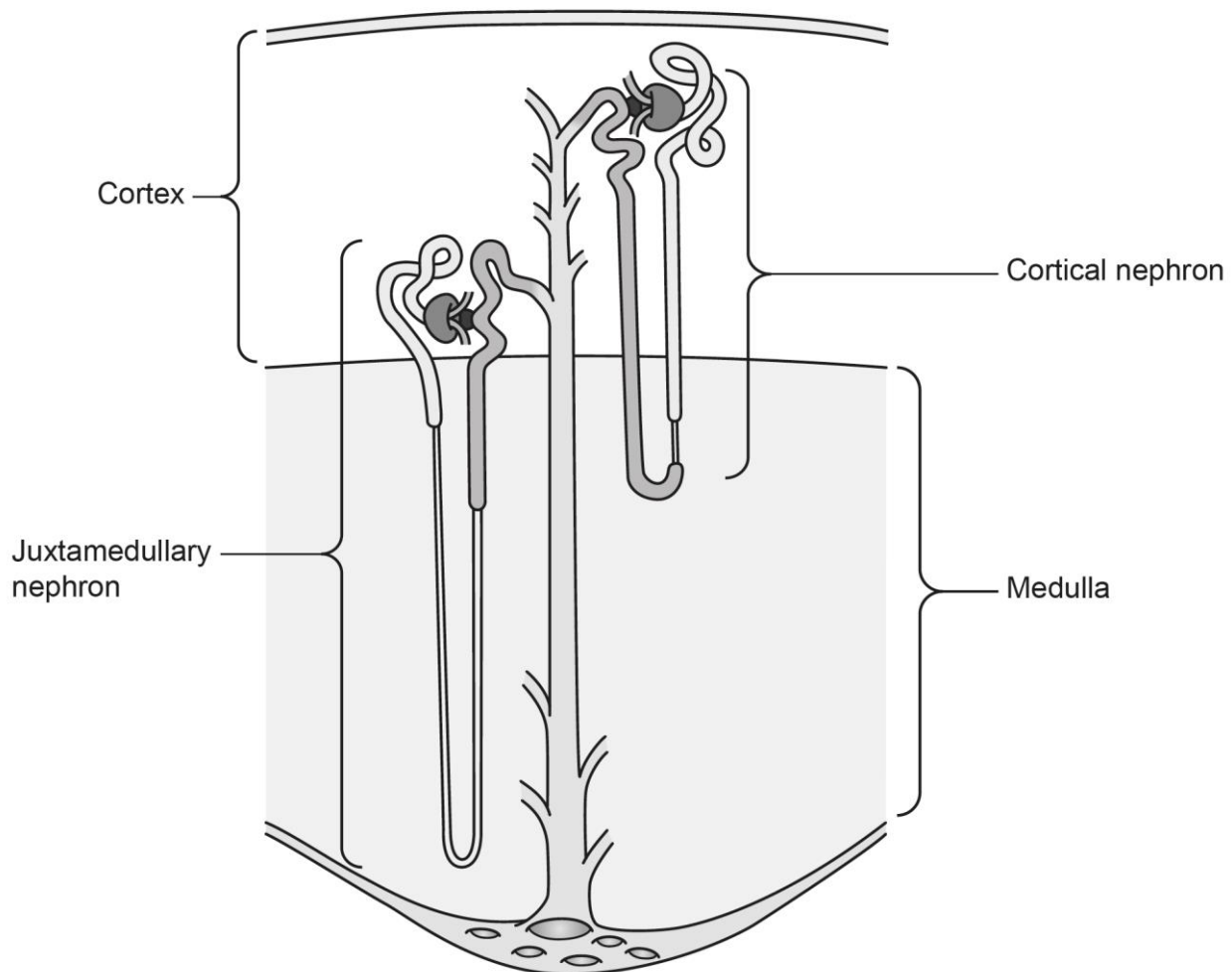
.....

..... [6]

This level of response question was answered very well by many candidates. It is clear that they have a good understanding of microscopy and used their understanding to structure their response in a way that allowed them to get marks.

Question 35 (a) (i)

35 The diagram shows two types of nephron found in the mammalian kidney.



- (a) Ultrafiltration occurs in both types of nephron.
- (i) Complete the sentences about how structures in the nephron are adapted for ultrafiltration.
- Blood enters the glomerulus via the afferent Endothelial cells lining the glomerulus are separated by narrow gaps, called, that prevent blood cells leaving the blood. In addition, the of the glomerulus provides a mesh of glycoprotein and collagen to prevent the escape of large plasma proteins. Cells lining the Bowman's capsule, called, have finger-like extensions to create small gaps for filtration.

[4]

Many candidates answered this question well, with most getting 3 or 4 marks. More successful candidates overall tended to make less mistakes on this question.

Question 35 (a) (ii)

- (ii) Suggest which of the nephrons has a main function in concentrating urine **and** give a reason for your choice.

.....

.....

..... [1]

Some candidates did well on this question. The most common mistake was candidates not giving a reason after they had stated the correct nephron.

Question 35 (a) (iii)

- (iii) In human adults, approximately 85% of nephrons are cortical nephrons.

Calculate the total number of juxtamedullary nephrons present in a human adult with an average of 900 000 nephrons per kidney.

Total = [1]

The most common incorrect answer was 135 000, showing that the candidates who made this mistake had not factored in that humans have two kidneys.

Calculation:

Percentage of juxtamedullary nephrons = $100 - 85 = 15\%$

$15\% \times 900000 = 350000$

$350000 \times 2 \text{ (kidneys)} = 700000$

Question 35 (b) (i)

(b) Patients with kidney failure need long-term dialysis therapy.

Haemodialysis (HD) and peritoneal dialysis (PD) are the two main forms of dialysis. There are advantages and disadvantages with both HD and PD, but the focus for doctors when choosing dialysis therapy for their patients is survival rate.

However, recent studies show that a priority for patients on long-term dialysis is maintaining their quality of life.

In one study, data was collected using questionnaires given to dialysis patients every 6 months over an 18-month period. Patients were asked to give a score of between 1 and 10 for questions relating to how they felt their dialysis treatment affected the different areas of their life.

The table is an analysis of some of the data showing the mean score with standard deviation shown in brackets for three different categories.

	6 months		12 months		18 months	
	HD	PD	HD	PD	HD	PD
Sexual function	7.03 (3.25)	7.45 (3.01)	6.85 (3.02)	7.50 (2.80)	6.12 (3.09)	7.52 (3.15)
Sleep disturbance	6.82 (1.95)	6.90 (1.83)	6.71 (2.02)	6.95 (1.91)	6.65 (1.75)	6.72 (1.80)
Ability to work	2.52 (3.28)	3.70 (3.74)	2.50 (3.35)	3.70 (3.85)	2.37 (3.15)	3.20 (3.80)

- (i) State **one** conclusion that can be drawn from the data and outline **two** limitations of the method that could affect the validity of your conclusion.

Conclusion

.....

.....

Limitation 1

.....

.....

Limitation 2

.....

.....

[3]

Few candidates got all 3 marks available for this question. Correct limitations were frequently seen, but often the conclusion was quite generic and did not always link to the information given in the table.

Question 35 (b) (ii)

(ii) Explain the importance of calculating standard deviation for the data.

.....

.....

.....

.....

..... [2]

Many candidates could correctly state what standard deviation was. The most common incorrect response was that outliers can be removed from the data set. The most common score was 1 mark.

OCR support



The [language of measurement](#) offers support on how to treat outliers.

Question 35 (c)

(c) Transplant surgery is also used for kidney failure.

State **one** advantage and **one** disadvantage of transplant surgery.

Advantage

.....

Disadvantage

..... [2]

Candidates gave some good responses to this interesting topic. The most common responses often stated no further need for dialysis and risk of rejecting a transplanted organ. Most candidates got 2 marks on this question.

Question 36 (a) (i)

36 Pick's disease or frontotemporal dementia (FTD) is a rare form of dementia.

(a) Symptoms of FTD include memory loss and speech deficits. Studies of brain tissue from FTD patients show the presence of inclusions known as Pick bodies that are similar to the neurofibrillary tangles found in the brain tissue of patients with Alzheimer's disease (AD).

(i) Apart from memory loss and speech deficits, suggest **two other** symptoms that may be associated with FTD.

1

2 [1]

This was a well-answered question, with many candidates getting the mark. The most common mistake was to give two of the same symptoms, e.g. forgetting basic tasks and forgetting people's faces.

Question 36 (a) (ii)

(ii) Using your knowledge of AD, suggest how the formation of Pick bodies may cause the symptoms associated with FTD.

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..... [2]

Most candidates got at least 1 mark on this question, showing that they were able to make links between their knowledge of Alzheimer's disease and frontotemporal dementia.

Question 36 (b) (i)

- (b) Approximately 40% of patients with FTD reported a family history of dementia.

One group of researchers investigated the role of DNA methylation in the regulation of genes associated with a risk of developing FTD.

- (i) Explain why DNA methylation is **not** described as a DNA mutation.

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..... [3]

This was a difficult question and demonstrated a lack of understanding in some candidates. Some candidates correctly included the term 'epigenetics' in their responses but did not give any further detail.

Question 36 (b) (ii)

- (ii) Describe the role of DNA methylation in the regulation of genes.

.....

.....

..... [1]

Many candidates got the mark for this question. The most common mistake seen was stating 'methylation stops transcription factors', which did not link close enough to the question to get the mark.

Question 36 (c)

- (c) Different scanning techniques are used by researchers and doctors to observe brain tissue and assess damage caused by disease or injury.

Complete the table below by deciding whether the statements about the scanning techniques used to observe brain tissue are **True (T)** or **False (F)**.

Statement	True (T) or False (F)
Electrical impulses sent between neurons in the brain can be detected using EEG scans.	
MRI scans do not use X-rays so are safer to use during pregnancy.	
PET scans use X-rays to construct images of internal structures.	

[3]

This was a well-answered question, with most candidates getting 2 marks. The most common error was on statement two, where some candidates incorrectly thought that MRI scans use X-rays.

Misconception



The most common misconception was around the roles of scans.

Support on this topic can be found on the [NHS website](#). Please note that not all of the scans listed in that website are required for A Level Biology B.

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