



UNITED LEARNING

YEAR 9

SCIENCE

END OF YEAR BIOLOGY ASSESSMENT 2023

TIME ALLOWED: 40 MINUTES

Student Name	
Class	

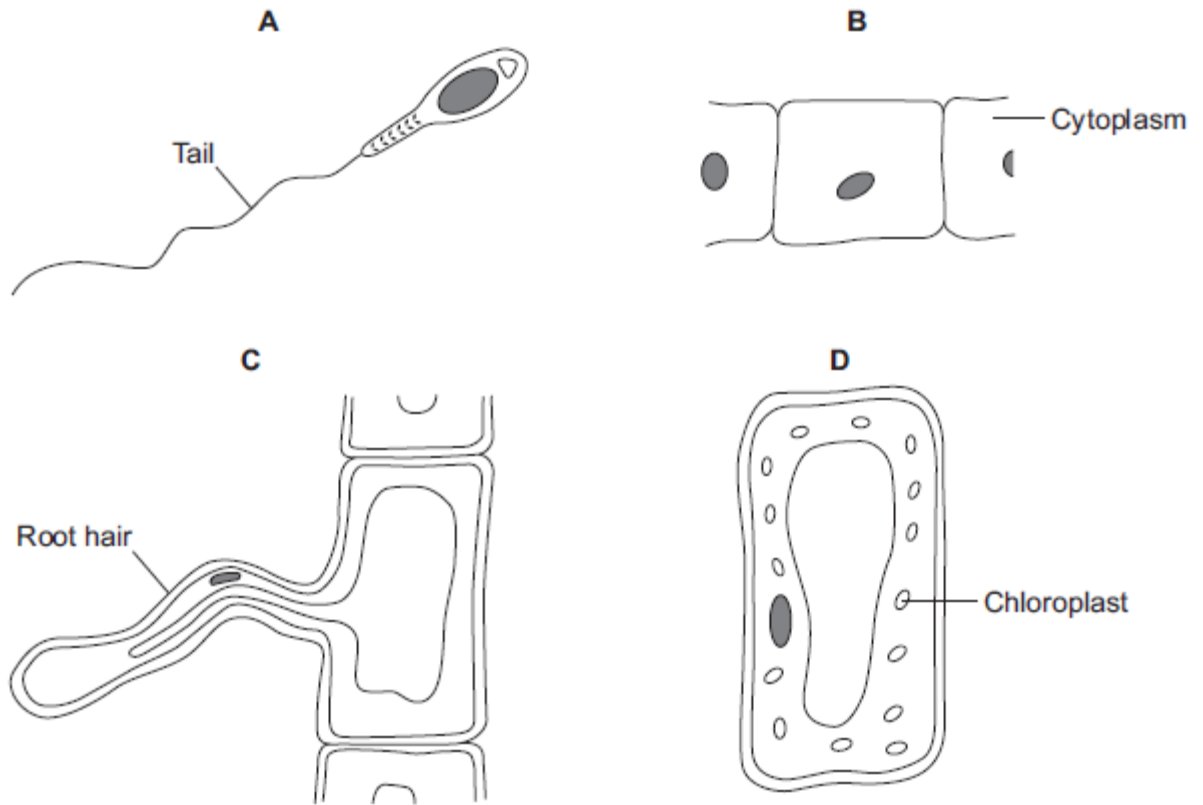
Total Mark

/40

QUESTION 1 – CELLS AND MICROSCOPY (9 marks)

The diagrams show four types of cells, **A**, **B**, **C** and **D**.

Two of the cells are plant cells and two are animal cells.



1.1 Which **two** of the cells are plant cells?

Tick (✓) **one** box.

1

- A and B
- A and D
- C and D



1.2 Give **one** reason for your answer.

1

1.3 Which cell, **A**, **B**, **C** or **D**, is adapted for swimming?

1

1.4 Which cell, **A**, **B**, **C** or **D**, can produce glucose by photosynthesis?

1

1.5 Cells **A**, **B**, **C** and **D** all use oxygen.

For what process do cells use oxygen?

Draw a ring around **one** answer.

osmosis

photosynthesis

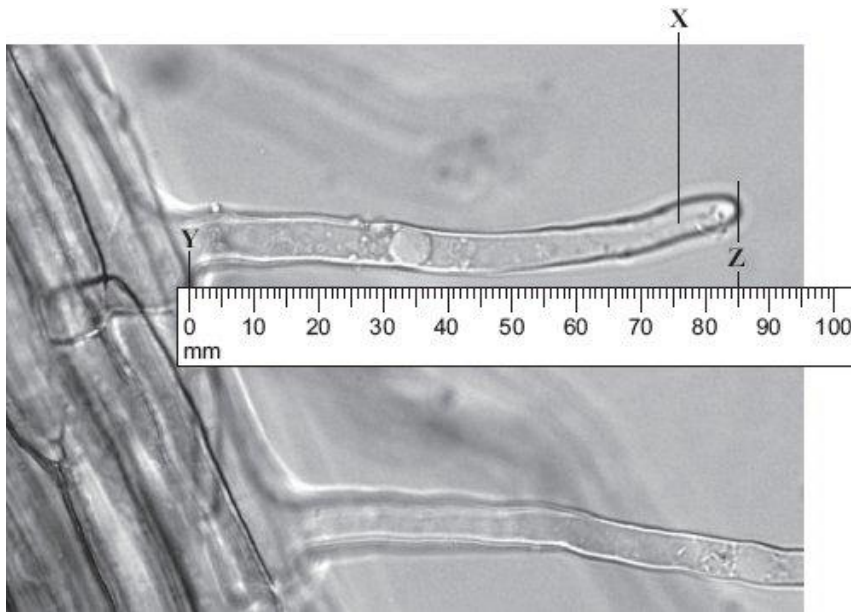
respiration

1

Question 1 continues on the next page



1.6 The image below shows some cells viewed under a microscope.



The ruler in the image gives the image size in **mm**.

The actual size is 0.034 cm

Calculate the magnification.

Use the equation:

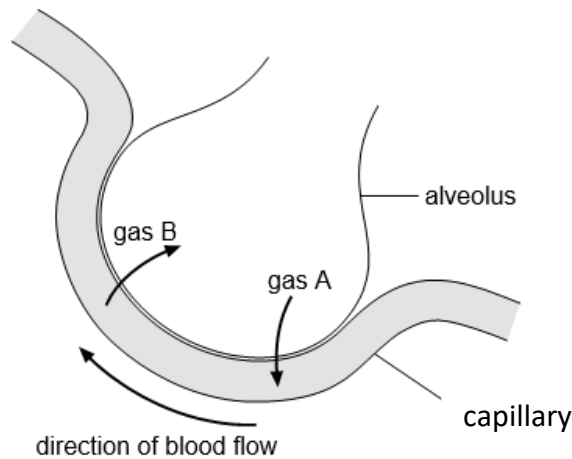
$$\text{Magnification} = \text{Image size} \div \text{Actual size}$$

Magnification = \times _____

4



QUESTION 2 – ALVEOLI (4 marks)



The diagram above shows one alveolus in the lungs

2.1 Name gas **A**

1

2.2 Name gas **B**

1

2.3 What process causes these gases to move in and out of the alveolus?

1

2.4 Give **one** way the alveolus is adapted for gas exchange

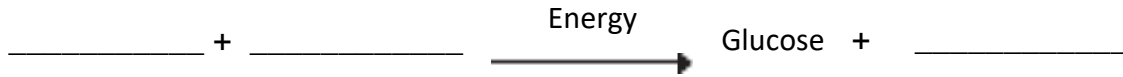
1



QUESTION 3 – PHOTOSYNTHESIS (9 marks)

3.1 Complete the word equation for photosynthesis.

3



Draw a ring around the correct answer to complete each sentence.

3.2 The energy needed for photosynthesis comes from

- | |
|--------------|
| light. |
| osmosis. |
| respiration. |

1

3.3 Energy is absorbed by a green pigment called

- | |
|--------------|
| chloride. |
| chloroplast. |
| chlorophyll. |

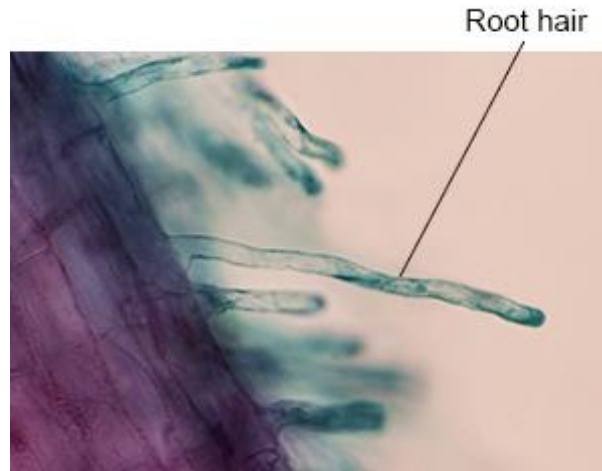
1

3.4 Give **one** way in which plants use the glucose made in photosynthesis.

1



The image below shows part of a plant root viewed using a microscope.



3.5 Explain how a root hair cell is specialised for its function.

2

3.6 Typical plant cells contain chloroplasts.

Explain why root hair cells **do not** contain chloroplasts.

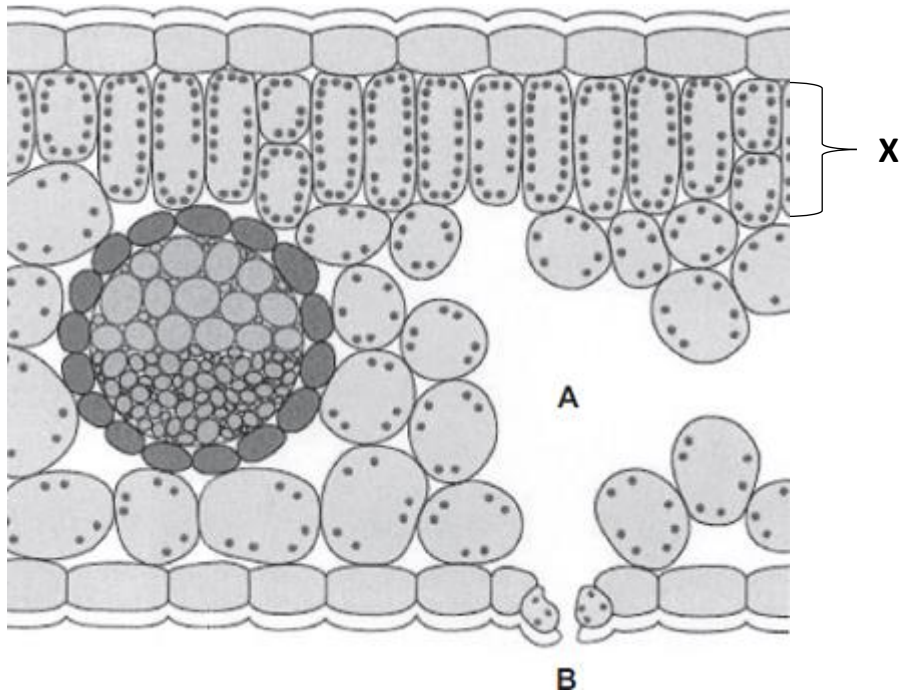
1

Turn over for the next question.



QUESTION 4 – THE LEAF (11 marks)

The diagram shows a section through a plant leaf.



4.1 What is the name given to the layer of cells labelled X?

1

4.2 Name **one** gas that will diffuse from point A to point B on the diagram on a sunny day.

1

Water vapour is lost from leaves via the hole at point B.

4.3 Give the name of the hole through which water is lost from the leaf.

1



4.4 The hole at point **B** is an adaptation of the leaf for photosynthesis.

Give **three other** adaptations of the leaf for photosynthesis.

1. _____

2. _____

3. _____

3

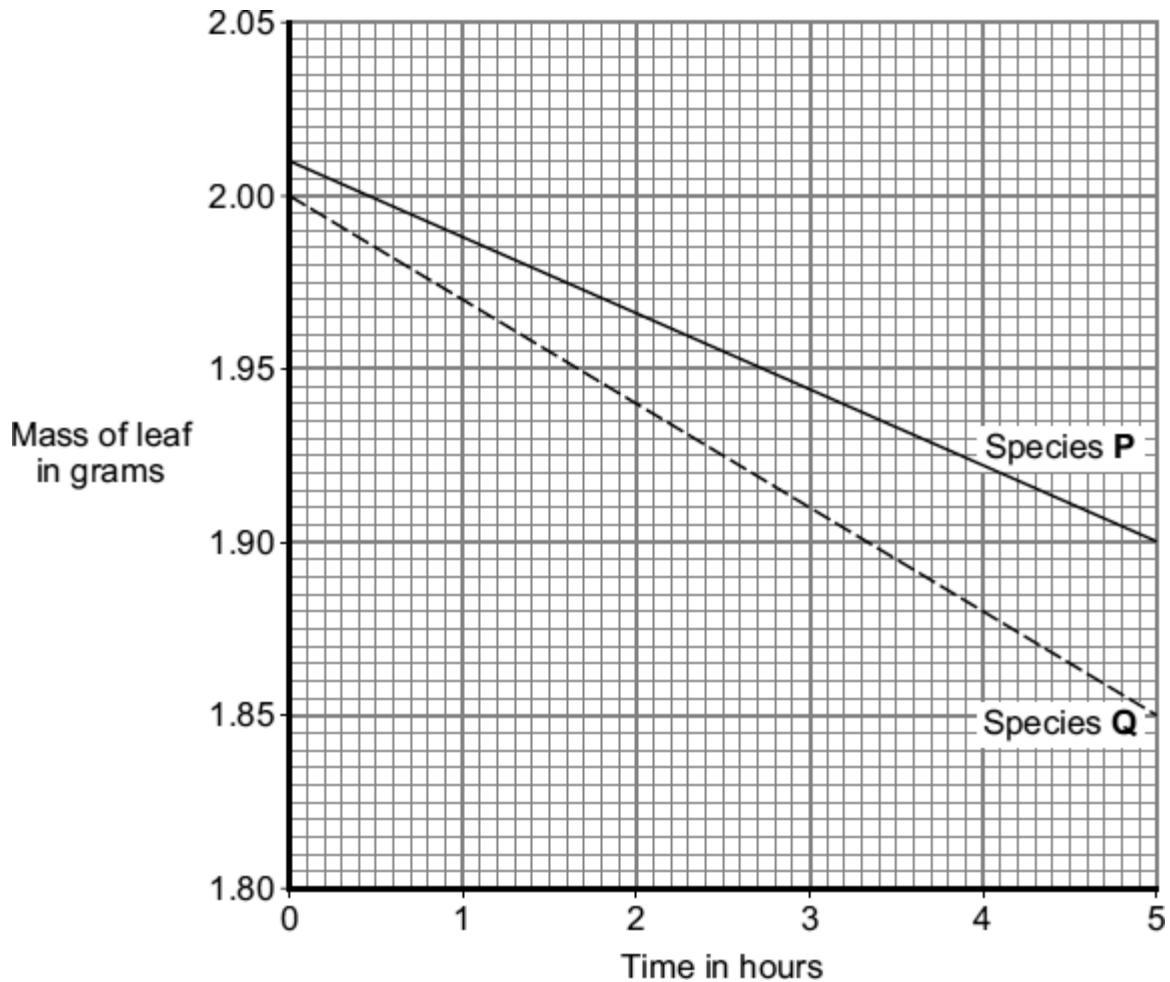
Question 4 continues on the next page.



Water loss causes a leaf to lose mass.

The graph shows how the masses of leaves from two plant species, **P** and **Q**, changed over several hours.

Both leaves were kept in the same conditions.



4.5 What was the mass of the leaf of species **Q** at 0 hours?
 _____ grams

4.6 What was the difference between the mass of the leaf of species **P** and the mass of the leaf of species **Q** after 5 hours?
 _____ grams



The leaf of species **Q** lost water at a faster rate than the leaf of species **P**.

4.7 Suggest **one** reason why.

1

A third leaf from plant species **R** was tested in the same way for 5 hours.

Plant species **R** is better adapted to hotter, drier conditions than plant species **Q**.

The leaf of plant species **R** had the same starting mass as plant species **Q**.

4.8 Sketch a line on the graph to represent the results for plant species **R**.

2

QUESTION 5 – RESPIRATION (7 marks)

An athlete ran as fast as he could until he was exhausted.

He respired **aerobically** at the start of the run.

At the end of the run, he respired **anaerobically**.

5.1 Give **one** difference between aerobic and anaerobic respiration

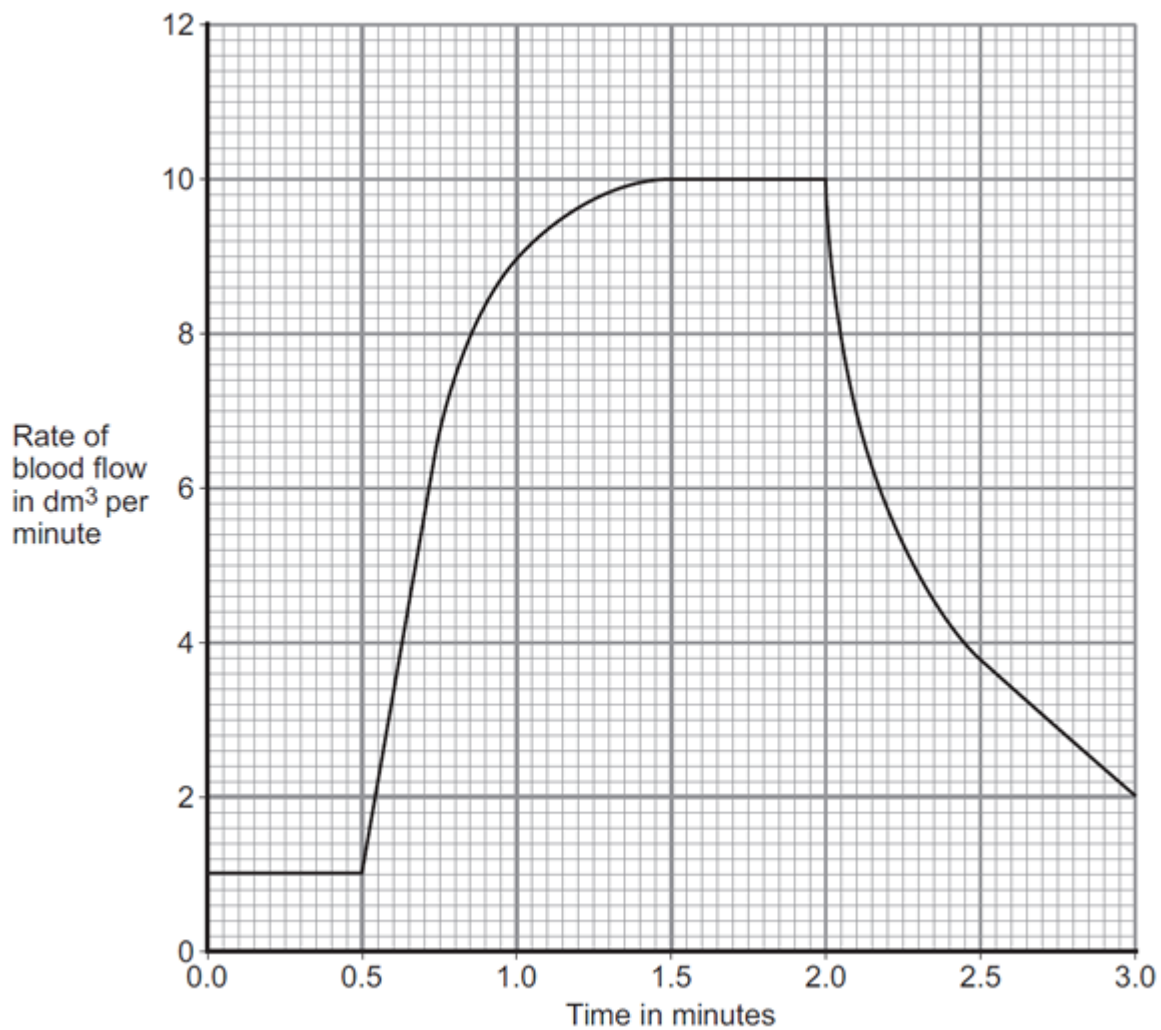
1

Question 5 continues on the next page



TURN OVER ►

The graph below shows the effect of running on the rate of blood flow through the athlete's muscles.



5.2 For how many minutes did the athlete run?

Time = _____ minutes

1



5.3 Describe what happens to the rate of blood flow through the athlete's muscles during the run.

Use data from the graph in your answer.

2

5.4 When an athlete exercises their breathing rate also increases.

Explain why breathing rate increases during exercise.

3



