CAMBRIDGE IGCSE BIOLOGY · 0610

# BIOLOGY



EXAM QUESTION PACK

## TOPIC 2: ORGANISATION OF THE ORGANISM

| SCORE | PERCENTAGE |
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| / | % |

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# Organisation of the organism – 2023 June IGCSE Biology 0610

**1.** June/2023/Paper_0610/11/No.4

Which row shows structures that are present in both root hair cells and palisade mesophyll cells?

| | cell wall | chloroplasts | cytoplasm | vacuole |
|---|---|---|---|---|
| **A** | ✓ | ✓ | ✓ | ✗ |
| **B** | ✗ | ✓ | ✓ | ✓ |
| **C** | ✓ | ✗ | ✓ | ✓ |
| **D** | ✓ | ✓ | ✗ | ✓ |

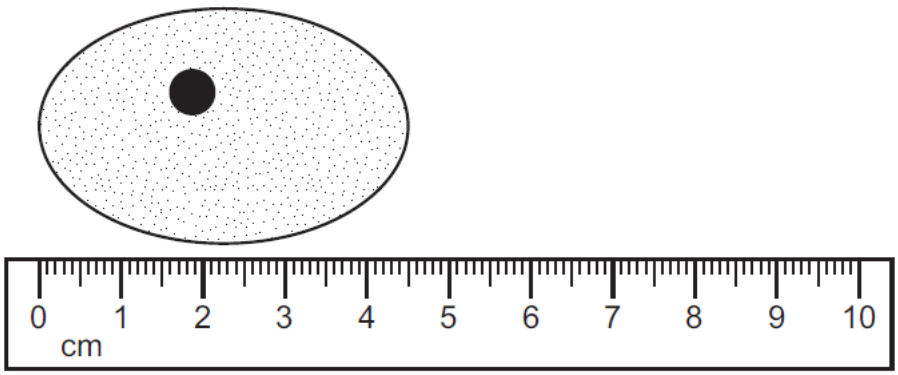
key

✓ = present

✗ = absent

**2.** June/2023/Paper_0610/11/No.5

The diagram shows a cell at ×1500 magnification.




What is the actual size of the cell?

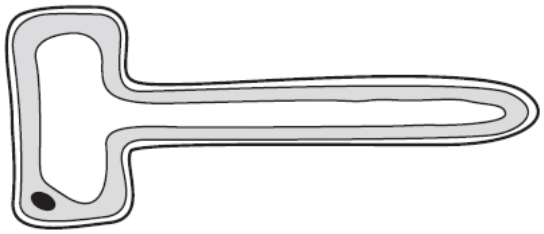
**A** 0.003 mm **B** 0.03 mm **C** 33 mm **D** 333 mm



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**3.** June/2023/Paper_0610/22/No.5

The diagram shows a root hair cell.



When does water enter the cell by osmosis?

**A** when the concentration of solutes outside the cell is greater than inside the cell

**B** when the concentration of solutes inside and outside the cell are equal

**C** when the water potential inside the cell is higher than outside the cell

**D** when the water potential outside the cell is higher than inside the cell



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**4.** June/2023/Paper_0610/31/No.7

**(a)** Fig. 7.1 is a diagram showing some of the organs in the human body.

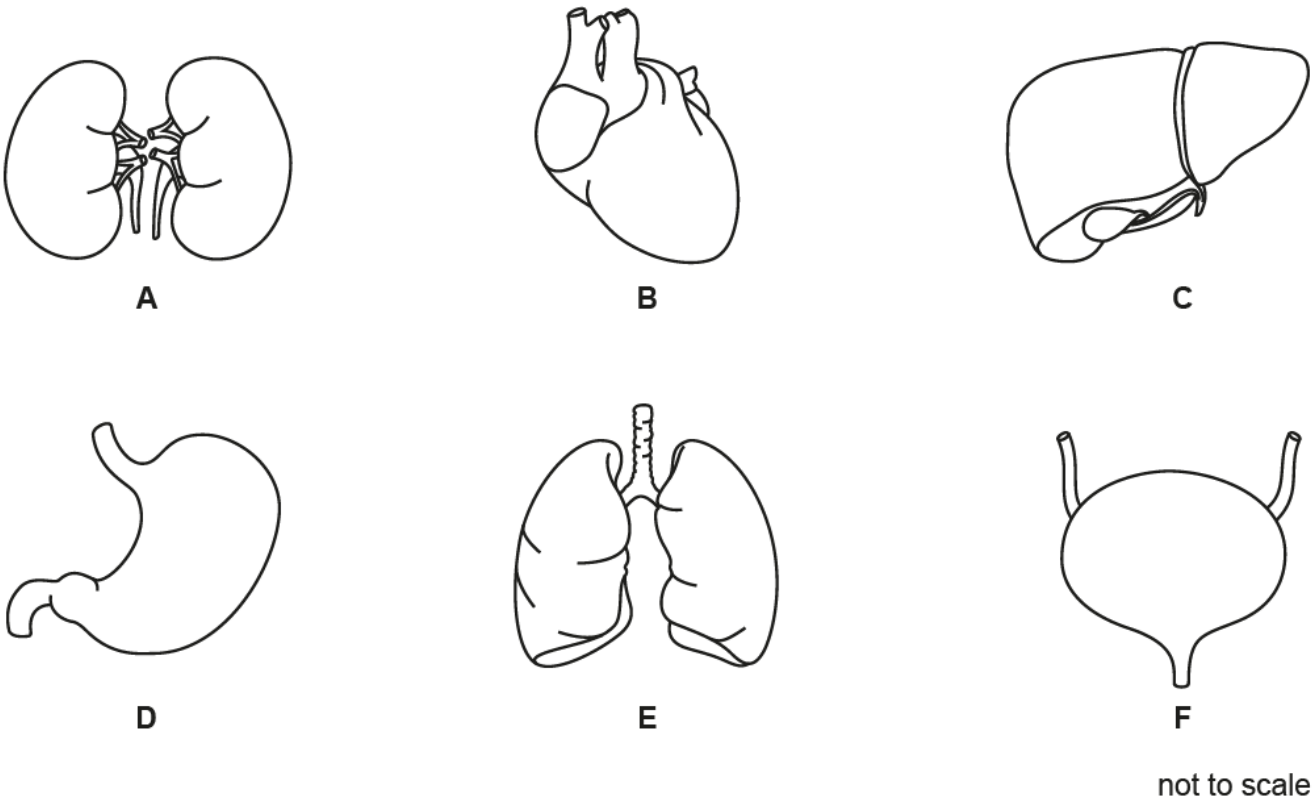



**Fig. 7.1**

Table 7.1 shows the names of some of the organs in Fig. 7.1, the identifying letters of some of these organs and their functions.

Complete Table 7.1.



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**Table 7.1**

| name | letter in Fig. 7.1 | function |
|---|---|---|
| | | excretes carbon dioxide from the body |
| heart | **B** | |
| | **F** | stores urine |
| | | excretes urea, excess water and ions |

[6]

**5.** June/2023/Paper_0610/32/No.2b

**(i)** State the name of **one** cell structure that is found in plant cells but **not** in animal cells.

..... [1]

**(ii)** State the name of **one** cell structure that is found in plant cells **and** in animal cells.

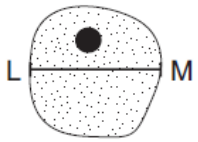
..... [1]



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**6.** March/2023/Paper_ 0610/12/No.5

The diagram shows a magnified image of a cell. The magnification is ×360. Line LM represents the width of the image of the cell. Line LM is 18 mm long in this diagram.

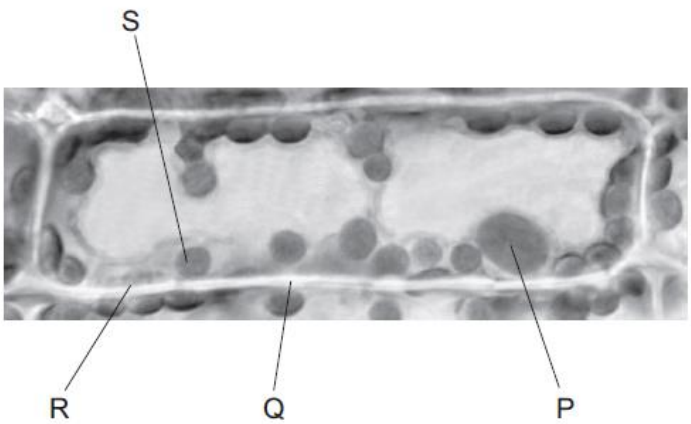



What is the actual width of the cell?

**A** 0.005 mm **B** 0.05 mm **C** 0.5 mm **D** 5.0 mm

**7.** March/2023/Paper_ 0610/22/No.3

The photomicrograph shows a cell from a type of aquatic plant.




Which labelled parts indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S



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# Organisation of the organism – 2022 November IGCSE 0610 Biology

**1.** Nov/2022/Paper_11/No.4

Root hair cells are found on plant roots.

Which feature is present in a root hair cell but **not** in a sperm cell?

**A** cell membrane

**B** cell wall

**C** chloroplasts

**D** cytoplasm

**2.** Nov/2022/Paper_12/No.4

Root hair cells are found on plant roots.

Which feature is present in a root hair cell but **not** in a sperm cell?

**A** cell membrane

**B** cell wall

**C** chloroplasts

**D** cytoplasm

**3.** Nov/2022/Paper_12/No.5

The cells listed have specialised structures that allow them to carry out their functions.

1 ciliated cell

2 nerve cell

3 root cortex cell

4 sperm cell

Which cells have structures that can move?

**A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

**4.** Nov/2022/Paper_13/No.4

Root hair cells are found on plant roots.

Which feature is present in a root hair cell but **not** in a sperm cell?

**A** cell membrane

**B** cell wall

**C** chloroplasts

**D** cytoplasm

**5.** Nov/2022/Paper_13/No.5

What is an example of a tissue?

**A** a chloroplast

**B** the palisade mesophyll

**C** a neurone

**D** the pancreas

**6.** Nov/2022/Paper_23/No.4

What is an example of a tissue?

**A** a chloroplast

**B** the palisade mesophyll

**C** a neurone

**D** the pancreas

**7.** Nov/2022/Paper_32/No.8

Table 8.1 shows the levels of organisation in living organisms and some examples.

Place ticks (✓) in the boxes to show the correct level of organisation for each example.

**Table 8.1**

| example | level of organisation | | | | |
|---|---|---|---|---|---|
| | cell | tissue | organ | organ system | organism |
| circulatory | | | | | |
| epidermis | | | | | |
| pancreas | | | | | |
| tree | | | | | |
| sperm | | | | | |

[5]



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# Organisation of the organism – 2022 June IGCSE 0610

**1.** June/2022/Paper_ 23/No.4

Which level of organisation is shown by the heart of a mammal?

**A** a cell

**B** a tissue

**C** an organ

**D** an organ system

**2.** June/2022/Paper_ 33/No.9(a)

**(a)** Define the term sense organ.

.....

.....

.....

.....

..... [2]

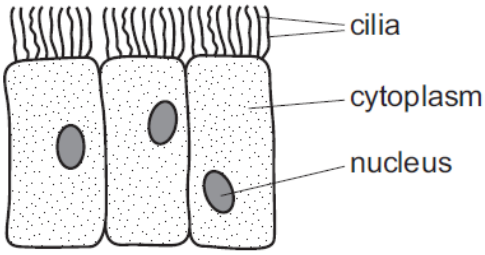


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# Organisation of the organism – 2021 IGCSE 0610

**1.** Nov/2021/Paper_11/No.5

The diagram shows some cells.




Where are these cells found?

**A** alimentary canal

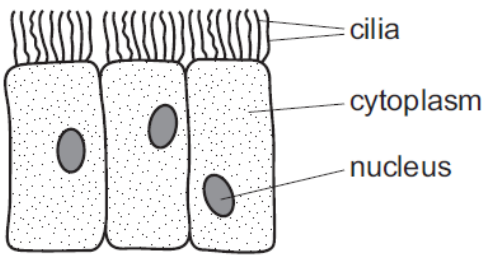
**B** blood

**C** bronchus

**D** plant roots

**2.** Nov/2021/Paper_12/No.5

The diagram shows some cells.




Where are these cells found?

**A** alimentary canal

**B** blood

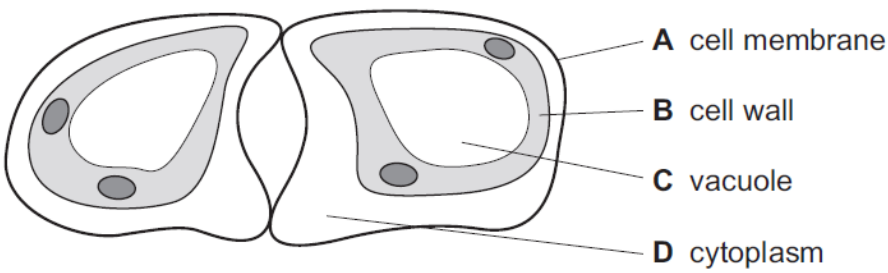
**C** bronchus

**D** plant roots

**3.** Nov/2021/Paper_13/No.4

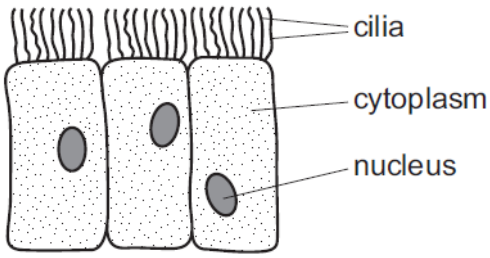
The diagram shows two guard cells.

Which label is correct?



**4.** Nov/2021/Paper_13/No.5

The diagram shows some cells.




Where are these cells found?

**A** alimentary canal

**B** blood

**C** bronchus

**D** plant roots

**5.** Nov/2021/Paper_13/No.6

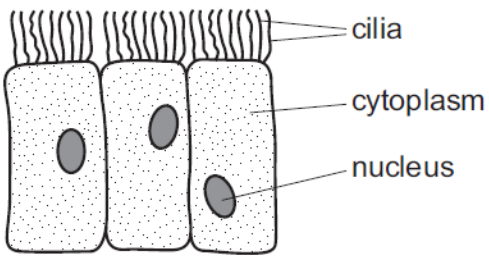
A student draws a root hair cell. The actual length of the cell is 0.8 mm and the drawing of the cell is 80 mm long.

What is the magnification of the student's drawing?

**A** ×0.001 **B** ×0.01 **C** ×10 **D** ×100

**6.** Nov/2021/Paper_21/No.5

The diagram shows some cells.




Where are these cells found?

**A** alimentary canal

**B** blood

**C** bronchus

**D** plant roots

**7.** Nov/2021/Paper_22/No.6

Which statement about diffusion is correct?

**A** The process requires energy from respiration.

**B** The particles must cross a cell membrane.

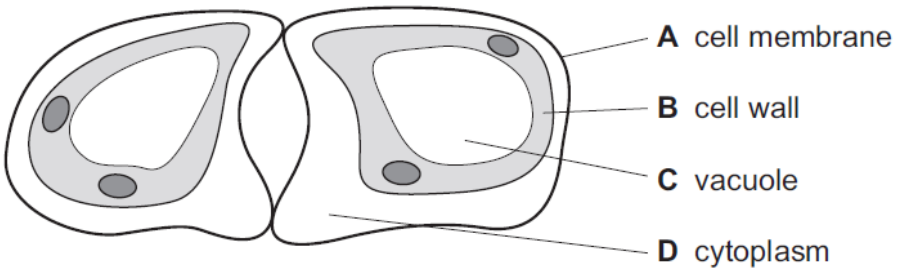
**C** The net movement of particles is up a concentration gradient.

**D** The process involves the random movement of particles.

**8.** Nov/2021/Paper_23/No.3

The diagram shows two guard cells.

Which label is correct?




**9.** Nov/2021/Paper_23/No.4

The length of a mitochondrion in a photomicrograph is 15 mm.

The actual length of the mitochondrion is 3 μm.

What is the magnification of the photomicrograph?

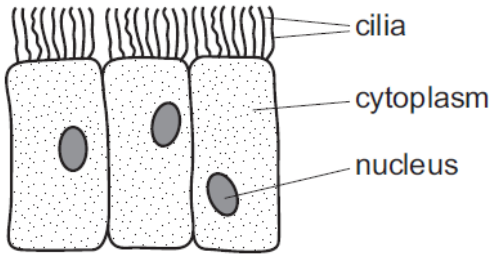
**A** ×5 **B** ×45 **C** ×5000 **D** ×45 000



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**10.** Nov/2021/Paper_23/No.5

The diagram shows some cells.




Where are these cells found?

**A** alimentary canal

**B** blood

**C** bronchus

**D** plant roots

**11.** Nov/2021/Paper_23/No.16

How is the structure of root hair cells related to their function?

**A** They have chloroplasts for photosynthesis.

**B** Their cell wall is partially permeable to absorb water by osmosis.

**C** They have a large surface area to increase the rate of mineral ion uptake.

**D** Both the cell wall and cell membrane control the active uptake of mineral ions.

**12.** Nov/2021/Paper_23/No.31

Which row is correct for the type of cell?

| | type of cell | nucleus | sets of chromosomes |
|---|---|---|---|
| **A** | body | diploid | two |
| **B** | gamete | diploid | one |
| **C** | gamete | haploid | two |
| **D** | body | haploid | one |



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**13.** Nov/2021/Paper_33/No.7

**(a)** Fig. 7.1 is a diagram of an animal cell.

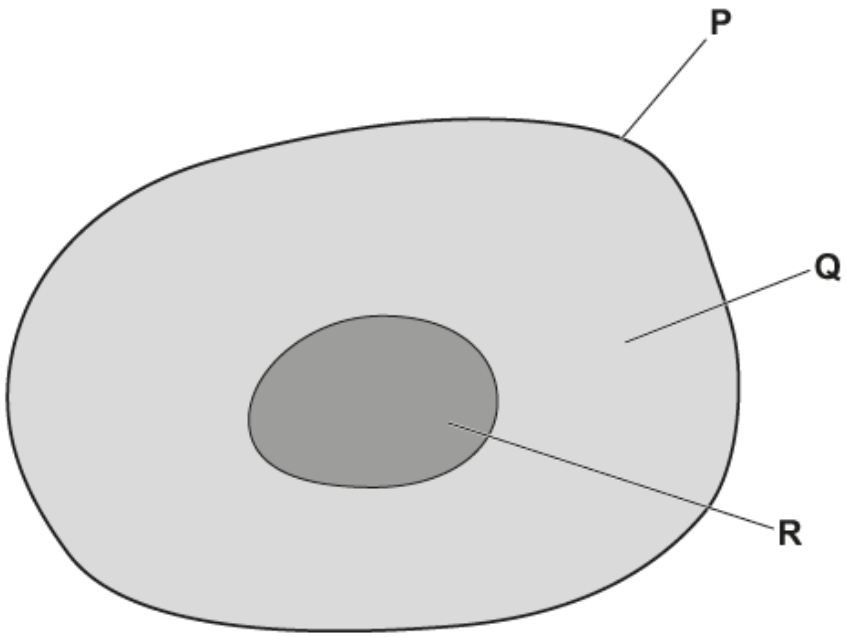



**Fig. 7.1**

Complete Table 7.1 by stating the functions of the structures labelled in Fig. 7.1.

**Table 7.1**



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| structure label | function of the structure |
|---|---|
| **P** | |
| **Q** | |
| **R** | |

[3]

**(b)** Cell structure can be specialised to perform a specific function. A range of animal cell types are shown in Fig. 7.2.

The boxes on the left contain the names of four specialised cells.

The boxes in the middle contain diagrams of different specialised cells.

The boxes on the right contain descriptions of functions.

Draw **one** line from each name of a specialised cell to the diagram of that cell.

Draw **one** line from each diagram of a specialised cell to its function.

Two lines have been drawn for you. Draw **six** more lines.



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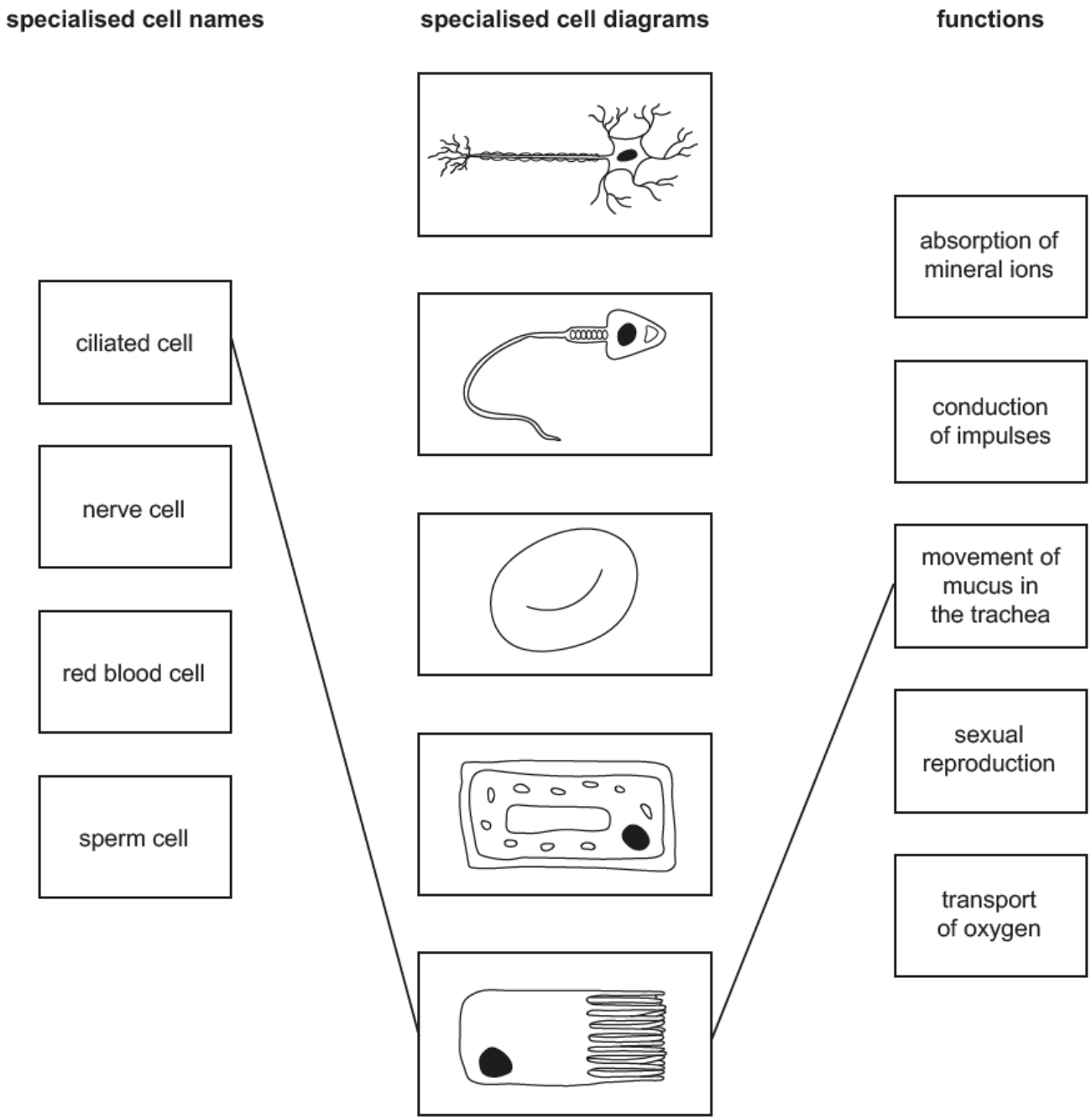



**Fig. 7.2**

[6]

[Total: 9]

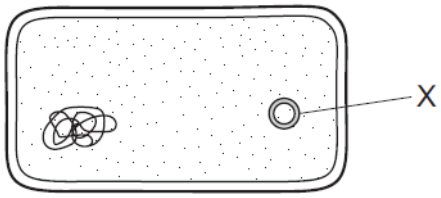


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# Organisation of the organism – 2021 IGCSE 0610

**1.** March/2021/Paper_22/No.38

The diagram shows the structure of a bacterium.




The presence of structure X is one reason why bacteria are used in genetic engineering.

What is structure X?

**A** chloroplast

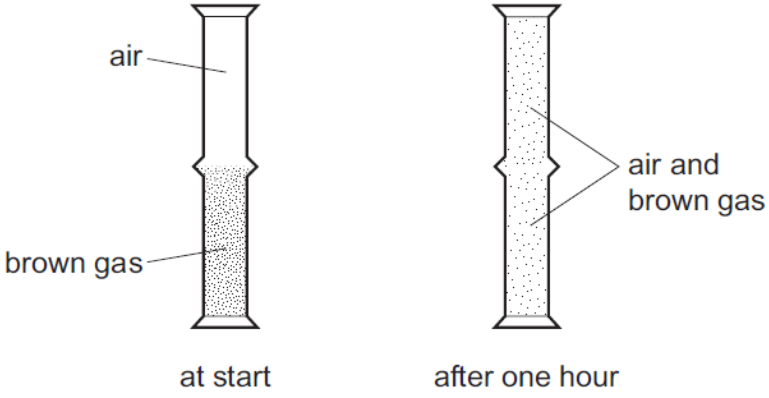
**B** mitochondrion

**C** nucleus

**D** plasmid

**2.** March/2021/Paper_12/No.7

A jar of air was placed upside down on top of a jar containing a brown gas as shown.




Which process has taken place?

**A** diffusion both upwards and downwards

**B** diffusion downwards only

**C** diffusion upwards only

**D** diffusion and osmosis

**3.** March/2021/Paper_12/No.8

Which row describes active transport?

| | particles move through a cell membrane | | energy from respiration needed |
|---|---|---|---|
| | from a region of | to a region of | |
| **A** | higher concentration | lower concentration | no |
| **B** | higher concentration | lower concentration | yes |
| **C** | lower concentration | higher concentration | no |
| **D** | lower concentration | higher concentration | yes |

**4.** March/2021/Paper_32/No.4

**(a)** Fig. 4.1 is a diagram of a plant cell.

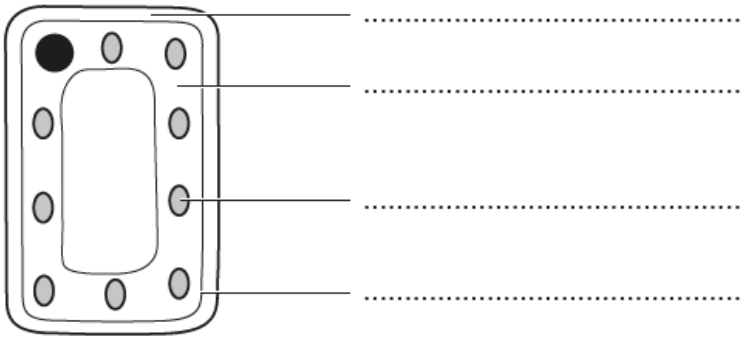



**Fig. 4.1**

Identify the parts of the plant cell in Fig. 4.1 by labelling them in the spaces provided, using words from the list.

| | | |
|---|---|---|
| **cell membrane** | **cell wall** | **chloroplast** |
| **cytoplasm** | **nucleus** | **vacuole** |

[4]

**(b)** The boxes on the left show parts of a plant cell.

The boxes on the right show the functions of the parts.

Draw lines to link each part with its function. Draw **four** lines.

| part | function |
|---|---|
| | contains the genetic material |
| cell wall | |
| | filled with sap and supports the plant cell |
| chloroplast | |
| | made of cellulose and strengthens the plant cell |
| nucleus | |
| | site of photosynthesis |
| vacuole | |
| | site of respiration |

[4]

**(c)** Xylem is a specialised plant tissue.

State **two** functions of xylem tissue.

1 .....

2 .....

[2]

**(d)** Plant shoots and roots respond to stimuli.

Fig. 4.2 is a photograph of a plant that has been grown in the dark.

The plant has been grown with the pot in this position and is showing a tropic response to this stimulus.



**Fig. 4.2**

**(i)** State the name of the tropic response shown in Fig. 4.2.

..... [1]

**(ii)** Describe how the roots would respond to the same stimulus.

.....

.....

..... [1]

[Total: 12]

**5.** March/2021/Paper_32/No.5

**(a)** A student investigated the effect of the concentration of carbon dioxide on the rate of photosynthesis in an aquatic plant.

Table 5.1 shows the results of the investigation.

**Table 5.1**

| concentration of carbon dioxide / ppm | rate of release of oxygen / $cm^3$ per hour |
|---|---|
| 0 | 0.0 |
| 100 | 11.2 |
| 300 | 26.1 |

**(i)** Describe **and** explain the results shown in Table 5.1.

.....

.....

.....

.....

.....

.....

..... [3]

**(ii)** State why the temperature should have been kept constant during this investigation.

.....

.....

..... [1]

**(b)** Carbon dioxide is an example of a greenhouse gas.

**(i)** State the name of **one other** greenhouse gas.

..... [1]

**(ii)** State the name of the chemical used to test for the presence of carbon dioxide and state the result of a positive test.

chemical .....

positive result .....

[2]

**(c)** Farmers use fertilisers on crops to improve crop growth. These fertilisers can cause pollution when washed into rivers.

State the names of **two other** substances used to improve crop yield that can cause pollution.

1 .....

2 .....

[2]

[Total: 9]

**6.** March/2021/Paper_32/No.6

**(a)** The box on the left contains the term 'Anaerobic respiration'.

The boxes on the right show some sentence endings.

Match the box on the left to **three** boxes on the right to make three correct sentences.

| | |
|---|---|
| Anaerobic respiration | involves the action of enzymes. |
| | is required for diffusion to occur. |
| | produces lactic acid in humans. |
| | releases less energy per glucose molecule than aerobic respiration. |
| | requires carbon dioxide. |
| | requires oxygen in humans. |

[3]

**(b)** State the word equation for anaerobic respiration in yeast.

..... [2]

**(c)** Respiration is one of the characteristics of living things.

State the names of **three other** characteristics of living things.

1 .....

2 .....

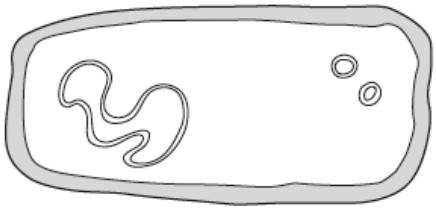
3 .....

[3]

[Total: 8]

**7.** March/2021/Paper_42/No.2

**(a)** Fig. 2.1 is a diagram of a prokaryotic cell.



**not to scale**

**Fig. 2.1**

**(i)** State **one** visible feature in Fig. 2.1 that identifies this cell as a prokaryotic cell.

..... [1]

**(ii)** State **one** cell structure that is present in the cells of all organisms.

..... [1]

**(b)** Prokaryotes, Animals and Plants are three of the five kingdoms of organisms.

State the names of the **two other** kingdoms.

1 .....

2 .....

[2]

**(c)** Fig. 2.2 shows part of the nitrogen cycle.

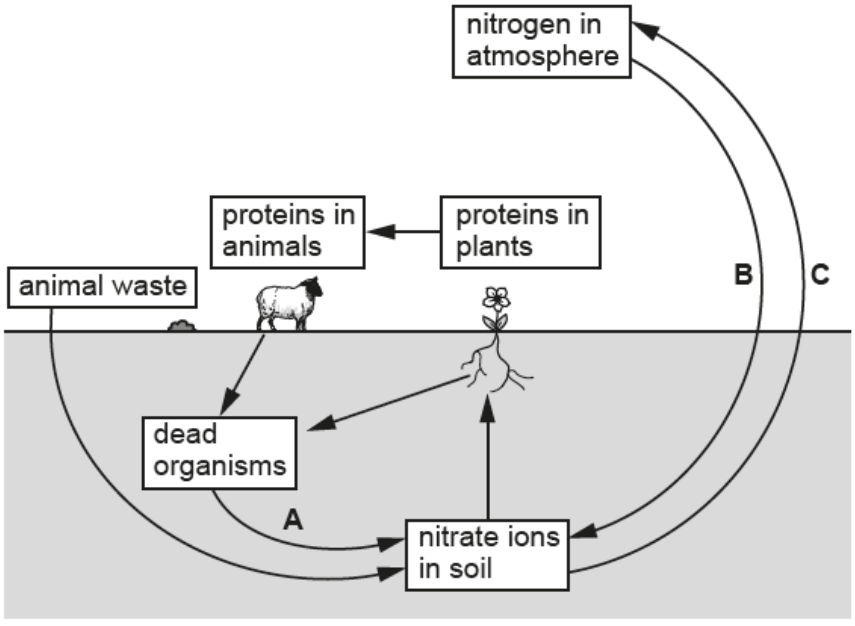



**Fig. 2.2**

**(i)** Describe processes **A**, **B** and **C** in Fig. 2.2.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [6]

**(ii)** State the name of the process that plants use to absorb nitrate ions.

..... [1]

[Total: 11]

**8.** March/2021/Paper_42/No.4

**(a)** A leaf can be described as an organ.

Define the term *organ*.

.....

.....

..... [1]

**(b)** Fig. 4.1 is a photomicrograph of a cross section of part of a leaf.

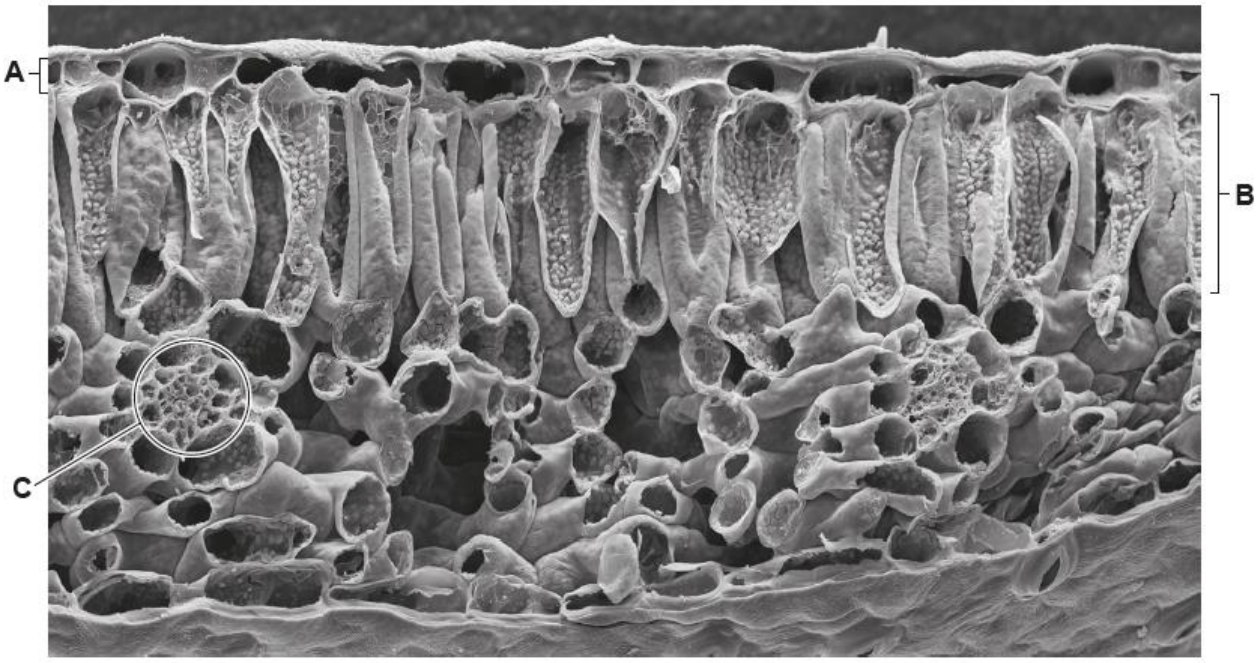



**Fig. 4.1**

**(i)** Identify the tissue labelled **A** in Fig. 4.1.

..... [1]

**(ii)** Identify the structure labelled **C** in Fig. 4.1.

..... [1]

(iii) Describe how the tissue labelled **B** is adapted to maximise photosynthesis.

.....

.....

.....

.....

.....

.....

..... [3]

(c) (i) State **two** substances that are transported only in the phloem.

..... [1]

(ii) Explain why some parts of a plant can act as both a source and a sink.

.....

.....

.....

.....

..... [2]

**(d)** The effect of carbon dioxide concentration on the rate of oxygen production in an aquatic plant was measured.

- A lamp was used to keep the light intensity constant.
- The oxygen gas released by the plant was collected in a gas syringe.
- The plant was placed in water that was kept constant at 20 °C.

Fig. 4.2 shows the results.

**(i)** The rate of oxygen production was assumed to be the same as the rate of photosynthesis.

Suggest why the rate of oxygen production was **not** the same as the rate of photosynthesis.

.....

.....

..... [2]

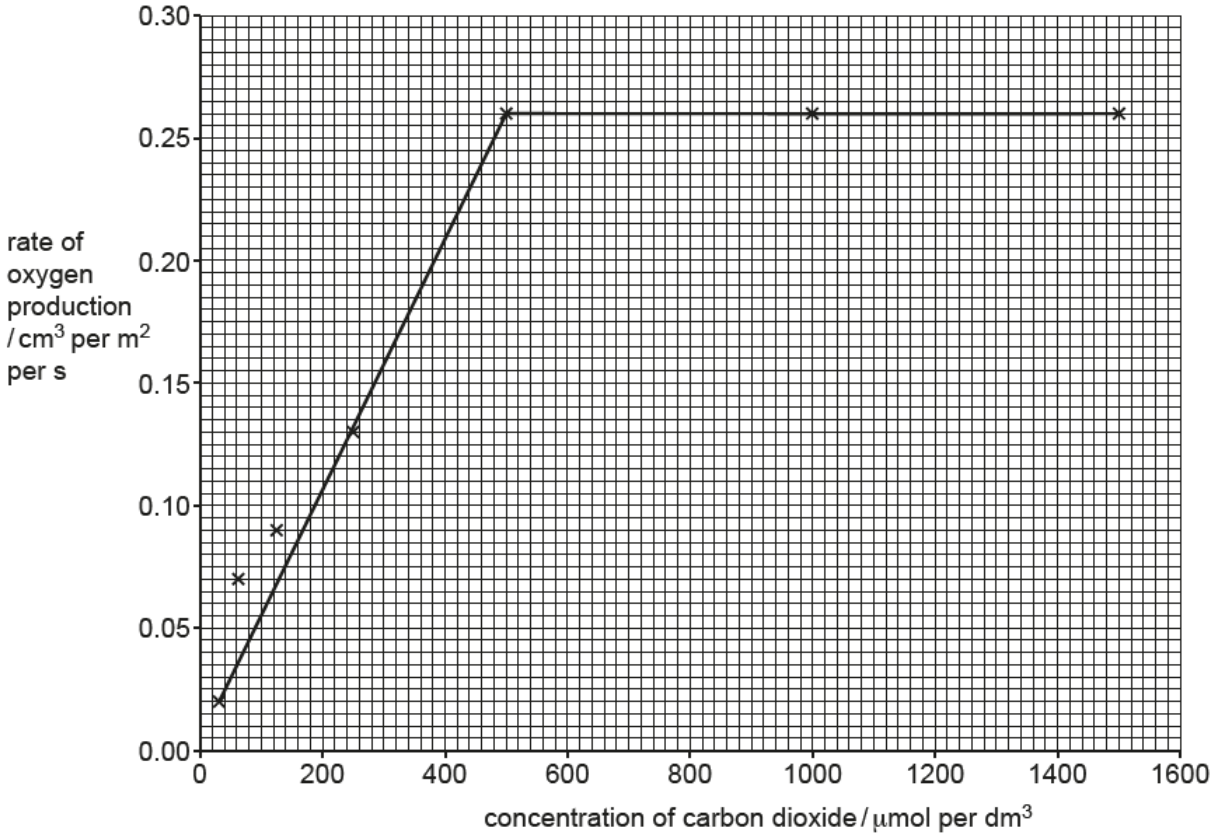



**Fig. 4.2**

**(ii)** Explain the results shown in Fig. 4.2.

.....

.....

.....

.....

.....

.....

..... [3]

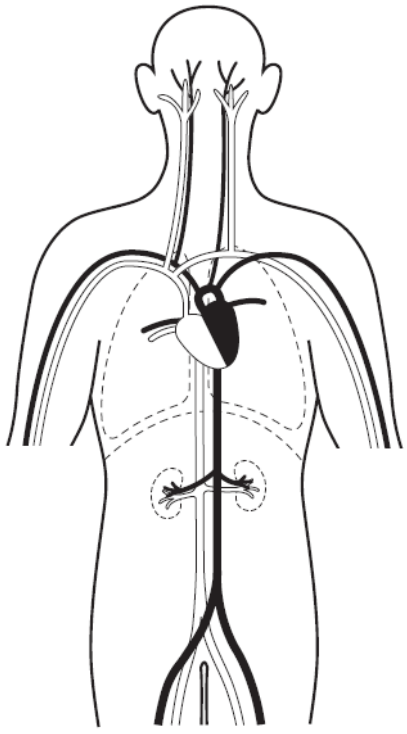
**(e)** The investigation was repeated with the same type of aquatic plant at 10 °C.

Draw a line **on Fig. 4.2** to predict the results at 10 °C. [2]

[Total: 16]

**9.** June/2021/Paper_11/No.5

The diagram shows some of the blood vessels and other structures in the human body.



The blood vessels shown are all parts of the same

**A** cell.

**B** organ.

**C** organ system.

**D** tissue.

**10.** June/2021/Paper_11/No.6

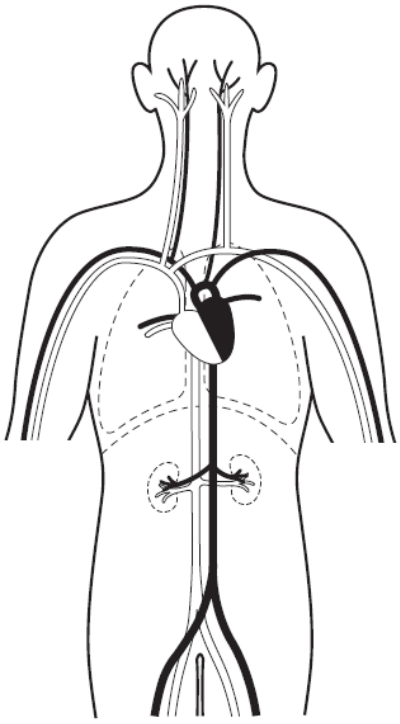
A photograph shows a plant cell nucleus measuring 2 mm across.

If the magnification of the cell is ×500, what is the actual size of the nucleus?

**A** 0.00002 mm **B** 0.004 mm **C** 0.04 mm **D** 250 mm

**11.** June/2021/Paper_12/No.5

The diagram shows some of the blood vessels and other structures in the human body.



The blood vessels shown are all parts of the same

**A** cell.

**B** organ.

**C** organ system.

**D** tissue.

**12.** June/2021/Paper_12/No.6

A photograph shows a plant cell nucleus measuring 2 mm across.

If the magnification of the cell is ×500, what is the actual size of the nucleus?

**A** 0.00002 mm **B** 0.004 mm **C** 0.04 mm **D** 250 mm

**13.** June/2021/Paper_13/No.4

In which part of a cell does photosynthesis take place?

**A** vacuole

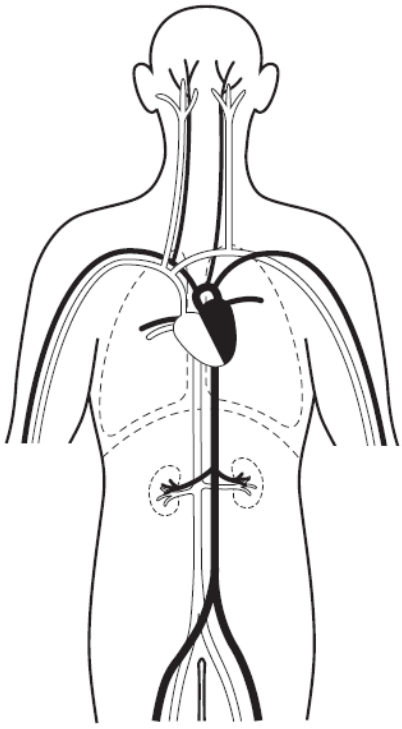
**B** nucleus

**C** chloroplast

**D** cytoplasm

**14.** June/2021/Paper_13/No.5

The diagram shows some of the blood vessels and other structures in the human body.



The blood vessels shown are all parts of the same

**A** cell.

**B** organ.

**C** organ system.

**D** tissue.

**15.** June/2021/Paper_13/No.6

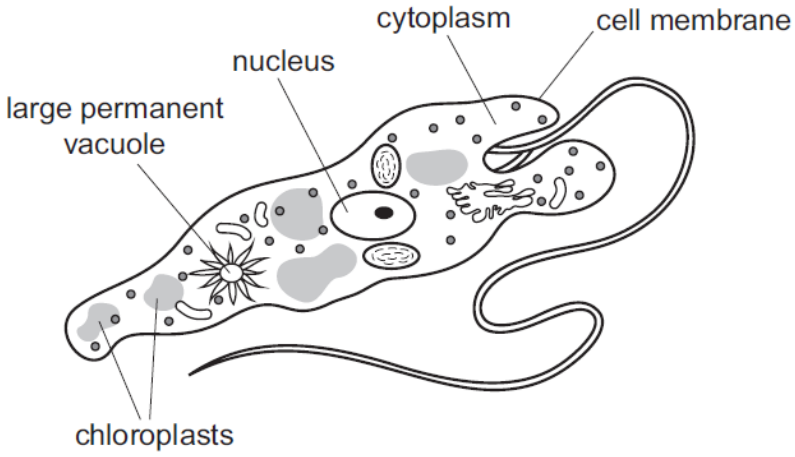
A photograph shows a plant cell nucleus measuring 2 mm across.

If the magnification of the cell is ×500, what is the actual size of the nucleus?

**A** 0.00002 mm **B** 0.004 mm **C** 0.04 mm **D** 250 mm

**16.** June/2021/Paper_21/No.4

The diagram shows a single-celled organism called *Euglena*.




Which labelled structures would also be found in an animal cell?

**A** cell membrane, chloroplast, nucleus

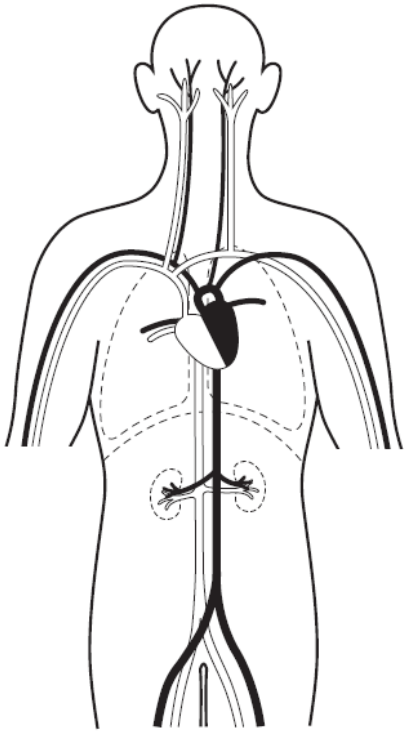
**B** chloroplast, cytoplasm, nucleus

**C** cell membrane, cytoplasm, nucleus

**D** cell membrane, cytoplasm, large permanent vacuole

**17.** June/2021/Paper_21/No.5

The diagram shows some of the blood vessels and other structures in the human body.



The blood vessels shown are all parts of the same

**A** cell.

**B** organ.

**C** organ system.

**D** tissue.

**18.** June/2021/Paper_21/No.6

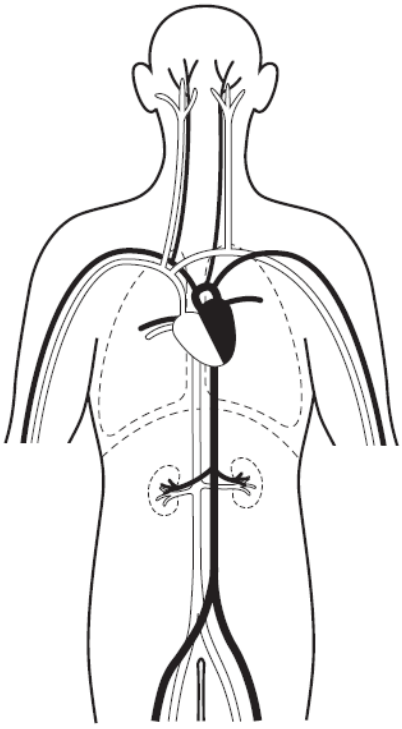
A photograph shows a plant cell nucleus measuring 2 mm across.

If the magnification of the cell is ×500, what is the actual size of the nucleus?

**A** 0.00002 mm **B** 0.004 mm **C** 0.04 mm **D** 250 mm

**19.** June/2021/Paper_22/No.5

The diagram shows some of the blood vessels and other structures in the human body.



The blood vessels shown are all parts of the same

**A** cell.

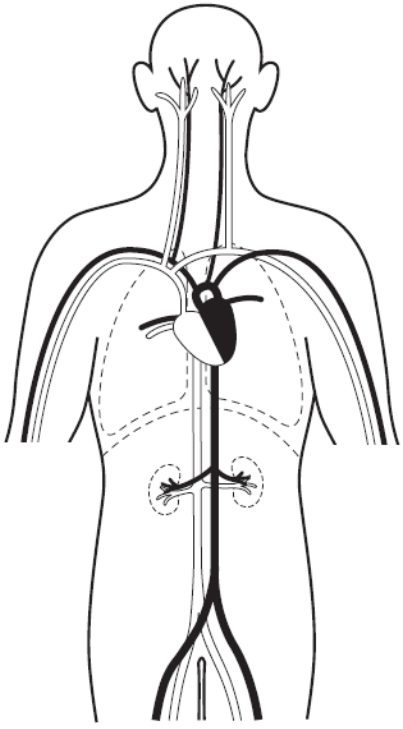
**B** organ.

**C** organ system.

**D** tissue.

**20.** June/2021/Paper_23/No.5

The diagram shows some of the blood vessels and other structures in the human body.



The blood vessels shown are all parts of the same

**A** cell.

**B** organ.

**C** organ system.

**D** tissue.

**21.** June/2021/Paper_23/No.6

A photograph shows a plant cell nucleus measuring 2 mm across.

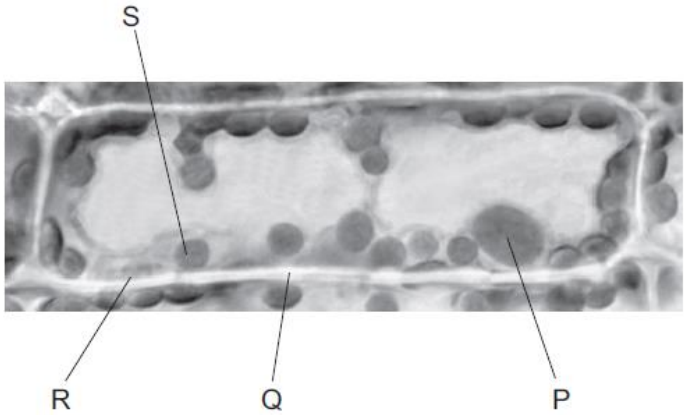
If the magnification of the cell is ×500, what is the actual size of the nucleus?

**A** 0.00002 mm **B** 0.004 mm **C** 0.04 mm **D** 250 mm

# Organisation of the organism – 2020 IGCSE 0610

**1.** Nov/2020/Paper_11/No.4

The photomicrograph shows a cell from a type of aquatic plant.




Which parts labelled on the photomicrograph indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S

**2.** Nov/2020/Paper_11/No.6

The cell shown in the diagram has been magnified 3000 times. The diagram is 21 mm wide.



What is the actual diameter of the cell?

**A** 21 mm

**B** $\frac{21\text{mm}}{3000}$

**C** 21 mm × 3000

**D** $\frac{3000}{21\text{mm}}$

**3.** Nov/2020/Paper_12/No.3

Some of the structures found in cells are listed:

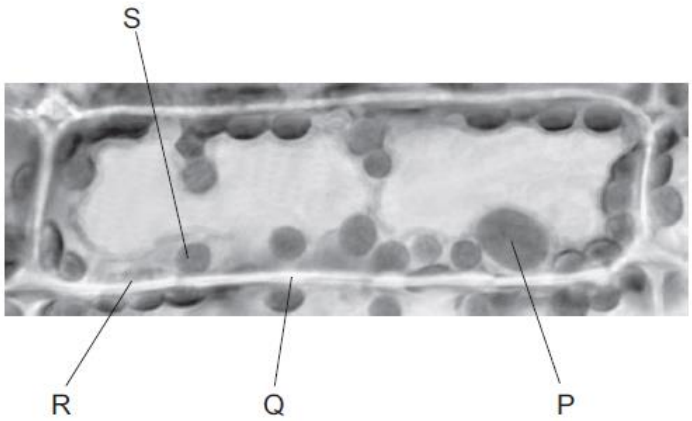
- cytoplasm
- cell membrane
- cell wall
- chloroplast.

How many of these structures are found in the cells of **all** living organisms?

**A** 1 **B** 2 **C** 3 **D** 4

**4.** Nov/2020/Paper_12/No.4

The photomicrograph shows a cell from a type of aquatic plant.




Which parts labelled on the photomicrograph indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S

**5.** Nov/2020/Paper_12/No.6

The cell shown in the diagram has been magnified 3000 times. The diagram is 21 mm wide.



What is the actual diameter of the cell?

**A** 21 mm

**B** $\frac{21\text{mm}}{3000}$

**C** $21\text{ mm} \times 3000$

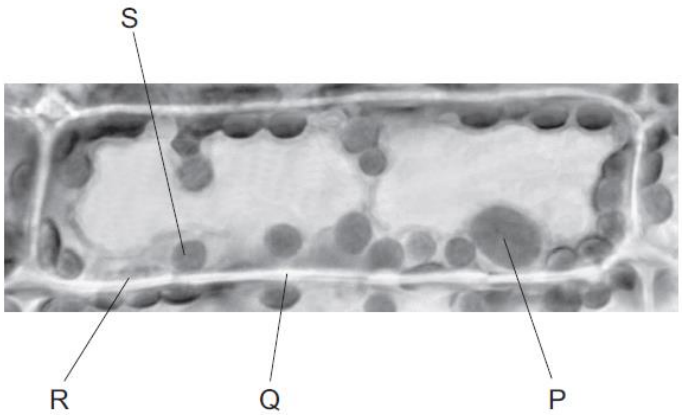
**D** $\frac{3000}{21\text{mm}}$



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**6.** Nov/2020/Paper_13/No.4

The photomicrograph shows a cell from a type of aquatic plant.



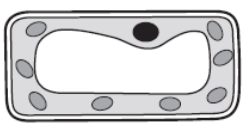

Which parts labelled on the photomicrograph indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S

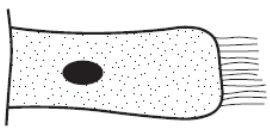
**7.** Nov/2020/Paper_13/No.5

Which cell is adapted for absorption?

**A**



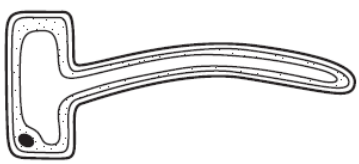
**B**



**C**



**D**



**8.** Nov/2020/Paper_13/No.6

The cell shown in the diagram has been magnified 3000 times. The diagram is 21 mm wide.



What is the actual diameter of the cell?

**A** 21 mm

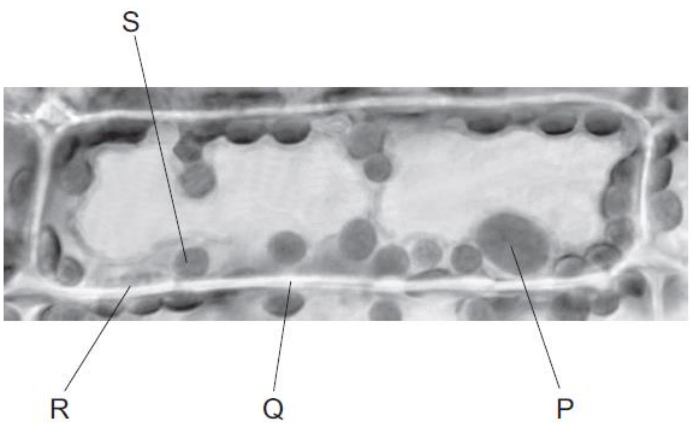
**B** $\frac{21\text{mm}}{3000}$

**C** 21 mm × 3000

**D** $\frac{3000}{21\text{mm}}$

**9.** Nov/2020/Paper_21/No.3

The photomicrograph shows a cell from a type of aquatic plant.




Which parts labelled on the photomicrograph indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S

**10.** Nov/2020/Paper_21/No.4

The diagram shows an image of a chloroplast. The image is 5 cm long.



The actual length of the chloroplast is 5 μm.

What is the magnification of the image?

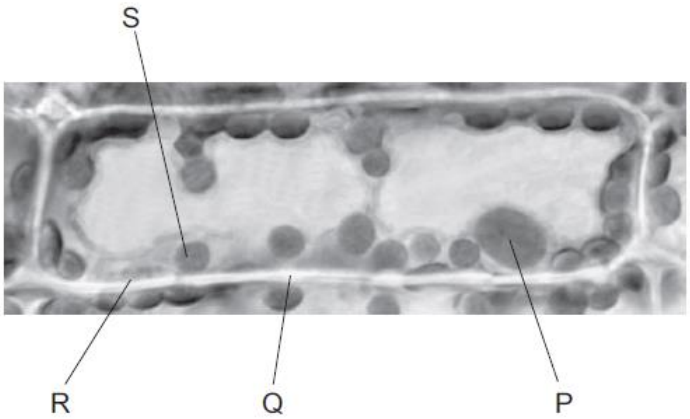
**A** ×10 **B** ×1000 **C** ×10 000 **D** ×100 000



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**11.** Nov/2020/Paper_22/No.3

The photomicrograph shows a cell from a type of aquatic plant.

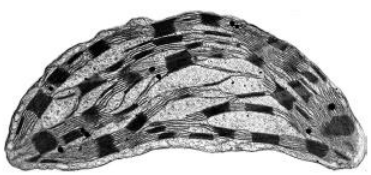



Which parts labelled on the photomicrograph indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S

**12.** Nov/2020/Paper_22/No.4

The diagram shows an image of a chloroplast. The image is 5 cm long.



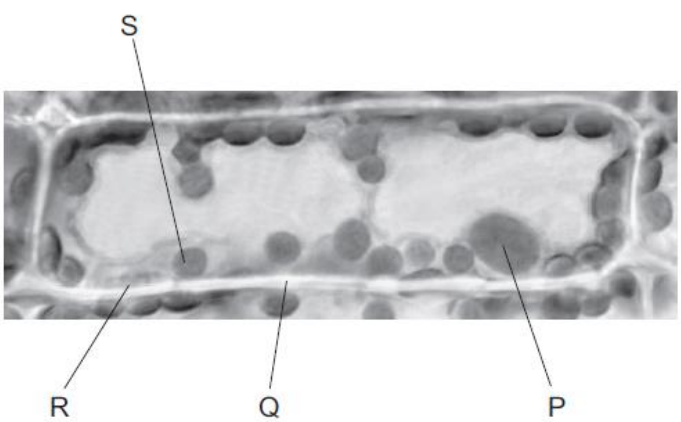
The actual length of the chloroplast is 5 μm.

What is the magnification of the image?

**A** ×10 **B** ×1000 **C** ×10 000 **D** ×100 000

**13.** Nov/2020/Paper_23/No.3

The photomicrograph shows a cell from a type of aquatic plant.

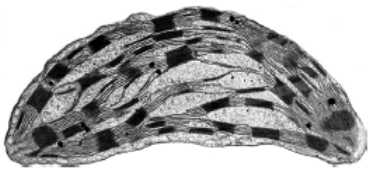



Which parts labelled on the photomicrograph indicate that this is a plant cell?

**A** P and R **B** P and S **C** Q and R **D** Q and S

**14.** Nov/2020/Paper_23/No.4

The diagram shows an image of a chloroplast. The image is 5 cm long.



The actual length of the chloroplast is 5 μm.

What is the magnification of the image?

**A** ×10 **B** ×1000 **C** ×10 000 **D** ×100 000



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# Organisation of the organism – 2020 IGCSE 0610

**1.** March/2020/Paper_12/No.4

What structures can be found in both plant and animal cells?

**A** cell walls and cell membranes

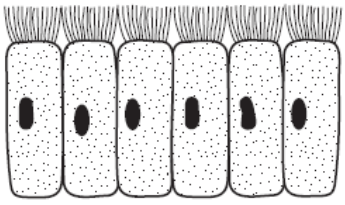
**B** nuclei and cell walls

**C** cytoplasm and chloroplasts

**D** cell membranes and nuclei

**2.** March/2020/Paper_12/No.5

The diagram shows a sample of material taken from an organism.



Which level of organisation does the sample show?

**A** cell

**B** organ

**C** organ system

**D** tissue

**3.** March/2020/Paper_12/No.6

What is the function of a root hair cell?

**A** absorption

**B** photosynthesis

**C** reproduction

**D** support

**4.** March/2020/Paper_22/No.6

What is the function of a root hair cell?

**A** absorption

**B** photosynthesis

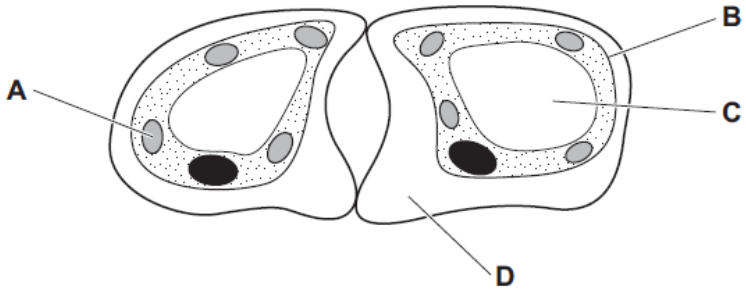
**C** reproduction

**D** support

**5.** June/2020/Paper_11/No.4

The diagram shows two guard cells.

Which label shows the cell wall?




**6.** June/2020/Paper_11/No.5

What is the correct order to describe an **increasing** level of organisation?

**A** cell → organ → tissue → organ system

**B** tissue → cell → organ → organ system

**C** organ → tissue → cell → organ system

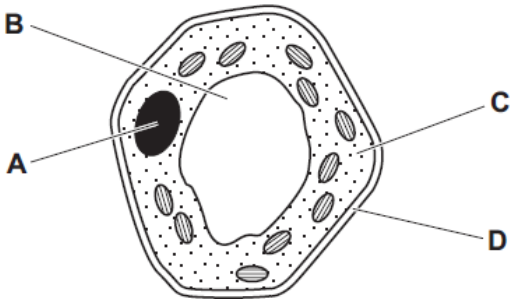
**D** cell → tissue → organ → organ system

**7.** June/2020/Paper_12/No.4

The diagram shows a plant cell.

A biologist wants to find out the number of chromosomes it contains.

Which labelled part should be examined more closely?




**8.** June/2020/Paper_12/No.5

What are leaves examples of?

**A** cells

**B** organs

**C** organ systems

**D** tissues

**9.** June/2020/Paper_13/No.4

Onion plant cells swell but do not burst when placed in distilled water.

Which cell component prevents the onion plant cells from bursting?

**A** cell membrane

**B** cell wall

**C** nucleus

**D** vacuole

**10.** June/2020/Paper_13/No.5

The diagram shows part of the human body.



Which level of organisation does this diagram show?

**A** a cell

**B** an organism

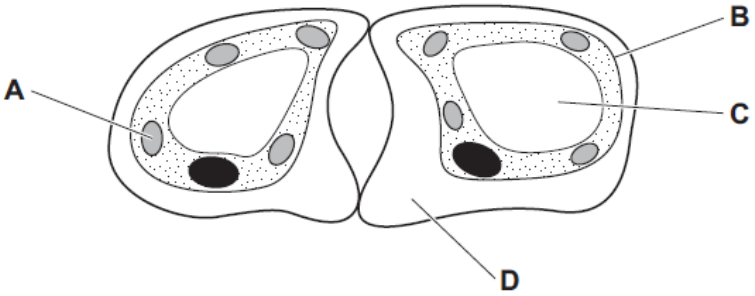
**C** an organ system

**D** a tissue

**11.** June/2020/Paper_21/No.3

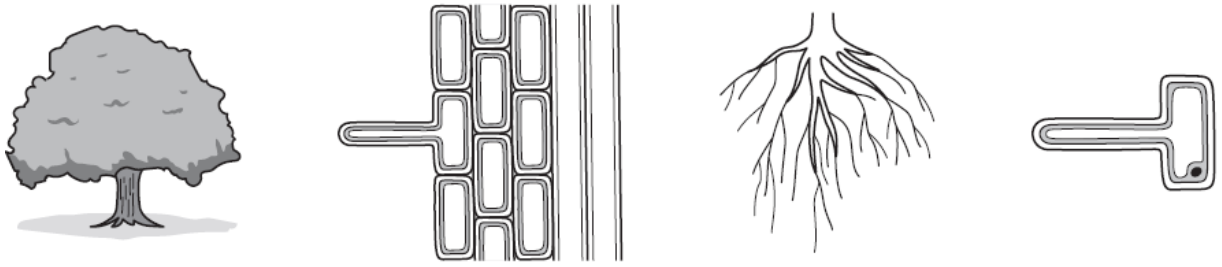
The diagram shows two guard cells.

Which label shows the cell wall?



**12.** June/2020/Paper_21/No.4

The diagrams show different levels of organisation in a plant. (Not drawn to scale.)



1 2 3 4

Which sequence shows the levels of organisation in order from smallest to largest?

**A** 4 → 2 → 3 → 1

**B** 4 → 3 → 1 → 2

**C** 3 → 4 → 2 → 1

**D** 3 → 2 → 1 → 4

**13.** June/2020/Paper_21/No.29

The diagram shows a sperm cell.

Which part contains enzymes that digest the jelly coat of an egg cell?

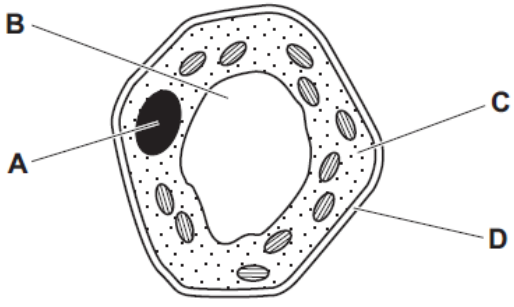



**14.** June/2020/Paper_22/No.3

The diagram shows a plant cell.

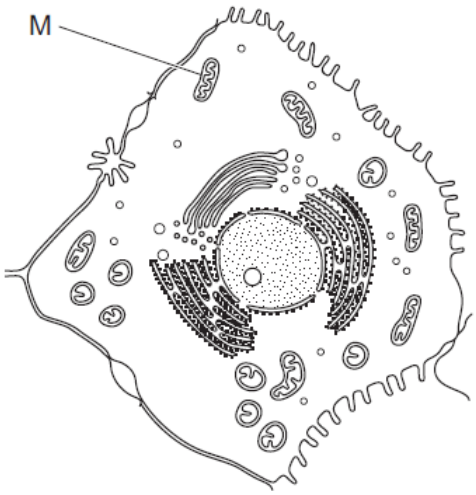
A biologist wants to find out the number of chromosomes it contains.

Which labelled part should be examined more closely?



**15.** June/2020/Paper_22/No.4

The diagram shows a human liver cell.




The length of structure M on the diagram is 6 mm.

The magnification of the diagram is x 2000.

What is the actual length of M?

**A** 0.03 μm **B** 3 μm **C** 333 μm **D** 12 000 mm

**16.** June/2020/Paper_31/No.6

**17.** June/2020/Paper_32/No.1

**(a)** Some substances move into cells by the process of diffusion.

State the name of the outer part of an animal cell that substances move through during diffusion.

..... [1]

**(b)** Substances can also move by osmosis and active transport.

Table 1.1 shows some of the features of diffusion, osmosis and active transport.

Complete Table 1.1 by placing **one** tick (✓) in each row to show the features of diffusion, osmosis and active transport.

One has been done for you.

**Table 1.1**

| feature | diffusion | osmosis | active transport |
|---|---|---|---|
| involves movement of water only | | ✓ | |
| always involves movement across a partially permeable membrane | | | |
| movement is from a higher solute concentration to a lower solute concentration | | | |
| requires energy from respiration | | | |
| involves the movement of both gases and solutes | | | |

[4]

**(c)** Oxygen moves from the air that we breathe into the blood.

State **three** structures of the gas exchange system that oxygen molecules must pass through on their way to the blood.

1 .....

2 .....

3 .....

[3]

[Total: 8]

1. Which row matches the cell membrane and cell wall of a palisade cell to their functions?

| | cell membrane | cell wall |
|---|---|---|
| **A** | active transport | active transport |
| **B** | active transport | support |
| **C** | support | active transport |
| **D** | support | support |

2. In a plant, what is formed by a group of xylem vessels?

**A** a cell

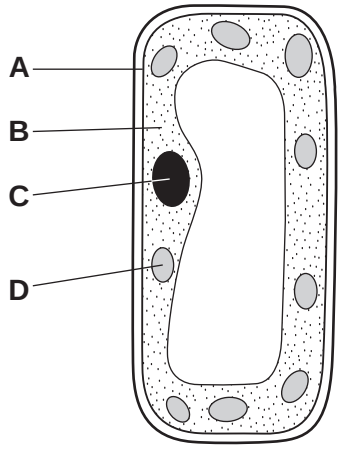
**B** a tissue

**C** an organ

**D** an organ system

3. The diagram shows a palisade mesophyll cell.

Which structure is **not** found in an animal cell?



4. What is the correct order of increasing size of the following structures, from smallest to largest?

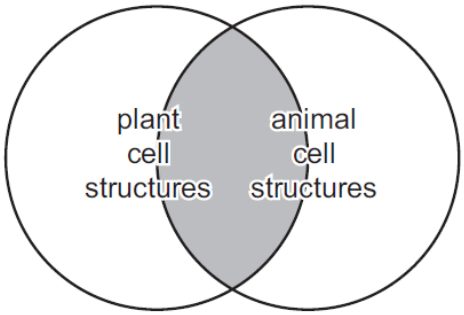
**A** chromosome → liver → white blood cell

**B** chromosome → white blood cell → liver

**C** liver → chromosome → white blood cell

**D** white blood cell → liver → chromosome

5. The shaded area of the diagram represents structures found in both plant and animal cells.




Which cell structure is from the shaded area?

**A** cell membrane

**B** cell wall

**C** chloroplast

**D** large vacuole

**6.** Which organelles are present in large numbers in cells that produce insulin?

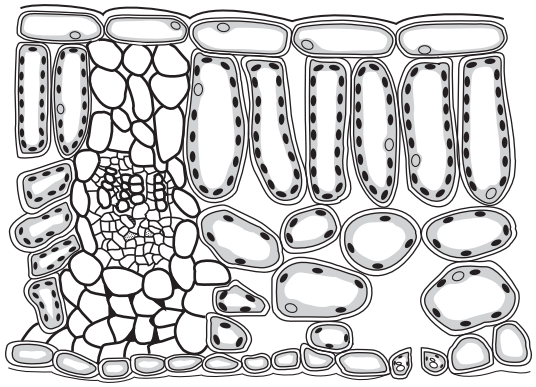
**A** nuclei and mitochondria

**B** ribosomes and mitochondria

**C** rough endoplasmic reticulum and cell walls

**D** vesicles and nuclei

**7.** The actual thickness of the leaf shown in the diagram is 2000 μm, but its thickness in the diagram is 50 mm.



What is the magnification of the diagram?

**A** ×0.025 **B** ×25 **C** ×100 **D** ×100 000

8. Which structures are present in a bacterial cell?

| | cell wall | nucleus |
|---|---|---|
| **A** | ✓ | ✓ |
| **B** | ✓ | ✗ |
| **C** | ✗ | ✓ |
| **D** | ✗ | ✗ |

9. In which part of the cell is oxygen used to release energy from nutrient molecules?

**A** mitochondrion

**B** ribosome

**C** rough endoplasmic reticulum

**D** vesicle

10. A palisade cell and a nerve cell are observed under a light microscope.

Only the palisade cell has a

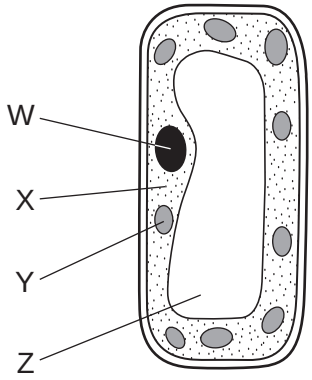
**A** cell membrane.

**B** cytoplasm.

**C** nucleus.

**D** vacuole.

11. The diagram shows a palisade mesophyll cell from a green leaf.



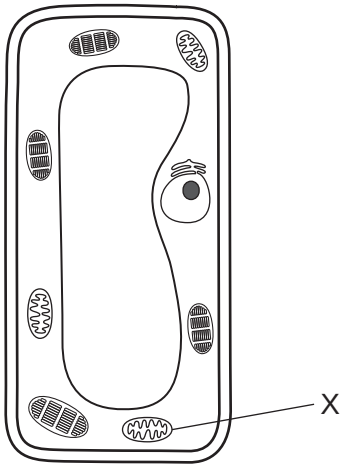

In which labelled part does photosynthesis occur and where is starch stored?

| | photosynthesis occurs | starch is stored |
|---|---|---|
| **A** | X | W |
| **B** | X | Z |
| **C** | Y | X |
| **D** | Y | Y |

12. Which row describes a root hair cell?

| | allows water to pass into the plant | increases the surface area of the root | loses water by transpiration |
|---|---|---|---|
| **A** | ✓ | ✓ | ✓ |
| **B** | ✓ | ✓ | ✗ |
| **C** | ✓ | ✗ | ✓ |
| **D** | ✗ | ✓ | ✓ |

**13**. The diagram shows the detailed structure of a plant cell.




What is organelle X?

**A** chloroplast

**B** mitochondrion

**C** nucleus

**D** vacuole

**14**. Three cell structures are listed.

1 cell wall

2 cytoplasm

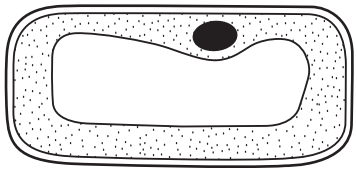
3 nucleus

Which structures are found in palisade cells **and** in liver cells?

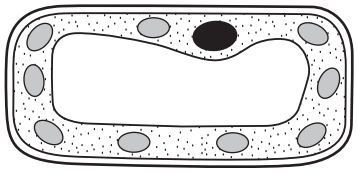
**A** 1 and 2 **B** 1 only **C** 2 and 3 **D** 3 only

**15.** The diagram shows two plant cells, P and Q.

cell P



cell Q



How does cell P differ from cell Q?

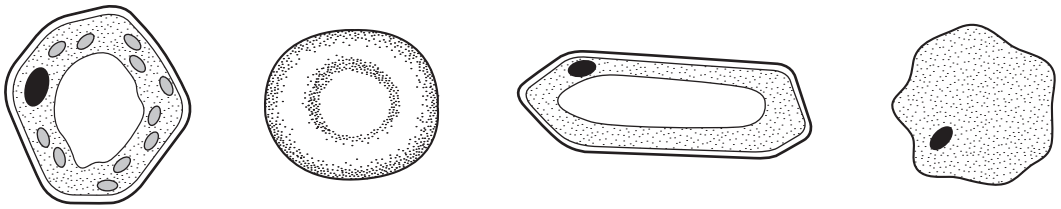
**A** It has no cell wall.

**B** It has no chloroplasts.

**C** It has no nucleus.

**D** It has no vacuole.

**16.** The diagram shows different types of cells.



Which structure do all these cells have?

**A** cell membrane

**B** cell wall

**C** chloroplast

**D** nucleus



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**17.** The diagram shows a male gamete.



Which term describes the level of organisation of this gamete?

**A** cell

**B** organ

**C** organism

**D** tissue

**18.** Which description of xylem is correct?

**A** a cell used for absorption

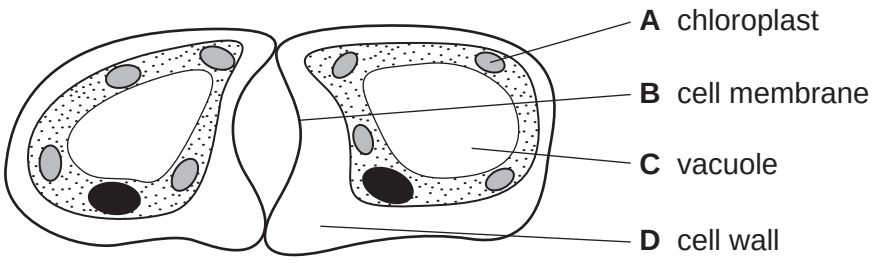
**B** a tissue used for support

**C** an organ system used for conduction

**D** an organ used for transport

**19.** The diagram shows a student's drawing of two guard cells.

Which label line is **not** correct?



**20**. How does a liver cell differ from a palisade cell?

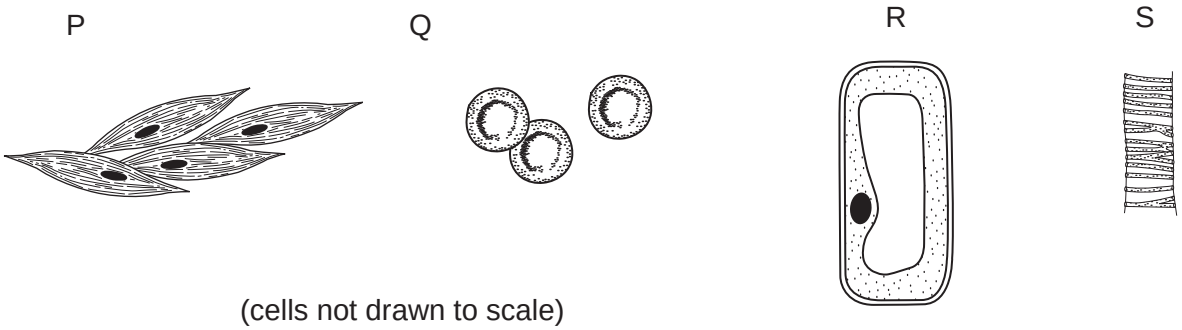
**A** A liver cell has a membrane.

**B** A liver cell has a vacuole.

**C** A liver cell has no cell wall.

**D** A liver cell has no cytoplasm.

**21.** The diagram shows structures taken from two different organisms.




(cells not drawn to scale)

Which structures have the main function of transport?

**A** P and R **B** P and S **C** Q and R **D** Q and S

**22.** At which level of organisation is a root?

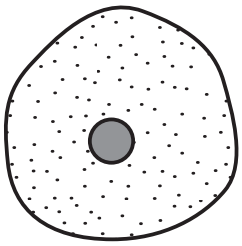
**A** organ

**B** organ system

**C** organism

**D** tissue

**23**. The diagram shows a liver cell.



Which features are present in this cell and also in most plant cells?

**A** cell membrane and cytoplasm

**B** cell membrane and sap vacuole

**C** cell wall and cytoplasm

**D** cell wall and sap vacuole

**24**. Which structure is present in a root hair cell but **not** in a liver cell?

**A** cell wall

**B** chloroplast

**C** glycogen granule

**D** nucleus

**25**. Which description of the heart is correct?

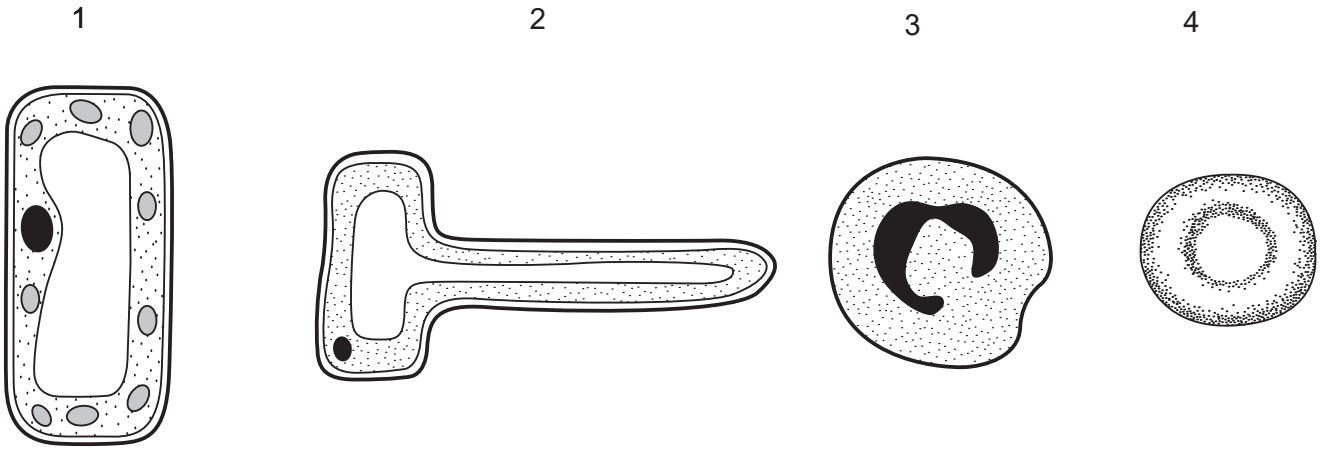
**A** The heart is an organ, containing several systems, which forms part of the circulatory tissue.

**B** The heart is an organ, containing several tissues, which forms part of the circulatory system.

**C** The heart is a system, containing several organs, which forms part of the circulatory tissue.

**D** The heart is a system, containing several tissues, which forms part of the circulatory organ.

**26**. The diagram shows four cells.

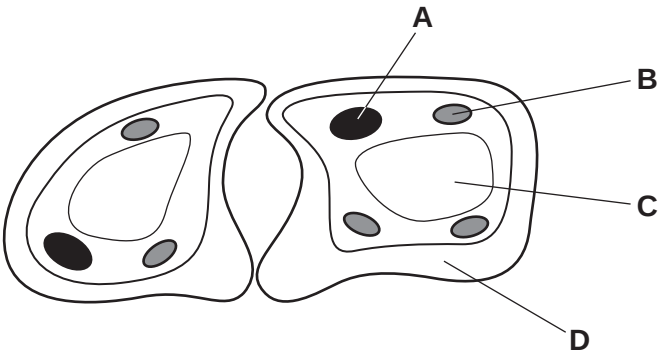



Which two cells contain cellulose and a vacuole?

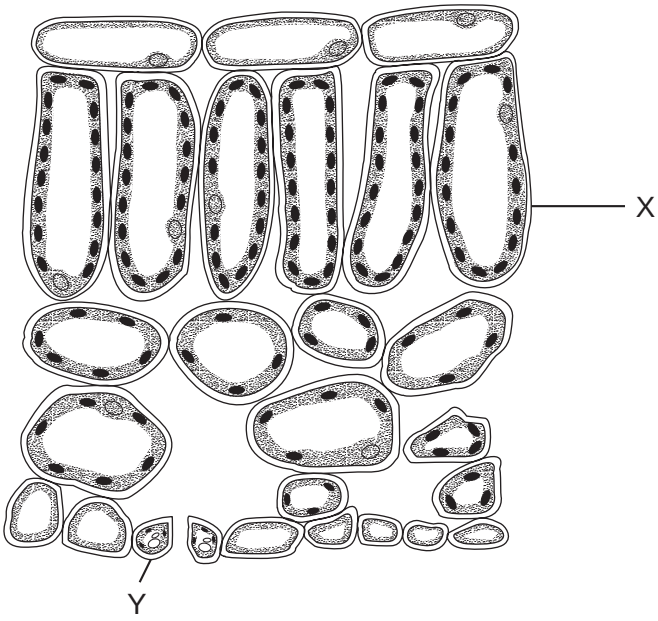
A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

27. The diagram shows two guard cells from a leaf.

Which labelled part would also be found in liver cells?




28. The diagram shows part of a leaf in cross-section.




Structures X and Y are both part of the same

**A** cell.

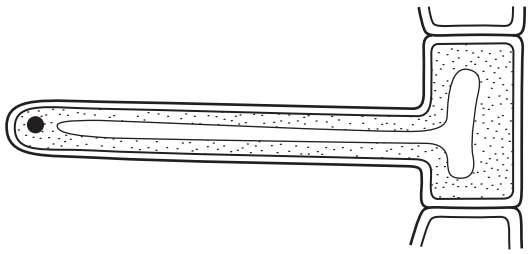
**B** organ.

**C** tissue.

**D** vessel.


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29. The diagram shows a plant cell.



Which features show that it is a plant cell?

**A** It has a cell wall and a vacuole.

**B** It has a nucleus and cytoplasm.

**C** It has a nucleus but no chloroplasts.

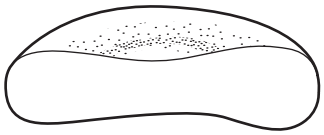
**D** It has chloroplasts but no vacuole.

30. In a section through a plant, a student found a group of long, microscopic structures. The structures lacked end walls, cytoplasm and nuclei.

Which identification and reason best matches the student's observations?

| | identification | reason |
|---|---|---|
| **A** | root hair cells | they do not contain a nucleus when mature |
| **B** | root hair cells | they do not contain cytoplasm to absorb water |
| **C** | xylem vessels | they can support the plant better without cytoplasm |
| **D** | xylem vessels | they need to be hollow to carry water efficiently |

31. The diagram shows a specialised cell cut in half.



What does this diagram indicate about the structure of this cell?

**A** The cell has a cell wall.

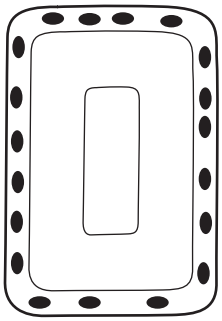
**B** The cell is concave on each side.

**C** The cell is long and thin.

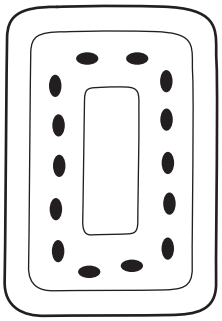
**D** The cell is red and carries oxygen.

32. Which diagram shows chloroplasts in their correct position in a plant cell?

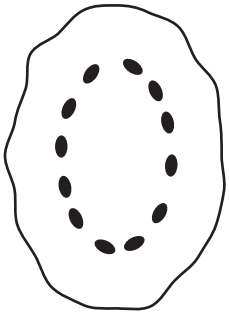
**A**



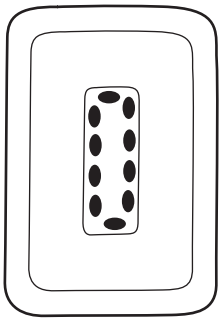
**B**



**C**



**D**



33. Which is **not** an organ?

**A** blood

**B** heart

**C** tooth

**D** vein

34. The cell shown in the diagram has been magnified 3000 times. The diagram is 21 mm wide.



What is the actual diameter of the cell?

**A** 21 mm

**B** $\frac{21}{3000}$ mm

**C** 21 x 3000 mm

**D** $\frac{3000}{21}$ mm

35. Xylem is an example of

**A** a cell.

**B** a tissue.

**C** an organ.

**D** an organ system.

36. Plant cells are often green but animal cells are not usually green.

Which structure in plant cells makes them green?

**A** cell wall

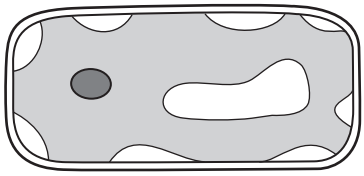
**B** chloroplast

**C** cytoplasm

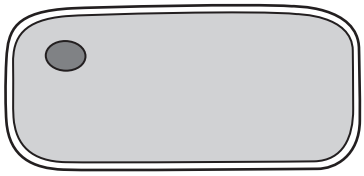
**D** vacuole

37. Which diagram shows the appearance of a plant cell several minutes after it has been placed in a concentrated solution of sugar?

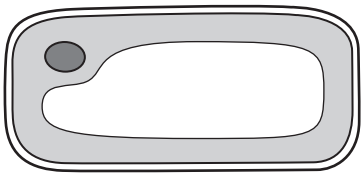
**A**



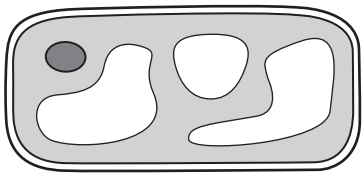
**B**



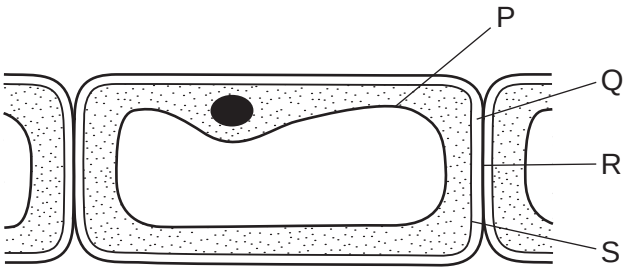
**C**



**D**



38. The diagram shows cells from the epidermis of a leaf.




Which parts are partially permeable?

**A** P and Q **B** Q and R **C** R and S **D** P and S

39. The diagram shows a student's drawing of guard cells.

Which label line is **incorrect**?

