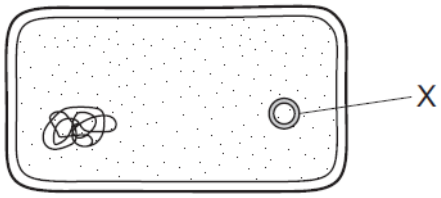
Organisation of the organism – 2021 IGCSE 0610

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

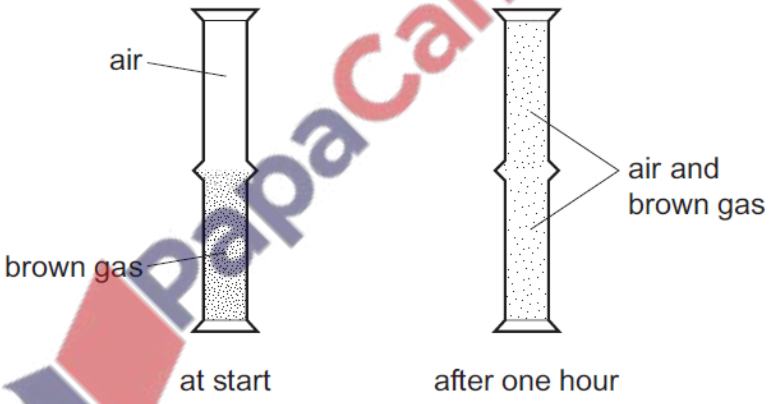
B mitochondrion

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.

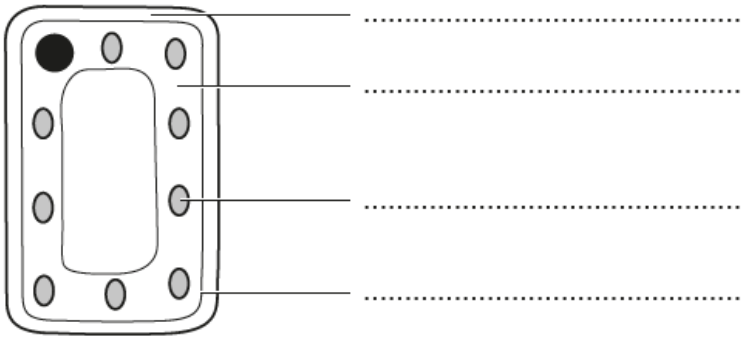


Fig. 4.1

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 .....

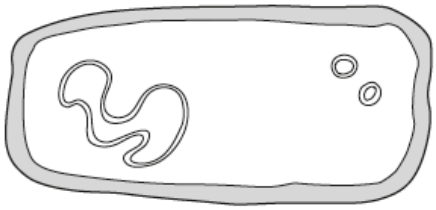
3 .....

[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.

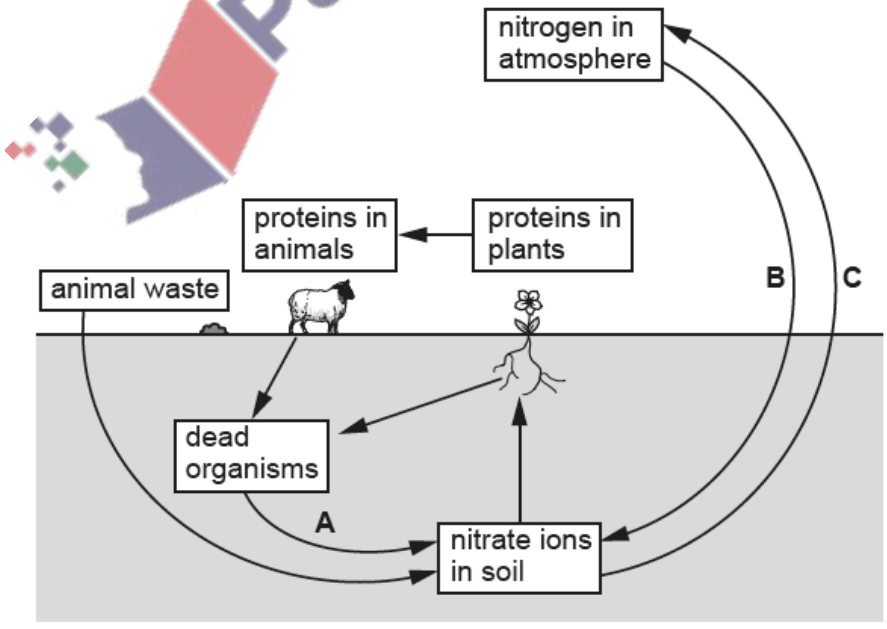


Fig. 2.2

(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.

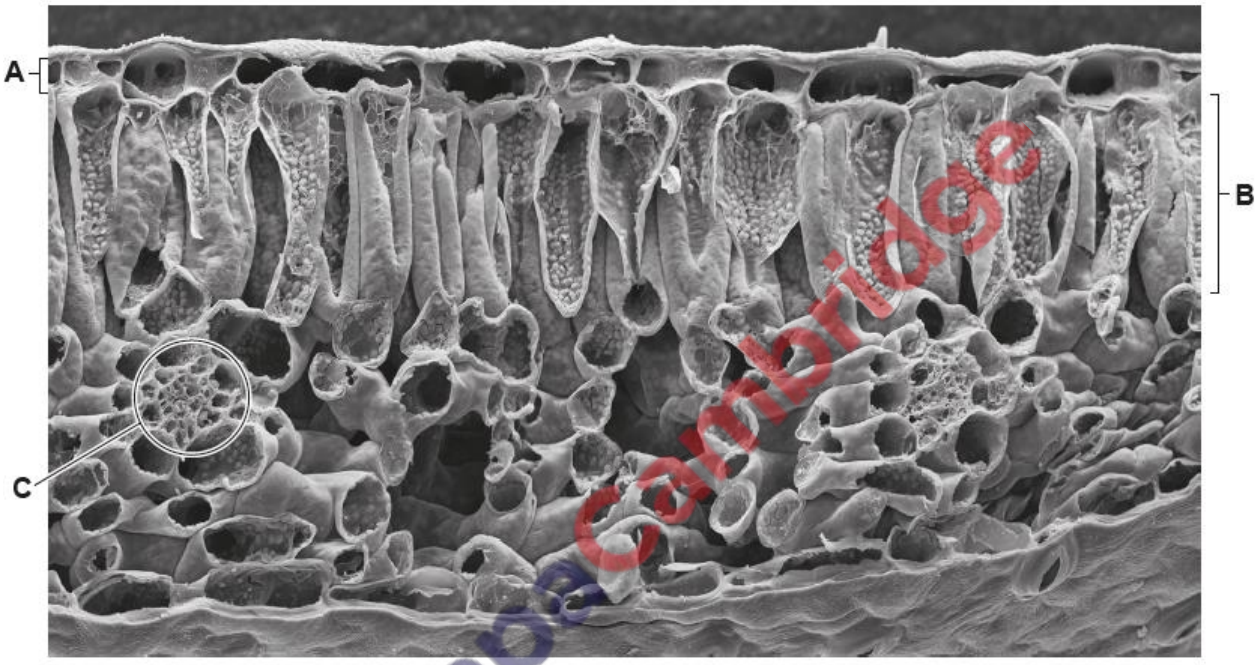


Fig. 4.1

(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]

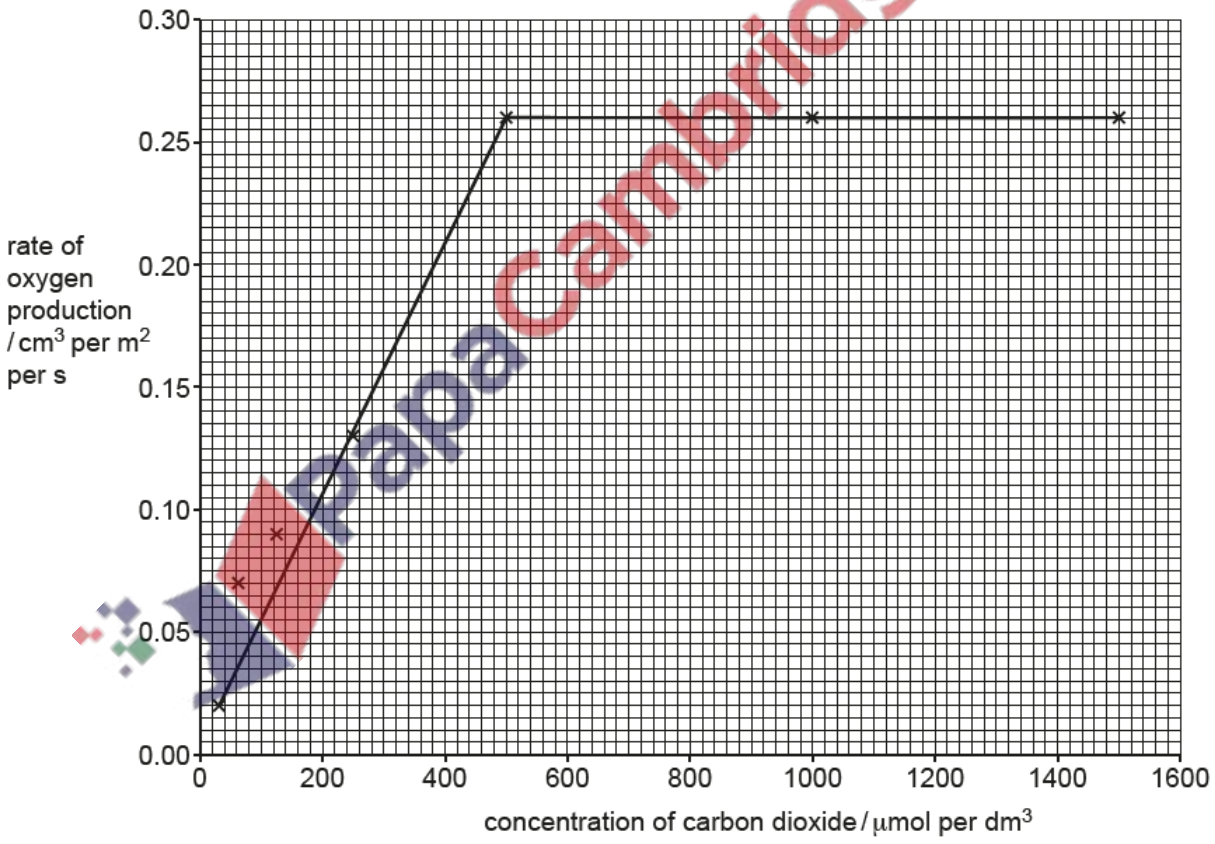


Fig. 4.2

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

.....

.....

.....

.....

.....

.....

..... [3]

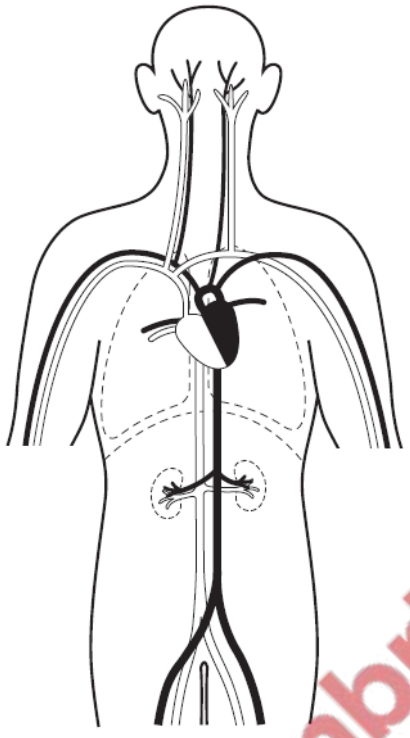
(e) The investigation was repeated with the same type of aquatic plant at 10 °C.

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

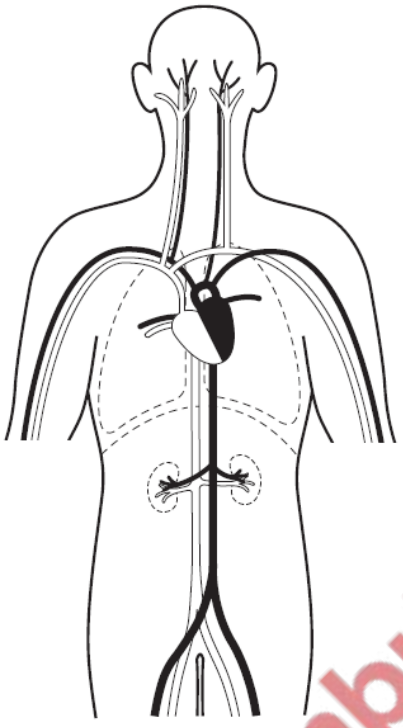
A photograph shows a plant cell nucleus measuring 2 mm across.

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

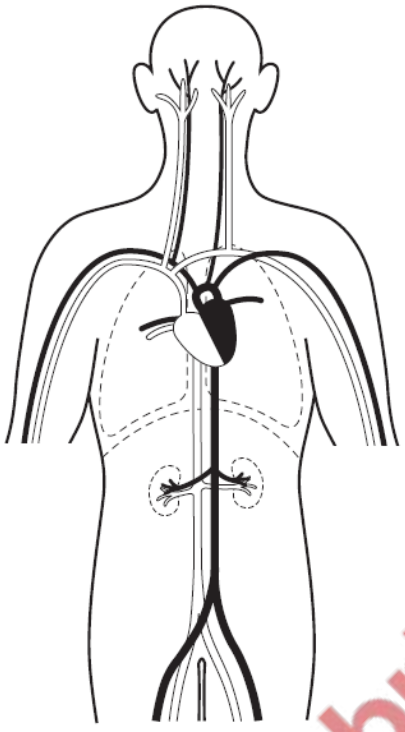
B nucleus

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

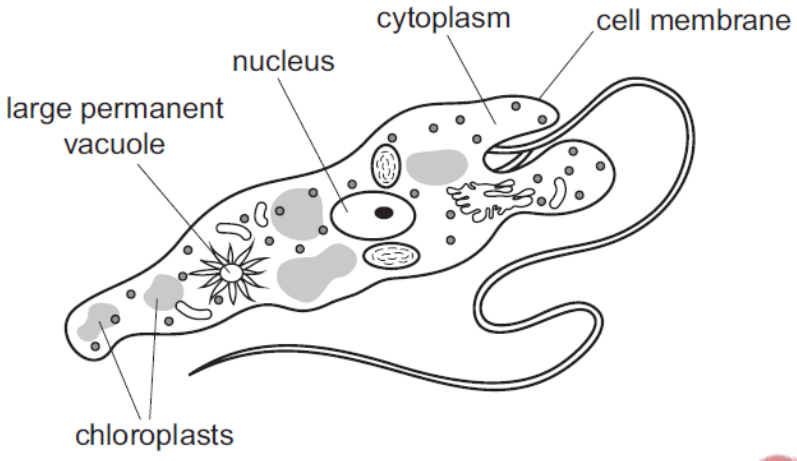
A photograph shows a plant cell nucleus measuring 2 mm across.

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

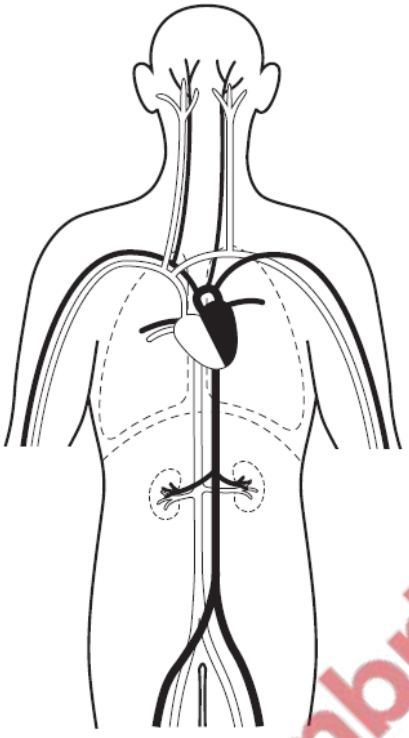
B chloroplast, cytoplasm, nucleus

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

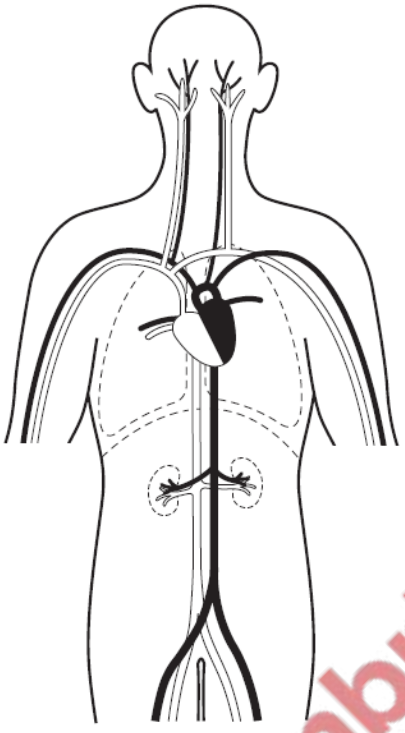
A photograph shows a plant cell nucleus measuring 2 mm across.

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.

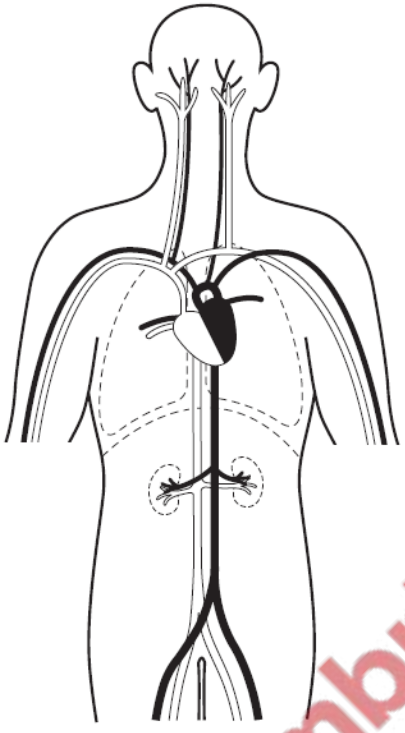
B organ.

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