

2. Organisation of the organism

2.1 Cell structure

Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

1 Which structures are found in an animal cell?

	cell membrane	cell wall	chloroplast	large vacuole	cytoplasm	nucleus
A	yes	yes	yes	no	no	no
B	yes	no	no	no	yes	yes
C	no	yes	no	no	no	yes
D	no	no	yes	yes	no	no

2 What is the function of ciliated cells in the bronchi?

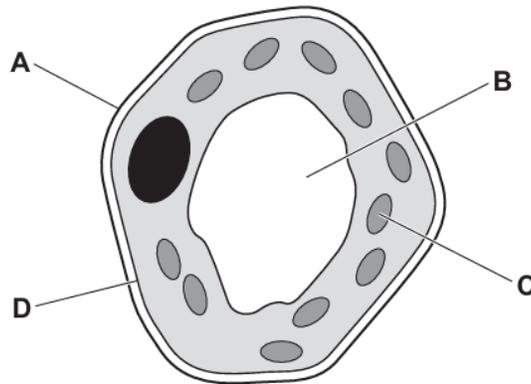
- A** to absorb oxygen
- B** to digest pathogens
- C** to move mucus
- D** to produce antibodies

3 Which type of cell moves mucus?

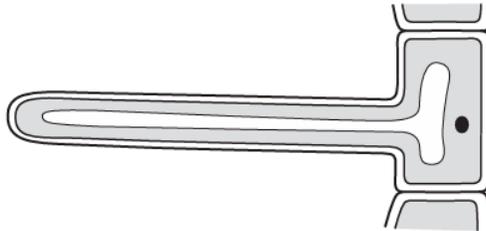
- A** ciliated cell
- B** egg cell
- C** guard cell
- D** root hair cell

- 4 The diagram shows a plant cell.

Which letter indicates the location of the cell membrane?



- 5 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.
- 6 Heart muscle cells have a high rate of metabolism.

Which structure do they require to be present in high numbers?

- A chloroplasts
- B mitochondria
- C cell walls
- D vacuoles

7 In a mesophyll cell, where are chloroplasts found?

- A between the cell wall and the cell membrane
- B in the cytoplasm
- C in the nucleus
- D in the vacuole

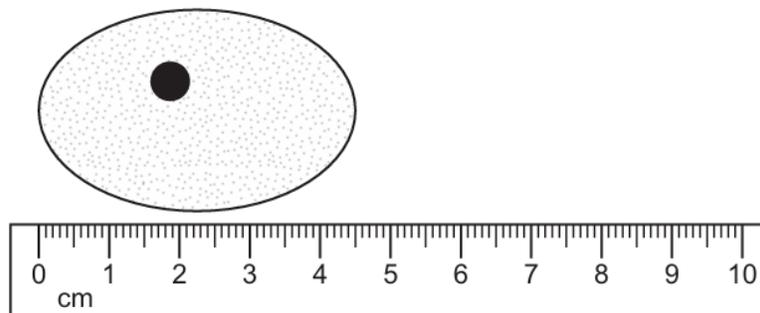
8 Which features are possessed by **all** plant cells?

	a cell wall	chloroplasts	
A	✓	✓	key ✓ = yes x = no
B	✓	x	
C	x	✓	
D	x	x	

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

	cell wall	chloroplasts	cytoplasm	vacuole	
A	✓	✓	✓	x	key ✓ = present x = absent
B	x	✓	✓	✓	
C	✓	x	✓	✓	
D	✓	✓	x	✓	

10 The diagram shows a cell at $\times 1500$ magnification.



What is the actual size of the cell?

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

11 Which structures are found in the cells of all living organisms?

- 1 cell membrane
- 2 chloroplast
- 3 cytoplasm

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

12 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

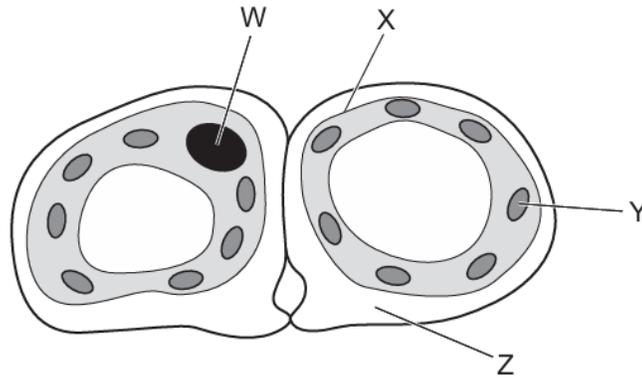
13 The cells listed have specialised structures that allow them to carry out their functions.

- 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

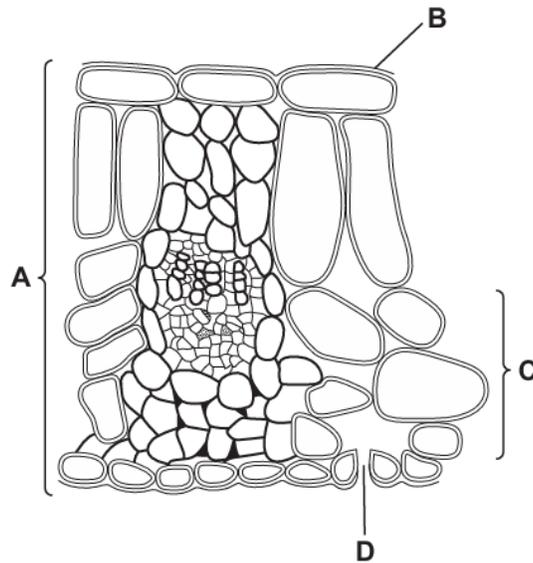
- 14 The diagram shows a cross-section through two guard cells of a leaf.



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

- A** W and X **B** X and Y **C** Y and Z **D** Z and W
- 15 The diagram shows a cross-section through a leaf.

Which label shows a tissue?



16 The table shows some structures found in the human body.

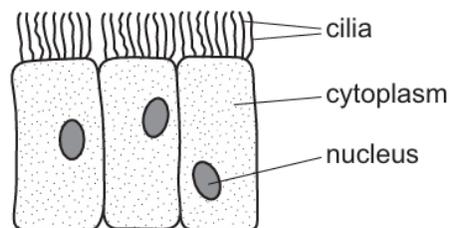
Which row shows the correct level of organisation, from the simplest structure to the most complex?

	simple → complex			
A	red blood cell	heart	heart muscle	circulatory system
B	heart muscle	circulatory system	red blood cell	heart
C	red blood cell	heart muscle	heart	circulatory system
D	heart muscle	red blood cell	circulatory system	heart

17 Which row shows the structure on the outside of a plant cell and the location of the chloroplasts in the cell?

	structure on the outside of a plant cell	location of chloroplasts
A	cell membrane	in the cytoplasm
B	cell membrane	in the vacuole
C	cell wall	in the cytoplasm
D	cell wall	in the vacuole

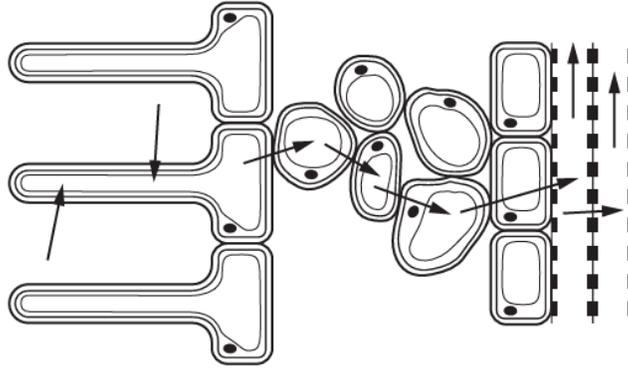
18 The diagram shows some cells.



Where are these cells found?

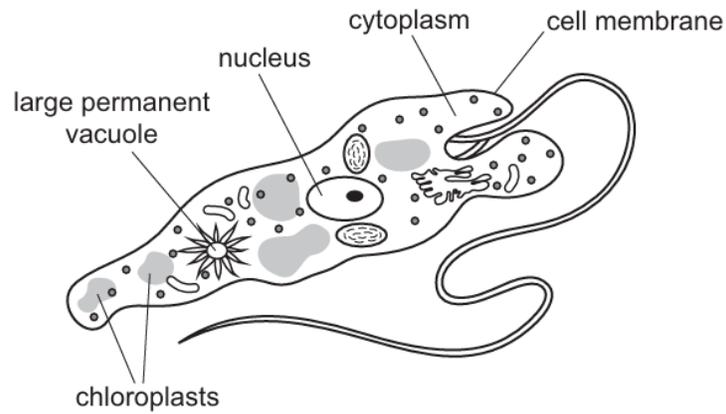
- A** alimentary canal
- B** blood
- C** bronchus
- D** plant roots

- 19 The diagram shows some tissues in part of a plant root. The arrows represent the movement of water into and across the plant root tissues.



How many different tissues are shown?

- A 2 B 4 C 5 D 7
- 20 The diagram shows a single-celled organism called *Euglena*.



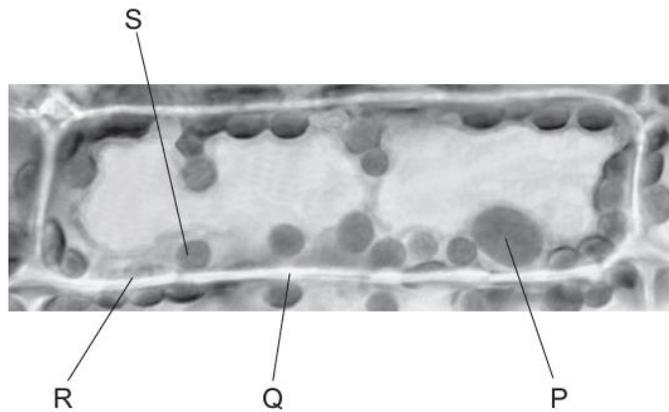
Which labelled structures would also be found in an animal cell?

- A cell membrane, chloroplast, nucleus
 B chloroplast, cytoplasm, nucleus
 C cell membrane, cytoplasm, nucleus
 D cell membrane, cytoplasm, large permanent vacuole

21 Which part of a cell makes glucose?

- A cell membrane
- B chloroplast
- C nucleus
- D vacuole

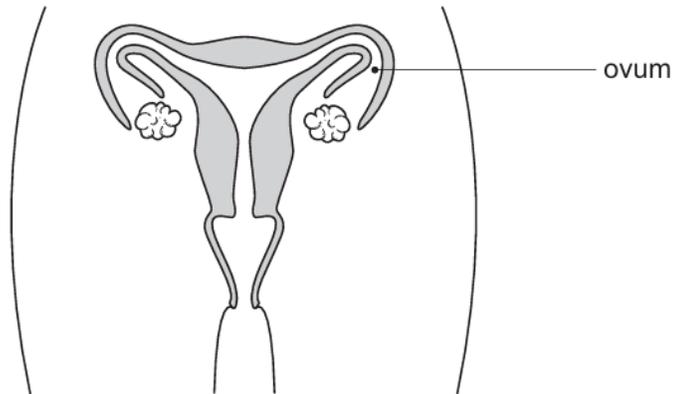
22 The photomicrograph shows a cell from a type of aquatic plant.



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

23 The diagram shows the female reproductive system.



At which level of organisation are the ovum and the ovary?

	ovum	ovary
A	cell	organ
B	cell	tissue
C	organ	tissue
D	tissue	organ

24 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?

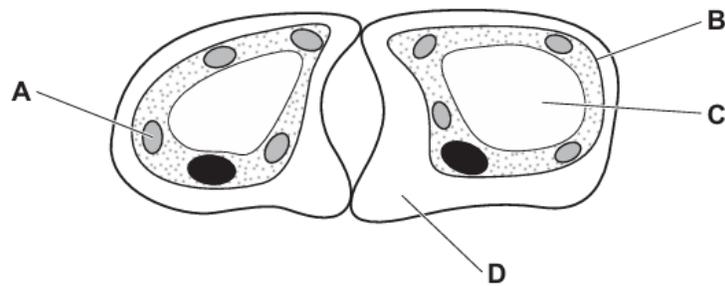
- A** 1 **B** 2 **C** 3 **D** 4

25 Which type of cell transports oxygen?

- A** ciliated
B nerve
C palisade mesophyll
D red blood

26 The diagram shows two guard cells.

Which label shows the cell wall?



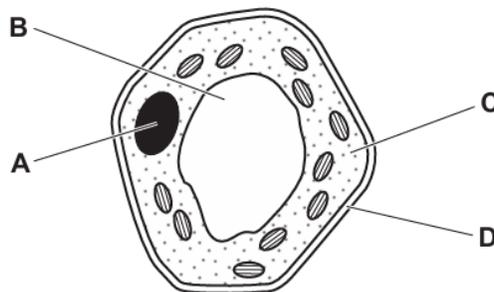
27 What is the correct order to describe an **increasing** level of organisation?

- A cell → organ → tissue → organ system
- B tissue → cell → organ → organ system
- C organ → tissue → cell → organ system
- D cell → tissue → organ → organ system

28 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?



29 What are leaves examples of?

- A cells
- B organs
- C organ systems
- D tissues

30 Which features do animal cells share with plant cells?

	chloroplast	cytoplasm	nucleus	
A	✓	✓	✓	key ✓ = yes x = no
B	✓	x	✓	
C	x	✓	✓	
D	x	x	x	

31 Which features are possessed by **all** plant cells?

	a cell wall	chloroplasts	
A	✓	✓	key ✓ = present x = absent
B	✓	x	
C	x	✓	
D	x	x	

32 Which part of a plant cell controls the movement of substances into and out of the cell?

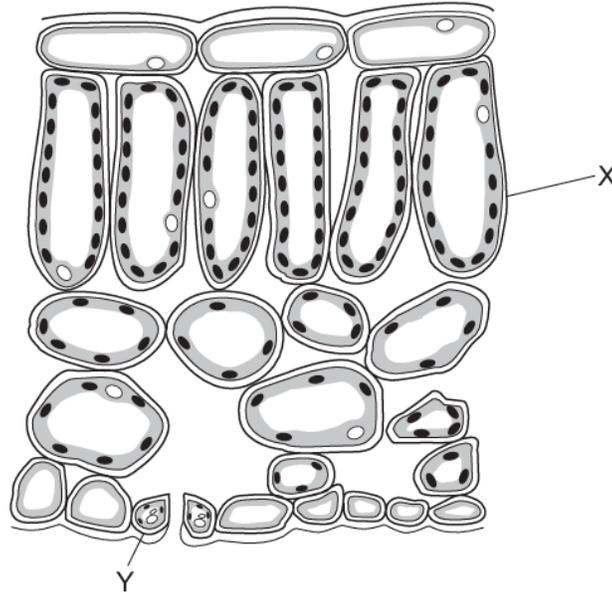
- A** cell membrane
- B** cell wall
- C** cytoplasm
- D** vacuole

33 Two types of cell, one animal and one plant, were examined using a light microscope.

Which row shows the correct combination of cellular features that would be observed in the cells?

	cell structure observed			
	animal cell		plant cell	
A	chloroplast	membrane	vacuole	cytoplasm
B	cytoplasm	nucleus	chloroplast	membrane
C	membrane	cell wall	cytoplasm	nucleus
D	nucleus	chloroplast	cell wall	membrane

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

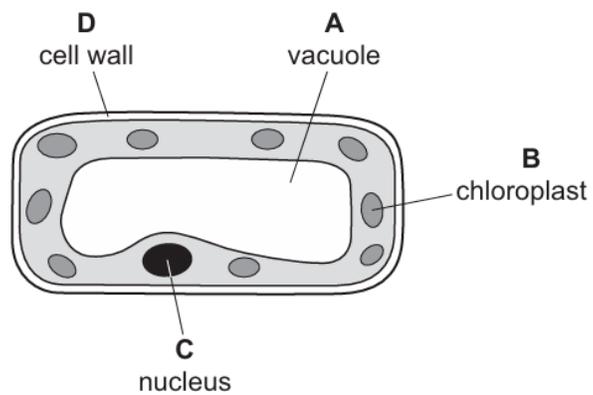


Structures X and Y are both part of the same

- A cell.
- B organ.
- C tissue.
- D vessel.

35 The diagram shows a plant cell.

In which labelled part of the cell is sugar made?



Paper 2

Questions are applicable for both core and extended candidates

36 The list shows some of the structures contained in cells.

- cytoplasm
- cell membrane
- cell wall
- chloroplast

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

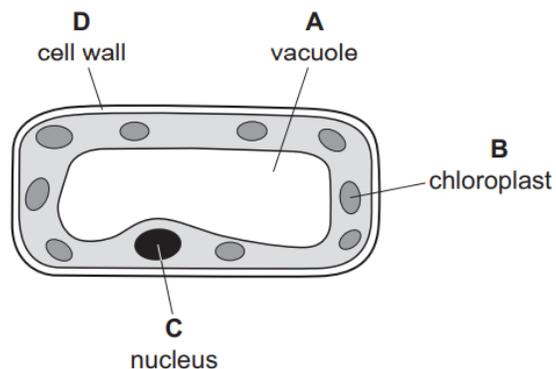
- A** 1 **B** 2 **C** 3 **D** 4

37 Which word is used to describe stem cells?

- A** gametes
B haploid
C homozygous
D unspecialised

38 The diagram shows a plant cell.

In which labelled part of the cell is glucose made?



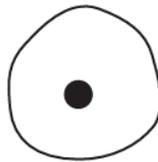
39 What is the function of mitochondria in cells?

- A to absorb light energy
- B to produce glucose
- C to release energy
- D to transport oxygen

40 Which row shows a function of the cell membrane and a function of the cell wall in a palisade cell?

	cell membrane	cell wall
A	active transport	active transport
B	active transport	support
C	support	active transport
D	support	support

41 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

42 Some structures found in cells are listed.

- 1 cell membrane
- 2 cell wall
- 3 mitochondria
- 4 nucleus

Which structures are found in prokaryotic cells?

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

43 In a mesophyll cell, where are chloroplasts found?

- A** between the cell wall and the cell membrane
- B** in the cytoplasm
- C** in the nucleus
- D** in the vacuole

44 Which feature is found in viruses?

- A** cell wall
- B** mitochondria
- C** nucleus
- D** protein coat

45 Which features are possessed by **all** plant cells?

	a cell wall	chloroplasts	
A	✓	✓	key
B	✓	x	✓ = yes
C	x	✓	x = no
D	x	x	

46 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

47 Which structures are found in the cells of all living organisms?

1 cell membrane

2 chloroplast

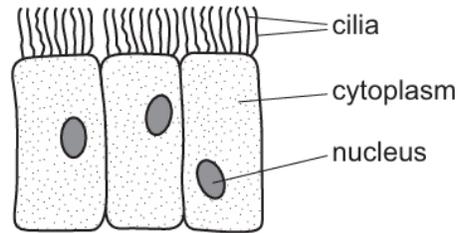
3 cytoplasm

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

48 Which row shows the structure on the outside of a plant cell and the location of the chloroplasts in the cell?

	structure on the outside of a plant cell	location of chloroplasts
A	cell membrane	in the cytoplasm
B	cell membrane	in the vacuole
C	cell wall	in the cytoplasm
D	cell wall	in the vacuole

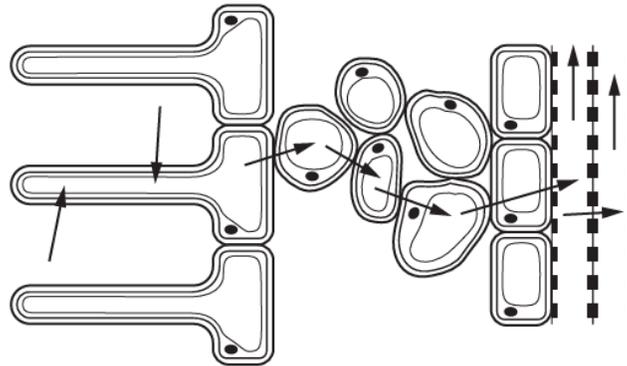
49 The diagram shows some cells.



Where are these cells found?

- A alimentary canal
- B blood
- C bronchus
- D plant roots

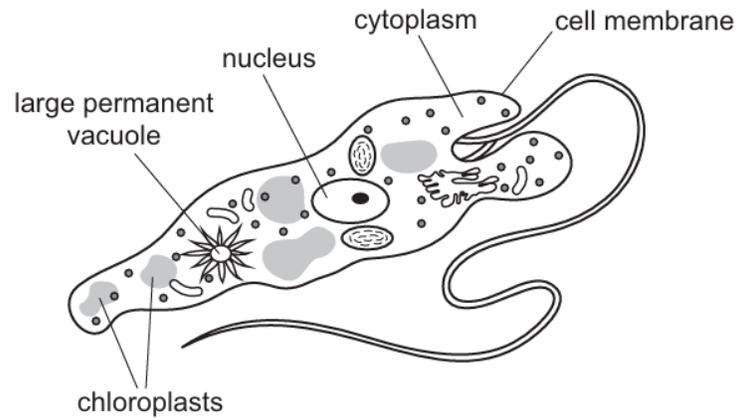
50 The diagram shows some tissues in part of a plant root. The arrows represent the movement of water into and across the plant root tissues.



How many different tissues are shown?

- A 2
- B 4
- C 5
- D 7

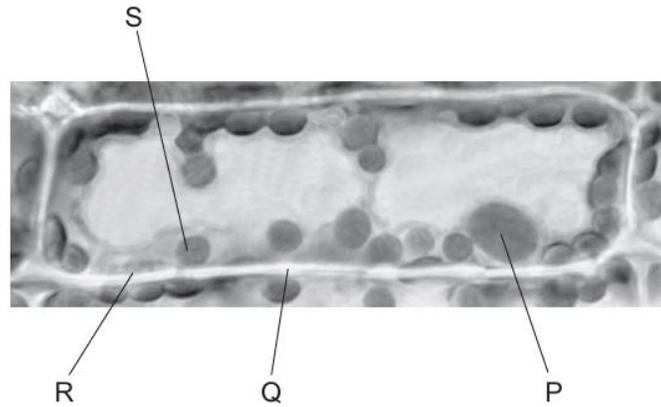
51 The diagram shows a single-celled organism called *Euglena*.



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
- 52 Which part of a cell makes glucose?
- A cell membrane
 - B chloroplast
 - C nucleus
 - D vacuole

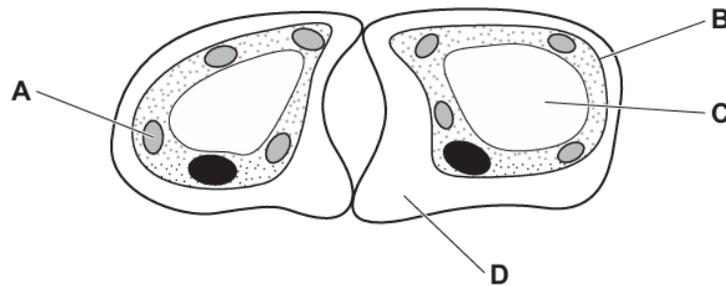
- 53 The photomicrograph shows a cell from a type of aquatic plant.



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
- 54 The diagram shows two guard cells.

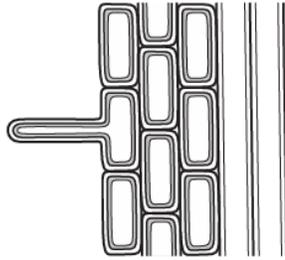
Which label shows the cell wall?



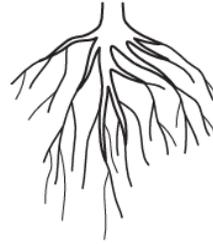
55 The diagrams show different levels of organisation in a plant. (Not drawn to scale.)



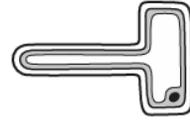
1



2



3



4

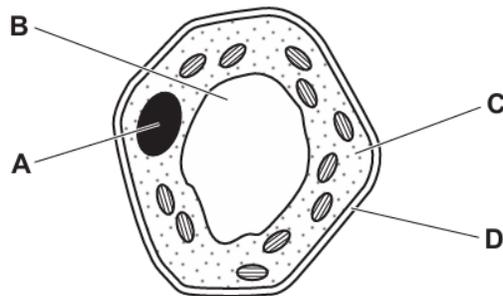
Which sequence shows the levels of organisation in order from smallest to largest?

- A 4 → 2 → 3 → 1
- B 4 → 3 → 1 → 2
- C 3 → 4 → 2 → 1
- D 3 → 2 → 1 → 4

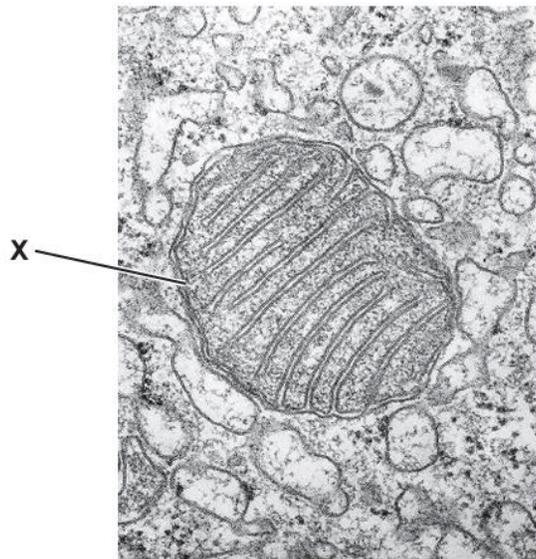
56 The diagram shows a plant cell.

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

Which labelled part should be examined more closely?



57 The photomicrograph shows part of an animal cell.



What is the structure labelled **X**?

- A** chloroplast
- B** mitochondrion
- C** ribosome
- D** vacuole

58 Which features are possessed by **all** plant cells?

	a cell wall	chloroplasts
A	✓	✓
B	✓	x
C	x	✓
D	x	x

key

✓ = present

x = absent

59 Heart muscle cells have a high rate of metabolism.

Which structure do they require to be present in high numbers?

- A chloroplasts
- B mitochondria
- C cell walls
- D vacuoles

60 Which features do animal cells share with plant cells?

	chloroplast	cytoplasm	nucleus	
A	✓	✓	✓	key
B	✓	x	✓	✓ = yes
C	x	✓	✓	x = no
D	x	x	x	