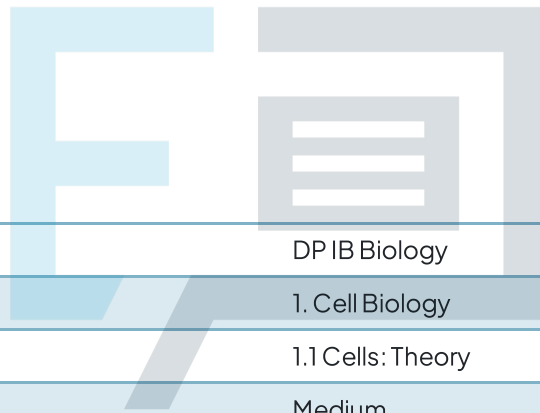




1.1 Cells: Theory

Question Paper



Course	DP IB Biology
Section	1. Cell Biology
Topic	1.1 Cells: Theory
Difficulty	Medium

Exam Papers Practice

To be used by all students preparing for DP IB Biology HL
Students of other boards may also find this useful

Question 1

A prokaryotic cell has a diameter of $1\ \mu\text{m}$. The cell is magnified 50 000 times by an electron microscope.

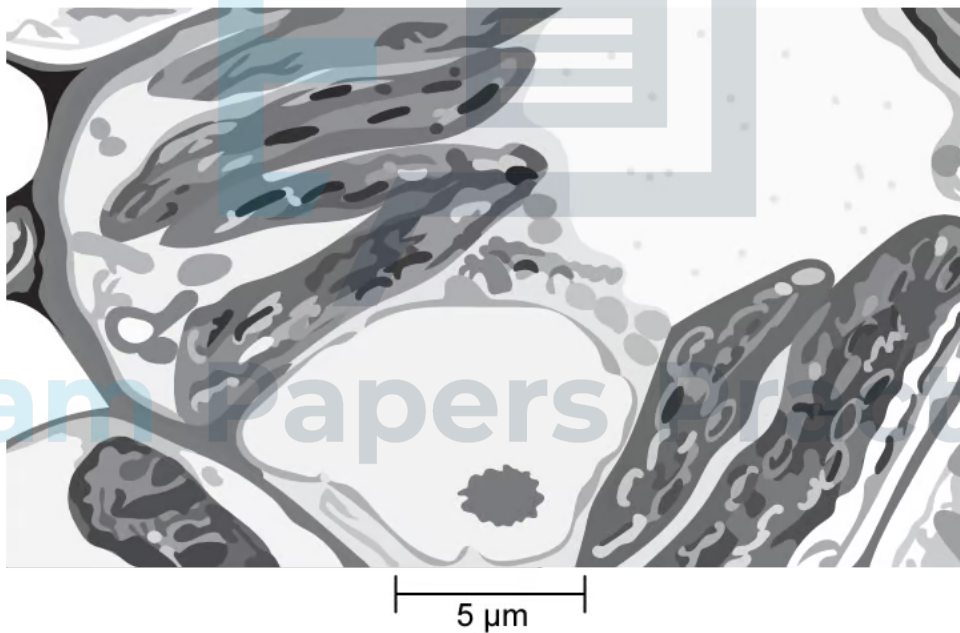
In the electron micrograph that is produced by the electron microscope, what is the diameter of the prokaryotic cell?

- A. $5 \times 10^0\text{mm}$
- B. $5 \times 10^{-1}\text{mm}$
- C. $5 \times 10^2\text{mm}$
- D. $5 \times 10^1\text{mm}$

[1 mark]

Question 2

The electron micrograph shows the organelles in a leaf cell. A student uses their ruler to measure the length of the scale bar, which they find to be 1.5 cm.



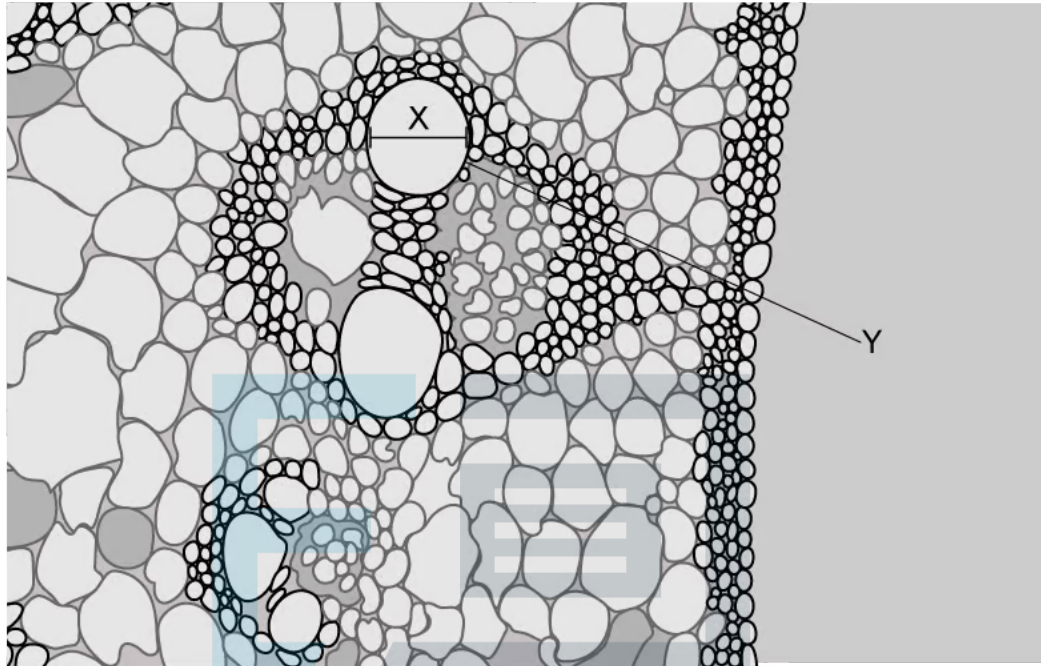
What is the magnification?

- A. $\times 7\ 000$
- B. $\times 7.5$
- C. $\times 3\ 000$
- D. $\times 300$

[1 mark]

Question 3

The electron micrograph below shows a root vascular system. The magnification of the image is $\times 200$. A student uses a ruler to measure distance X and finds it to be 10 mm.



What is the diameter of the cell labelled Y?

- A. 100 μm
- B. 50 μm
- C. 10 μm
- D. 5 μm

[1 mark]

Question 4

The electron micrograph of the plant cell has a 2 cm scale line labelled $5\ \mu\text{m}$.



What is the magnification?

- A. $\times 5\ 000$
- B. $\times 4\ 000$
- C. $\times 2\ 000$
- D. $\times 1\ 000$

Exam Papers Practice [1 mark]

Question 5

Erythrocytes (red blood cells) have a diameter of $7\ 000\ \text{nm}$. Pancreatic cells have a diameter of $35\ \mu\text{m}$.

Which of these statements is correct about the relative sizes of these cells?

- A. The erythrocytes are 5 times smaller.
- B. The erythrocytes are 50 times smaller.
- C. The erythrocytes are 5 times larger.
- D. The erythrocytes are 50 times larger.

[1 mark]

Question 6

Which of the following ideas are part of cell theory?

- I. Cells are the smallest unit of life.
- II. Cells show great variety in shape and structure.
- III. Cells are derived from other cells (pre-existing cells) by division.

- A. I only
- B. II only
- C. I and III only
- D. II and III only

[1 mark]

Question 7

Which property of stem cells makes them suitable for therapeutic uses?

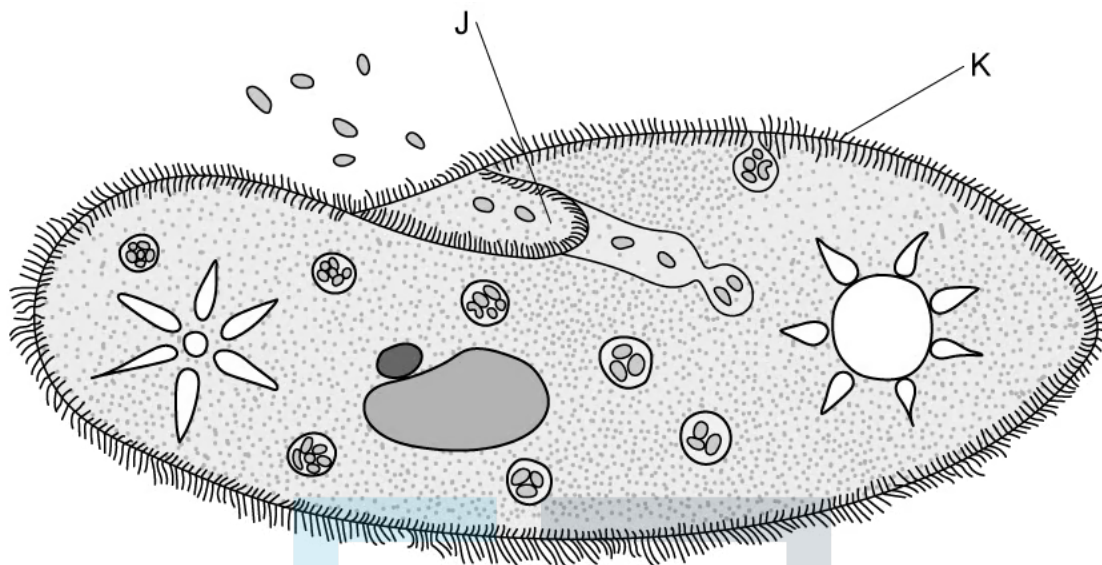
- A. They can differentiate into specialised cells.
- B. They can produce chemicals that destroy viruses.
- C. They can form gametes when they divide by mitosis.
- D. They have chromosomes that are suitable for gene transfer.

[1 mark]

Exam Papers Practice

Question 8

A *Paramecium* is shown in the image below.



Which functions are structures **J** and **K** responsible for carrying out in *Paramecium*?

	J	K
A	Respiration	Movement
B	Feeding	Movement
C	Excretion	Respiration
D	DNA replication	Digestion

[1 mark]

Exam Papers Practice

Question 9

What happens to the surface area:volume ratio of a cell as the cell grows and increases in size?

- A. It does not change.
- B. It increases.
- C. It decreases.
- D. It doubles as the cell doubles in size.

[1 mark]

Question 10

Which of the following statements relate to Stargardt's disease?

- I. There is neuron death in the part of the midbrain that controls subconscious muscle activities.
- II. There is a mutation in a gene for active transport in photoreceptor cells.
- III. β -cells of the pancreas are destroyed by the body's immune system.
- IV. There is a breakdown of light-sensitive cells in the retina.

- A. I only
- B. I and II only
- C. II and III only
- D. II and IV only

[1 mark]



Exam Papers Practice