

Cells and Microscopy

Q1.a(2018)

- A student cut a piece of onion and placed it on a microscope slide.

The student then placed this slide on the stage of a light microscope and looked through the eyepiece.

No cells could be seen in the piece of onion.

Explain **two** ways this method could be improved to see details of the onion cells.

(4)

Q1.b(2018)

Figure 4 shows mitosis occurring in some plant cells.

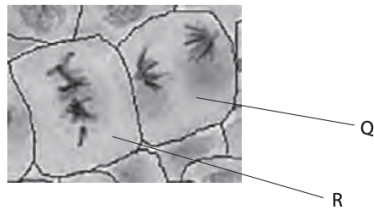


Figure 4

- (i) The cells in Figure 4 were taken from a rapidly growing part of a plant.

Which part of a plant has rapidly dividing cells?

(1)

- ☐ A chloroplast
- ☐ B epithelium
- ☐ C meristem
- ☐ D vacuole

Q1.c(2018)

- (ii) Which stage of mitosis is shown in cell R?

(1)

- ☐ A prophase
- ☐ B metaphase
- ☐ C anaphase
- ☐ D telophase

Q1.d(2018)

Describe **two** genetic similarities of the new cells that would be produced by cell Q in Figure 4.

(2)

Q1.e(2018)

The cells in Figure 4 were heated in hydrochloric acid.

State **two** safety precautions that should be taken when heating hydrochloric acid.

(2)

Q1.f(2018)

Explain **one** advantage of using an electron microscope to observe plant cells.

(2)

Q2.a(2020)

(a) Figure 1 shows three cells.

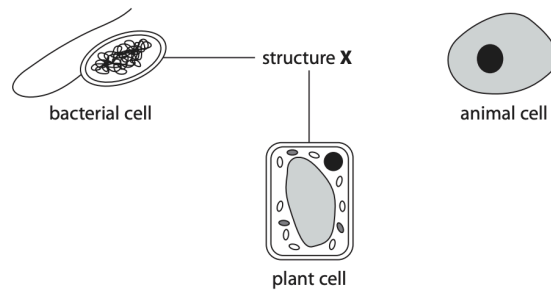


Figure 1

(i) What is structure X?

(1)

- ☐ A cell membrane
- ☐ B cell wall
- ☐ C cytoplasm
- ☐ D nucleus

Q2.b(2020)

Key concepts

<http://www.pcfgstudy.com>

The bacterial cell in Figure 1 has a flagellum.

State the function of a flagellum.

(1)

.....

.....

Q2.c(2020)

Give **one** other difference between the bacterial cell and the animal cell shown in Figure 1.

(1)

.....

.....

Q2.d(2020)

(b) Substances move into and out of cells.

How does oxygen move into and out of cells?

(1)

- ☐ A transpiration
- ☐ B active transport
- ☐ C diffusion
- ☐ D osmosis

Q2.e(2020)

A plant leaf cell is 0.04 mm long.

Calculate the length of the image after this cell has been magnified 500 times.

(2)

length of image = ...mm

Q3.a(2020)

Figure 9 is a drawing of a eukaryotic cell.

Structure **Z** is found in plant leaf cells.

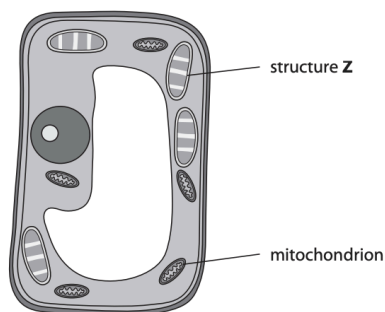


Figure 9

(i) Name structure **Z**.

(1)

Q3.b(2020)

Give **one** function of the mitochondrion.

(1)

Q4.a(2021)

A student is preparing a microscope slide of plant cells.

(i) State what can be added to the slide to make the plant cells more visible.

(1)

Q4.b(2021)

The microscope has two lenses:

- an eyepiece lens with $\times 10$ magnification
- an objective lens with $\times 40$ magnification

Which is the **total** magnification of this microscope?

(1)

- ☐ **A** $\times 4$
- ☐ **B** $\times 30$
- ☐ **C** $\times 50$
- ☐ **D** $\times 400$

Q4.c(2021)

Name **one** part of a light microscope that can be moved to obtain a clear image of plant cells.

(1)

Q5.a(2023)

Figure 1 shows an animal cell.

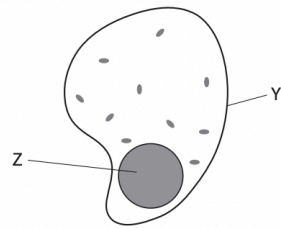


Figure 1

(i) Which part of the cell is labelled Y?

(1)

- ☐ A cell wall
- ☐ B cell membrane
- ☐ C nucleus
- ☐ D cytoplasm

Q5.b(2023)

Which structures are found in the part labelled Z?

(1)

- ☐ A chromosomes
- ☐ B mitochondria
- ☐ C ribosomes
- ☐ D vacuoles

Q5.c(2023)

Name the part of an animal cell where respiration occurs.

(1)

Q6.a(2023)

A microscope can be used to observe the structure of a cell.

Figure 2 shows a microscope.



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Figure 2

- (i) Give **one** advantage of using a microscope to look at cells.

(1)

Q6.b(2023)

- (ii) Draw **one** straight line from each part of the microscope to its function.

(2)

part of the microscope

function

eyepiece •

stage •

• to place a slide on

• to carry the microscope

• to make the cells
look brighter

• to look through to see
the cells

• to reflect light onto
the cells

Q7.(2023)

Figure 3 shows some of the units used when cells and organelles are measured.

micrometre = 10^{-6} m	picometre = 10^{-12} m
nanometre = 10^{-9} m	millimetre = 10^{-3} m

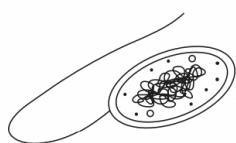
Figure 3

Give the name of the smallest unit shown in Figure 3.

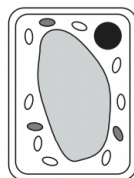
(1)

Q8.(2023)

Figure 11 shows a bacterial cell and a plant cell.



bacterial cell



plant cell

Figure 11

Describe the similarities and differences of a bacterial cell and a plant cell.

(6)

Q9.a(2024)

Figure 1 shows a bacterial cell.

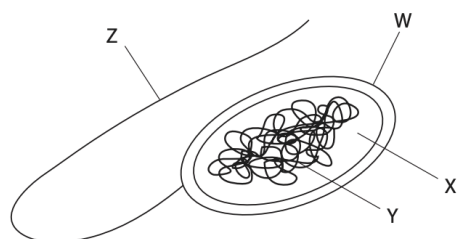


Figure 1

(i) What is structure W?

(1)

- ☐ A cell wall
- ☐ B cytoplasm
- ☐ C chromosomal DNA
- ☐ D plasmid

Q9.b(2024)

Give the name of structure Z.

(1)

.....

Q9.c(2024)

State the function of structure Z.

(1)

.....

.....