

Cells and Microscopy

Q1.a(2018)

C a cell wall

1. The only correct answer is C

A is not correct because both plant and animal cells have cytoplasm

B is not correct because both plant and animal cells have a cell membrane

D is not correct because both plant and animal cells have mitochondria

Q1.b(2018)

Substitution

$$20.5 \times 400 \text{ (1)}$$

Evaluation

$$8\,200 \text{ }\mu\text{m}$$

Q1.c(2018)

Substitution

$$(3.08 \div 400) = 0.0077 \text{ (1)}$$

Evaluation

$$7.7 \times 10^{-3}$$

Q1.d(2018)

An answer that combines **three** of the following points to provide a method:

- measure the length of the tissue (1)
- add masses / mass (1)
- remove the mass and measure length of the tissue (1)
- repeat until the tissue no longer returns to its original length (1)

Q1.e(2018)

Any one from:

- wash hands (1)
- wear gloves (1)
- sterilise the apparatus after use /
disinfect working area (1)

Q2.(2019,4)

- a diagram of the cell that reflects its shape
and some of the internal structures. (1)
- with any **three** cell structures labelled from:
nucleus / chloroplast / vacuole / cytoplasm /
cell wall / cell membrane (3)

Q3.(2019,4)

A respiration

The only correct answer is A

B is not correct because the **to** make proteins is not
the function of mitochondria in a plant cell.

C is not correct because the photosynthesis is not the
function of mitochondria in a plant cell

D is not correct because the store water is not the
function of mitochondria in a plant cell.

Q4.a(2019,4)

- Used as a control / to
compare with the results of
the other tubes

Q4.b(2019,4)

Key concepts

<http://www.pcfgstudy.com>

Any two variables from:

- temperature (1)
- age / variety of potato (1)
- {size / volume / length / width / shape / mass / surface area} of chip (before investigation) (1)
- volume of solution (1)
- time left in solutions (1)

Q4.c(2019,4)

An explanation including:

- There is a higher concentration of sodium chloride outside (the cell) than inside / higher concentration of water molecules inside (the cell) than outside (1)
- water moves out of {cells / chips} / into (sodium chloride) solution (1)
- by osmosis (1)

Q5.a(2020,4)

6 / six

Q5.b(2020,4)

D cell wall, chloroplast, large vacuole.

The only correct answer is **D** cell wall, chloroplast, large vacuole

A is incorrect because both the cell membrane and nucleus are also found in animal cells

B is incorrect because the cell membrane and cytoplasm are also found in animal cells

C is incorrect because the nucleus is also found in animal cells

Q6.a(2021,4)

D nucleus

The only correct answer is D

A is not correct because mitochondria do not control the white blood cell

B is not correct because ribosomes do not control the white blood cell

C is not correct because chromosomes are only part of organelle X

Q6.b(2021,4)

haemoglobin (1)

liquid (1)

Q6.c(2021,4)

10 (µm)

Q6.d(2021,4)

An explanation including any **two** from:

- greater resolution (1)
- so greater magnification is possible (1)
- so smaller structures can be seen / identified (1)

Q7.a(2021,4)

- a diagram of the cell that reflects its shape and some of the structures (1)
- with any **three** cell structures from {nucleus / cytoplasm / membrane / cilia} (3)

Q7.b(2021,4)

to {move/waft} {mucus / bacteria / dust} (1)

Q8.a(2022,4)

To make the { cell / nucleus } more visible

Q8.b(2022,4)

D cell wall

The only correct answer is D

A is not correct because V is not a chloroplast

B is not correct because V is not a vacuole

C is not correct because V is not a nucleus

Q8.c(2022,4)

An explanation including two from:

- water moved out of cell / cytoplasm (1)
- by osmosis / definition of osmosis (1)

Q8.d(2022,4)

A description linking three from:

- use forceps to {pick up / peel} a (thin layer of) onion (cells) (1)
- place (onion cells) onto microscope slide (1)
- add a drop of stain / named stain (1)
- place coverslip on top (of onion) (1)
- lower coverslip slowly / at an angle (1)

Q8.e(2022,4)

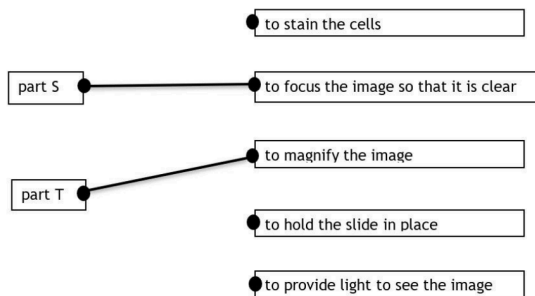
Any two from the following:

- at any point between 0 to 0.33 {mass / water} is gained (1)
- from 0 to 0.33 the change in mass decreases (1)
- 0.33 is where the concentration inside and outside (of the cell) is the same (1)
- above 0.33 {mass / water} is lost (1)
- from 0.33 to 1.0 the change in mass increases (1)

Q9.a(2024,4)

Part of microscope

Function



Do not award mark if two lines are drawn from part S box

Do not award mark if two lines are drawn from part T box

Q9.b(2024,4)

A biological diagram that shows:

- the shape of the bacterial cell (1)
- two flagella (1)
- one structure labelled from:
flagellum / cytoplasm / cell wall (1)

Q9.c(2024,4)

An answer including:

a light microscope

- is affordable / easy to use /
large field of view / portable
(1)

an electron microscope

- gives higher resolution / shows
(more) detail (1)