

(Microscopy (light and electron))

Q1.a)(2019)

24 (mm) **or** 2.4 (cm)

$$\frac{24}{0.06}$$

or

$$\frac{2.4}{0.06}$$

(×) 400

Q1.b)(2019)

high(er) magnification

high(er) resolution **or** high(er)
resolving power

Q2.(2021)

any **two** from:

- (microscope) slide
- cover slip
- dye / stain

- (mounted) needle
- pipette / dropper
- scalpel
- forceps / tweezers

Q3.a)(2021)

eyepiece / lens

Q3.b)(2021)

to focus (the image / cells)

Q3.c)(2021)

any **one** from:

- no cells in the field of view
- slide not in the correct position
- mirror not in correct position
- (objective) lens not clicked into place
- **or**
(objective) lens dirty
- (student is) looking at a (large) air bubble
- (the microscope is) not focussed

Q4.a)(2022)

Hazard	Risk	Plan to minimise risk
Iodine solution is an irritant	May cause allergic reaction or skin rash	wash skin immediately (after contact) or wear gloves or clean up spills allow method to prevent spills e.g. use a dropper bottle ignore do not spill
Sharp knife	may cut you / someone / skin	cut away from the body or cut on a chopping board or keep fingers away from blade (when cutting) allow description of how to carry knife safely ignore use a blunt knife

1 mark for each correct row

Q4.b)(2022)

thin layer

(to) help see individual cells

iodine solution

(to) stain / see the parts of the cell

at an angle

(to) prevent / reduce air bubbles

Q4.c)(2022)

recall of equation
magnification =
$$\frac{\text{size of image}}{\text{size of real object}}$$

rearrangement of equation
size of real object =
$$\frac{\text{size of image}}{\text{magnification}}$$

substitution
$$\frac{4.8}{400}$$

0.012 (cm)

conversion
120 (µm)

Q4.d)(2022)

any **two** from:

- include magnification / scale
- use continuous lines
 or ensure no gaps in lines
- do not draw overlapping cells
- draw (wider) cell walls
- do not shade
- draw all the cells present
- draw correct cell shapes
- do not have gaps between
 cells
- draw nuclei in correct location
- label cell part(s)

Q4.e)(2022)

(would) look more magnified /
bigger

(cell would) have more detail

or

(would) be at a higher resolution

or

(could) see more sub-cellular
structures

or

sub-cellular structures seen in
detail