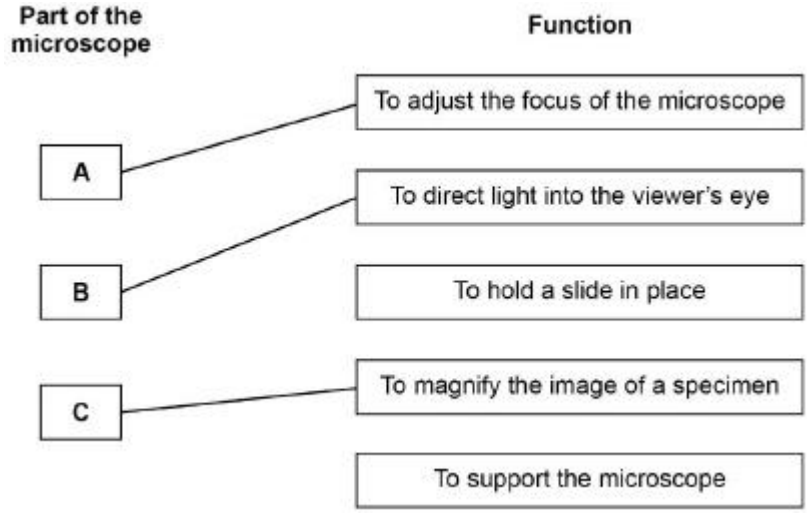
Mark schemes

Q1.

(a)



*do **not** accept more than one line from a box on the left*

3

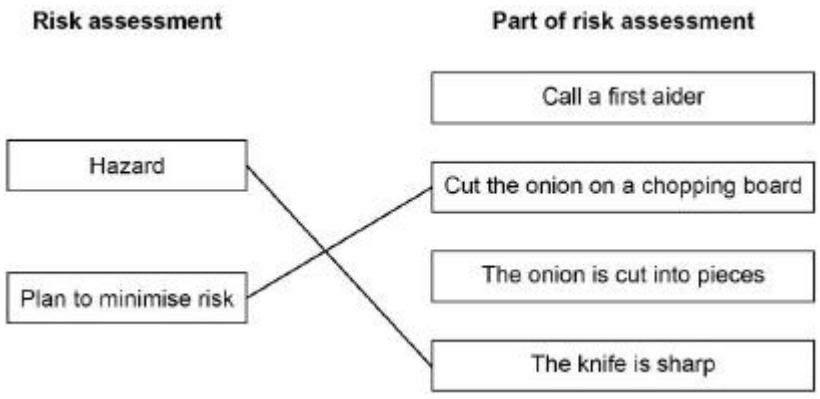
(b) to stain the cells

1

(c) to allow light to pass through the cells

1

(d)



*do **not** accept more than one line from a box on the left*

2

(e) *student's measurement*
49 (mm)

allow in range 48 – 50 (mm)

1

conversion of student's measurement
49 000 (µm)

allow correct conversion using student's measurement

1

substitution

$$\frac{49\,000}{400}$$

allow a correct substitution using incorrectly measured / converted length

1

122.5 (µm)

allow a correct answer from student's division using a magnification of ×400

1

(f) the cells would look larger

1

the cells would show more internal structures

1

(g) complete the cell walls

1

include the magnification

1

[15]

Q2.

(a) nucleus

must be in this order
allow chromosomes
allow plasmid

1

(site of aerobic) respiration

allow makes ATP
***or** releases energy*
*do **not** accept produces / makes / creates energy*
*do **not** accept anaerobic respiration*

1

(cell) membrane

1

(b) photosynthesis

allow produces glucose / sugar
allow to absorb (sun) light
ignore contains chlorophyll

1

(c) root (hair)

allow xylem / phloem / epidermis / meristem

1

(d) concentration of salt solution

1

(e) to make sure **only** the potato mass was measured

*allow (to) remove **excess** water / solution / liquid*

or
if water / solution / liquid was left on (the potato), the mass would be higher / affected

*do **not** accept if water / solution / liquid was left on (potato) the mass would be lower*
ignore to remove water / solution / liquid on the outside / surface (of potato)

1

(f) $\frac{0.2}{2.5} \times 100$

allow $\frac{2.7 \times 2.5}{2.5} \times 100$

1

8(%)

*if no other mark awarded allow **1** mark for* $\frac{2.5 - 2.7}{2.5} \times 100 = -8$ *(%)*

1

(g) **Mark with (h)**

correct scale **and** axis labelled (concentration (of salt solution) in mol/dm^3)

scale must take up at least 50% of grid

1

all points plotted correctly

allow a tolerance of ± ½ small square

*allow 3 or 4 correct plots for **1** mark*

2

curved line of best fit

ignore line extended beyond 0.4 mol/dm^3

ignore line joined point to point with straight lines

1

*max **3** marks for bar chart*

(h) **Mark with (g)**

correct answer from their line drawn on the graph

allow a tolerance of ± ½ small square

ignore line joined point to point with straight lines if a line of best fit is drawn

if no line of best fit is drawn, allow an answer in the range 0.31 − 0.33 (mol/dm^3)

1

(i) <u>water</u> moves out of cells / potato

1

by osmosis

allow by diffusion of water through a partially / selectively / semi permeable membrane

1

(because) the solution in the cells / potato is less concentrated than outside

or

(because) the solution in the cells / potato is more dilute than outside

allow (because) the solution outside the cells / potato is more concentrated than inside

allow (because) the solution outside the cells / potato is less dilute than inside

allow correct references to <u>water</u> <u>concentration</u> / <u>potential</u>

ignore reference to amount of water or salt

*do **not** accept water moves from an area of high (solute) concentration to an area of low (solute) concentration*

1

allow 'pieces' for potato throughout

[17]