

Cell Transport

Q1.a(2018)

6 (a) Figure 8 shows two potato chips.

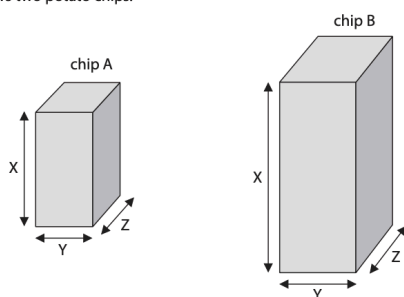


Figure 8

Figure 9 shows some information about each potato chip.

potato chip	length of X in cm	length of Y in cm	length of Z in cm	total surface area of four sides in cm ²	total surface area of top and bottom in cm ²	total surface area of chip in cm ²
A	3.0	1.5	1.5	18.0	4.5	22.5
B	5.0	2.0	2.0	?	?	?

Figure 9

(i) Calculate the total surface area of potato chip B using the formula,

$$\text{Total surface area} = 2XY + 2XZ + 2YZ$$

(2)

total surface area = ... cm²

Q1.b(2018)

The potato chips were placed in distilled water for 20 minutes.

Figure 10 shows the increase in mass of each potato chip.

potato chip	increase in mass in grams
A	0.1
B	0.3

Figure 10

Explain why potato chip B has a greater increase in mass than potato chip A.

(2)

Q1.c(2018)

Potato chip A is transferred from the distilled water into a concentrated salt solution.

Explain what will happen to the cells in potato chip A.

(3)

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Q2.a(2020)

A student placed three different sized cubes of agar jelly into separate beakers containing the same concentration of hydrochloric acid.

The cubes contained a pink indicator.

This indicator becomes clear when in contact with an acid.

Figure 2 shows the results of the investigation after the cubes had been in the acid for 120 seconds.

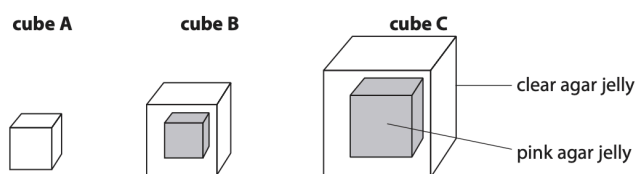


Figure 2

(i) The distance from the outside of cube B to the pink area was 3mm.

Calculate the distance diffused by hydrochloric acid in **one** second.

(2)

..... mm

Q2.b(2020)

The student wanted to confirm their results.

Give **one** improvement the student should make to this investigation to confirm their results.

(1)

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Q2.c(2020)

Devise a method, using cubes of agar jelly, to investigate how temperature affects the rate of diffusion.

(3)

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Q2.d(2020)

(c) Some substances move into and out of cells by active transport.

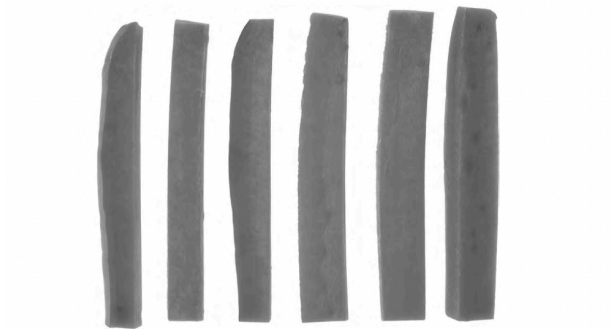
Which is the correct description of the movement of a substance by active transport?

(1)

- ☐ A against a concentration gradient using energy
- ☐ B down a concentration gradient using energy
- ☐ C against a concentration gradient without using energy
- ☐ D down a concentration gradient without using energy

Q3.a(2021)

Figure 4 shows some carrot sticks.



(Source: © rukstockphoto/Shutterstock)

Figure 4

A student chose three carrot sticks and weighed each one.

The carrot sticks were placed in 50 cm³ of distilled water.

After two hours the student weighed each carrot stick again.

Figure 5 shows the results for these carrot sticks P, Q and R.

carrot stick	mass at the start in grams	mass after two hours in grams	change in mass in grams
P	4.0	4.9	0.9
Q	4.2	5.0	0.8
R	4.1	5.0	0.9

Figure 5

Give **one** reason why the student used three carrot sticks instead of just one carrot stick.

(1)

Q3.b(2021)

Give **two** ways that this method could be improved.

(2)

Q3.c(2021)

Calculate the percentage change in mass of carrot stick **Q**.

(3)

Use the equation

$$\text{percentage change} = \frac{\text{change in mass}}{\text{mass at the start}} \times 100$$

Give your answer to 2 significant figures.

percentage change = ... %

Q3.d(2021)

Explain the change in mass of the carrot sticks.

(2)

Q4.(2022)

Alcohol is broken down by liver cells.

(a) Which process moves alcohol from the blood into the liver cells?

(1)

- ☐ **A** diffusion
- ☐ **B** respiration
- ☐ **C** osmosis
- ☐ **D** transpiration