

Leaf structure & adaptations

Q1.a(2018)

A student compared the number of stomata on the upper and lower surfaces of a leaf.

She completed a leaf peel as shown in Figure 12.

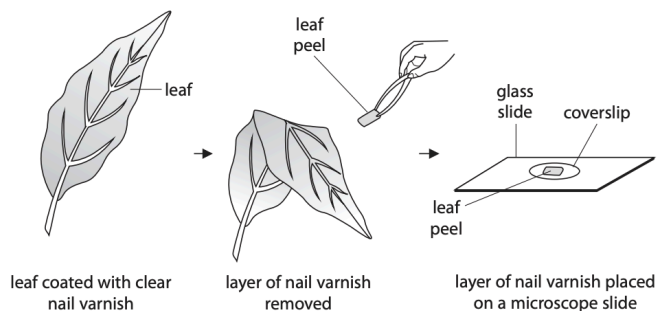


Figure 12

The layer of nail varnish shows an impression of the cells on the surface of the leaf.

- (a) (i) State why a coverslip is placed on top of the leaf peel.

(1)

Q1.b(2018)

Explain why the leaf peel rather than the whole leaf was viewed with a microscope.

(2)

Q1.c(2018)

The student drew a biological diagram of the leaf peel taken from the underside of the leaf.

Figure 13 shows this diagram.

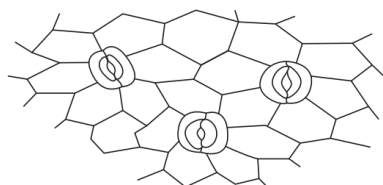


Figure 13

- (i) State the number of stomata visible on Figure 13.

(1)

Q1.d(2018)

The student observed that the stomata were open.

Describe how stomata open.

(3)

Q2.a(2020,4)

Figure 10 shows the leaves and flowers of water lily plants (*Nymphaea odorata*) on a lake.



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Figure 10

(a) Water lilies have stomata on the upper surface of the leaves.

Explain why water lilies have no stomata on the lower surface of the leaves.

(2)

Q2.b(2020,4)

(i) The white petals of the water lily flowers cannot photosynthesise.

Which structure in leaf cells is the site of photosynthesis?

(1)

- ☐ A nucleus
- ☐ B vacuole
- ☐ C mitochondrion
- ☐ D chloroplast

Q2.c(2020,4)

(ii) Glucose is made by photosynthesis.

Glucose is converted to another sugar to be transported in the plant.

What is the name of this sugar?

(1)

- ☐ A glycerol
- ☐ B ribose
- ☐ C sucrose
- ☐ D starch

Q2.d(2020,4)

Describe how this sugar is transported from the leaves to the flowers of the water lily.

(2)

Q2.e(2020,4)

Figure 11 shows water lilies growing in a lake in Europe.



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Figure 11

(i) One water lily plant was brought from America 10 years ago and planted in the lake shown in Figure 11.

Explain why this non-indigenous plant now covers the whole surface of the lake.

(3)

Q2.f(2020,4)

Explain how the water lilies will affect the biodiversity of this lake.

(3)

Q3.a(2022,4)

Figure 8 shows a diagram of a plant root hair cell.

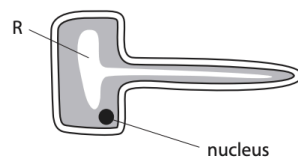


Figure 8

(i) Name the part labelled R.

(1)

Q3.b(2022,4)

Explain **one** adaptation of a root hair cell that increases the absorption of water and mineral ions.

(2)

Q4.a(2024,4)

Figure 9 shows a root hair cell from a plant.

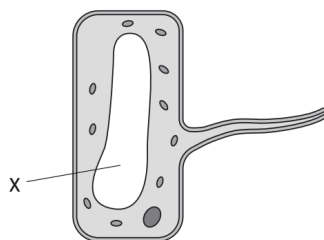


Figure 9

(i) Name the part labelled X.

(1)

Q4.b(2024,4)

State **one** way that the structure of the root hair cell increases the volume of substances it absorbs.

(1)

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Q4.c(2024,4)

Explain why root hair cells do not contain chloroplasts.

(3)

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