Questions are for both separate science and combined science students

Q1.

Plants contain many different tissues.

(a) Complete the sentences.

The leaf tissue that contains the most chloroplasts is

the _____ .

The leaf tissue that contains many air spaces is

the _____ .

The plant tissue that can differentiate throughout the life of the plant is

the _____ .

(3)

(b) Xylem tissue transports water through a plant.

The walls of xylem cells contain cellulose.

Name **one other** substance that strengthens xylem tissue.

_____

(1)

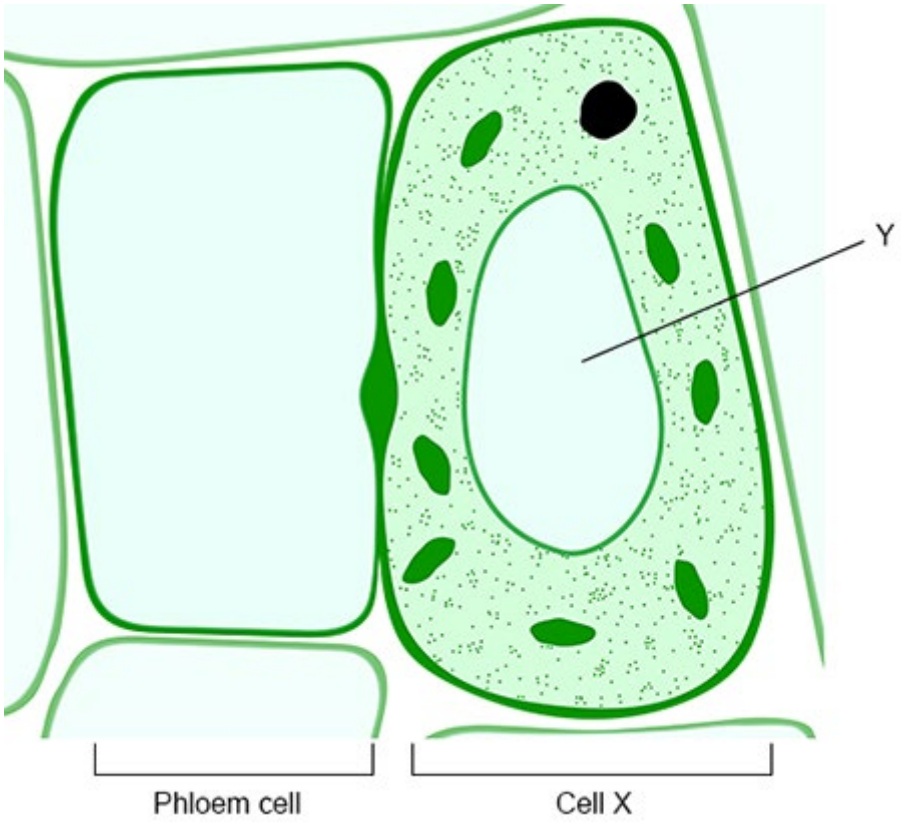
(c) Phloem tissue transports dissolved sugars around a plant.

Name the process that transports dissolved sugars around a plant.

_____

(1)

The figure below shows two plant cells.



(d) Name part **Y** in the figure above.

_____

(1)

(e) The phloem tissue transports sugars to other parts of the plant.

The concentration of dissolved sugars in the phloem cell in above figure is higher than in cell **X**.

Explain how sub-cellular structures help to move dissolved sugars from cell **X** into the phloem cell.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(5)

(f) New phloem cells form when unspecialised plant cells differentiate and become specialised.

Describe **one** change in structure that occurs when an unspecialised cell differentiates to form a phloem cell.

Use the above figure.

_____

_____

(1)

(Total 12 marks)

Q2.

Water and carbon dioxide are exchanged between leaves and the atmosphere through pores called stomata.

(a) Name the cells that control the opening and closing of the stomata.

_____

(1)

Water moves through a plant in the transpiration stream.

(b) Describe **two** differences between the transpiration stream and translocation.

1 _____

_____

2 _____

_____

(2)

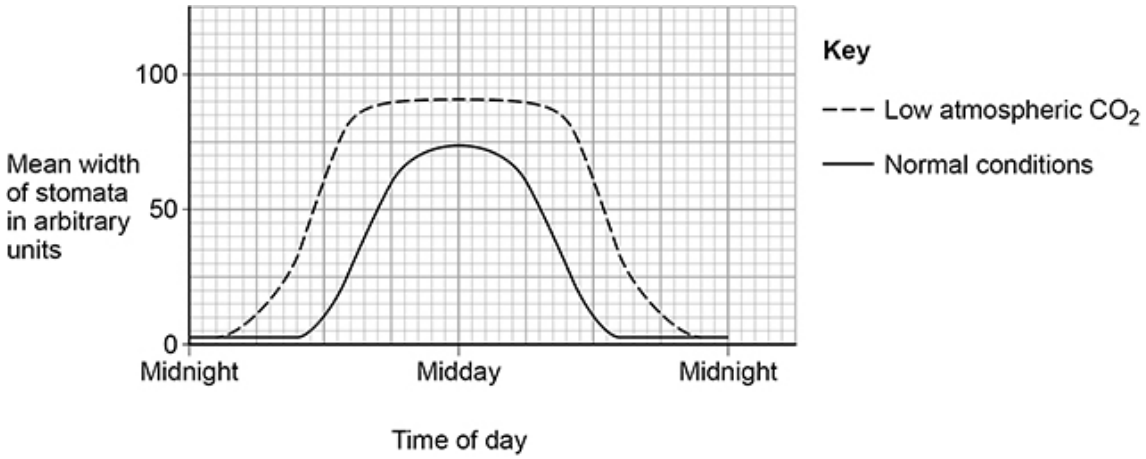
(c) Which environmental conditions would cause the rate of transpiration to be greatest in a plant?

Tick (✓) **one** box.

Cold with low humidity	☐
Cold with high humidity	☐
Warm with low humidity	☐
Warm with high humidity	☐

(1)

The figure below shows information about the mean width of the stomata in a plant.



(d) The changes in the mean width of the stomata in **normal conditions** are an advantage to the plant.

Explain how.

(4)

(e) The changes in the mean width of the stomata in low atmospheric carbon dioxide are different from the changes in normal conditions.

Explain how the difference helps the plant to survive in low atmospheric carbon dioxide.

(2)

(Total 10 marks)