

14.2 Homeostasis in Plants

Question Paper

Course	CIEA Level Biology
Section	14. Homeostasis
Topic	14.2 Homeostasis in Plants
Difficulty	Easy

Time allowed: 20
Score: /9
Percentage: /100

Question 1a

Guard cells surround the stomatal aperture.

State **three** structural features of guard cells.

[3 marks]

Question 1b

Specific mechanisms and steps take place within the guard cells to open the stomata.

Re-order the statements below to show the steps in the correct order.

- A Thin outer cell wall of the guard cell curves causing stomata to open
- B Water enters the cell through aquaporins
- C Light hits the cell
- D Channel proteins open and potassium ions diffuse into the cells
- E Turgor pressure is increased
- F Proton pumps actively transport hydrogen ions out of the cell

[1 mark]

Question 1c

Identify the process by which water enters the cell as described in **step B** in part (b).

[1 mark]

Question 1d

The hormone abscisic acid (ABA) is produced by plants to stimulate the closing of their stomata during times of water stress.

Complete the sentences below to describe the role of abscisic acid in the closure of stomata.

Choose words from the following list. You may use each word once, more than once or not at all.

proton hydrogen calcium potassium out in

increases decreases flaccid receptors turgid

- ABA binds with ABA _____ on the cell surface membrane of guard cells.
- This inhibits the _____ pumps and _____ ions are no longer actively transported out of the cell.
- _____ ions also move into the guard cells which stimulates the opening of further channel proteins that allow _____ ions to leave the guard cells.
- Water potential inside the cell _____ and so water leaves the cell by osmosis. The guard cells become _____ and the stomata close.

[4 marks]