IGCSE BIOLOGY • EXERCISE SHEET

8.1 Xylem and phloem

Name: _____ Class: _____ Date: _____ **Total: 7 marks**

Objective

Build the skills to answer exam questions on **xylem and phloem** 木质部与韧皮部—what each carries, where they are, and how xylem is adapted.

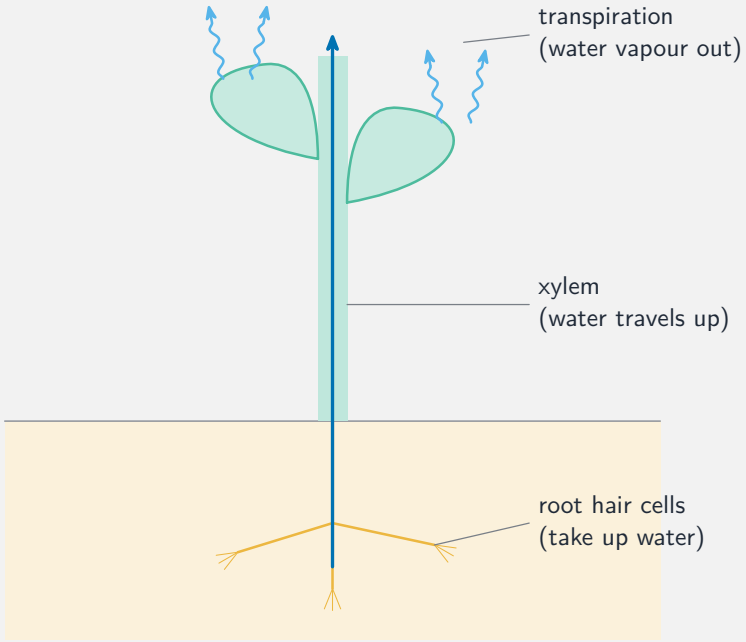
You must be able to:

- state what xylem and phloem transport, and the direction
- describe the structure of xylem (dead, lignified tubes)
- locate xylem and phloem in a vascular bundle

1 Worked examples

The two transport tissues

Xylem: water + mineral ions, upward, + support. Phloem: sucrose + amino acids



Xylem and phloem run through the plant

- **xylem cells:** dead and hollow, with thick **lignin** walls; joined end to end into one pipe.

2 Practice

2.1 State what the xylem transports. [1]

2.2 State what the phloem transports. [1]

3 Exam-style questions

3.1 Xylem vessels are well adapted to carry water because they are: [1]

- **A** living cells full of cytoplasm
- **B** dead, hollow tubes with lignin walls
- **C** thin-walled and branched
- **D** packed with chloroplasts

3.2 Xylem and phloem run through the plant.

(a) State the additional role of xylem (besides transport). [1]

(b) Explain how the structure of xylem suits carrying water. [2]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **8.1 Xylem and phloem** past-paper sheet in the Library, or try these in **Practice mode**:

- 0610/21 N25 —Q12 (xylem / phloem)
- 0610/23 N25 —Q9 (transport tissues)

Solutions

2.1 water and mineral ions (upward).

2.2 sucrose and amino acids.

3.1 B. Xylem cells are dead, hollow tubes with lignin walls.

3.2 (a) it supports the plant.
(b) the cells are dead and hollow, so water flows through freely; they are joined end to end into one continuous lignified pipe.