

Xylem and phloem

Revision notes • The functions of xylem and phloem, and where they are found in the roots, stems and leaves of a dicotyledonous plant.

For Cambridge IGCSE Combined Science 0653. **Supplement** is Extended content, only examined on Papers 2 and 4.

Xylem and phloem Spec B8.1

Xylem and phloem Spec B8.1.1

Plants have two transport tissues. Together they make up the vascular tissue, which runs from the roots through the stem and into the leaves.

Functions of xylem and phloem

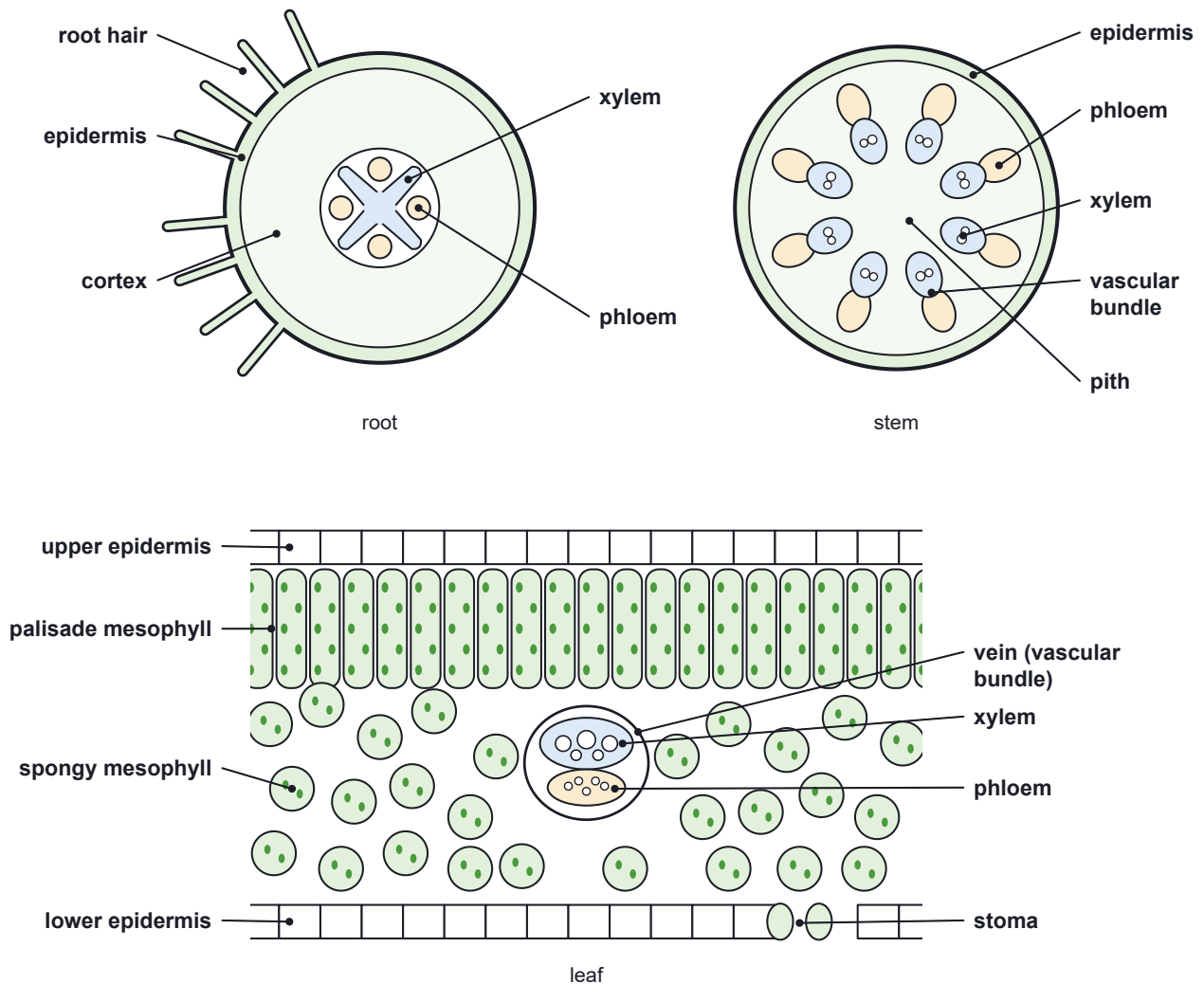
Tissue	Function
Xylem	transport of water and mineral ions (from the roots upwards), and support for the plant
Phloem	transport of sucrose and amino acids

Xylem and phloem in roots, stems and leaves Spec B8.1.2

You must be able to find xylem and phloem in sections of the roots, stems and leaves of a non-woody dicotyledonous plant. In all three organs they are found together, in groups called **vascular bundles** (veins in the leaf).

Position of xylem and phloem

Organ	Where the vascular tissue is	Xylem and phloem
Root	in the centre of the root	xylem in the middle, often in an X or star shape, with phloem between the arms of the X
Stem	vascular bundles in a ring near the outside of the stem	in each bundle, xylem is on the inside and phloem on the outside
Leaf	in the midrib and the veins	in each vein, xylem is on the upper side and phloem on the lower side



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Root: xylem in the centre. Stem: bundles with **phloem outside, xylem inside**. Leaf vein: **xylem above phloem**.

To identify the tissues in a photograph, find the vascular bundle or vein first, then use its position to decide which tissue is which.

Common mistake: Do not mix up the order in the stem. Phloem is on the outside of each bundle and xylem is on the inside.

Quick check

1. What does phloem transport?
2. What are the two functions of xylem?
3. In a stem, which tissue is on the outside of a vascular bundle?

Quick check answers

Xylem and phloem

1. Sucrose and amino acids.
2. Transport of water and mineral ions, and support.
3. Phloem.