

A-Level Biology

Name: _____ Score: _____

1. Which statement is correct?

- ☐ xylem carries water and minerals up; phloem carries dissolved sugars
- ☐ xylem carries sugars; phloem carries water up
- ☐ both carry only water
- ☐ both carry only sugars

2. Water enters a root hair cell by osmosis because the root hair has:

- ☐ a lower water potential than the surrounding soil water
- ☐ a higher water potential than the soil
- ☐ no cell membrane
- ☐ no cytoplasm

3. Transpiration is:

- ☐ the loss of water vapour from a plant
- ☐ the uptake of water at the roots
- ☐ the making of sugars in the leaf
- ☐ the transport of sucrose in phloem

4. Translocation in the phloem transports:

- ☐ sugars (mainly sucrose)
- ☐ only water
- ☐ oxygen
- ☐ minerals only

5. Xylem vessels are strengthened and waterproofed by _____ in their walls.

6. Water enters root hair cells from the soil by _____.

7. Water vapour leaves the leaf mainly by diffusing out through pores called _____.

8. In translocation, a "source" is:

- ☐ where the assimilate is made or released, such as a photosynthesising leaf
- ☐ where the assimilate is used or stored
- ☐ the xylem
- ☐ the root hair

9. A mature xylem vessel is a living cell, full of cytoplasm and a nucleus.

- ☐ True ☐ False

10. Sucrose is loaded into the sieve tube at the source by _____ transport (using proton pumps).

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1. **xylem carries water and minerals up; phloem carries dissolved sugars**

Xylem moves water and mineral ions upward; phloem moves dissolved assimilates (mainly sucrose).

2. **a lower water potential than the surrounding soil water**

Water moves down the water-potential gradient, into the root hair which has the lower water potential.

3. **the loss of water vapour from a plant**

Transpiration is water evaporating inside the leaf and the vapour diffusing out through the stomata.

4. **sugars (mainly sucrose)**

Phloem carries dissolved sugars (assimilates), unlike xylem which carries water and minerals.

5. **lignin**

Lignin makes a strong, waterproof, hollow pipe — and the cells die, leaving an open tube.

6. **osmosis**

Water moves down a water-potential gradient into the root hair.

7. **stomata**

After evaporating from leaf cell surfaces, the vapour diffuses out through the stomata.

8. **where the assimilate is made or released, such as a photosynthesising leaf**

A source makes/releases the assimilate (e.g. a leaf); a sink uses or stores it (e.g. a growing root).

9. **False**

Xylem vessels are dead and empty — that is what makes them a fast, open pipe for water.

10. **active**

Companion cells pump H^+ out, then cotransporters bring sucrose in with the ions — active transport.