

Transport in plants practice questions

10 questions • 25 marks • mark scheme at the back

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

Name

Total / 25

Xylem and phloem Spec B8.1

1 Which statement about phloem is correct? [1 mark]

- A. ☐ It transports water and mineral ions.
- B. ☐ It transports sucrose and amino acids.
- C. ☐ It supports the plant.
- D. ☐ It absorbs water from the soil.

2 State two functions of xylem and one function of phloem. [3 marks]

3 Describe where xylem and phloem are found in a cross-section of the stem of a non-woody dicotyledonous plant. [3 marks]

4 Describe the position of the xylem and phloem in a cross-section of a root. [3 marks]

Water uptake Spec B8.2

5 **Supplement** [1 mark]

Why do root hair cells have long extensions?

- A. ☐ to increase the surface area for absorption
- B. ☐ to store water
- C. ☐ to carry out photosynthesis
- D. ☐ to transport sucrose

6 State two functions of root hair cells and explain how the root hair is adapted to carry them out. [3 marks]

7 Outline the pathway taken by water from the soil to the mesophyll cells of a leaf. [4 marks]

8 Which list shows the pathway of water through a plant in the correct order? [1 mark]

- A. ☐ xylem, root hair cell, root cortex, mesophyll
- B. ☐ root hair cell, root cortex, xylem, mesophyll
- C. ☐ root cortex, root hair cell, mesophyll, xylem
- D. ☐ mesophyll, xylem, root cortex, root hair cell

Transpiration

Spec B8.3

9

Supplement

[4 marks]

A student uses a potometer to investigate the effect of wind speed on the rate of transpiration. Describe how the student could do this.

[illegible]

10

Supplement

[2 marks]

In a potometer experiment, an air bubble moved the distances shown in the table. Calculate the rate of water uptake with the fan on, in mm / min.

Potometer results		
conditions	distance moved by bubble / mm	time / min
still air	18	6
fan on	54	6

Answer =

[illegible]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (1)

2. [3]

- (xylem) transport of water / mineral ions (1)
- (xylem) support (1)
- (phloem) transport of sucrose / amino acids (1) ignore 'food' alone

3. [3]

- in vascular bundles (1)
- arranged in a ring near the outside of the stem (1)
- xylem on the inside and phloem on the outside of each bundle (1)

4. [3]

- in the centre of the root (1)
- forms an X / star shape (1)
- phloem between the arms (of the X) (1)

5. [1] **Supplement**

A A (1)

6. [3]

- absorb water (1)
- absorb mineral ions (1)
- long extension / root hair gives a large surface area (1)

7. [4]

- enters root hair cells (from soil) (1)
- moves through root cortex cells (1)
- enters and moves up the xylem (1)
- (from xylem in the leaf) to mesophyll cells (1)

8. [1]

B B (1)

9. [4] **Supplement**

- place a fan at different distances from the leafy shoot / use different fan speeds (1)
- measure the distance moved by the air bubble in a set time (1)
- keep other variables the same, for example temperature / light / same shoot (1)
- repeat and calculate a mean (1)

10. [2] **Supplement**

- rate = distance ÷ time = $54 \div 6$ (1)
- 9 mm / min (1)