

Water uptake: practice questions

6 questions • 15 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 15

- 1** Why do root hair cells have long extensions? [1 mark]
- A. ☐ to increase the surface area for absorption
- B. ☐ to store water
- C. ☐ to carry out photosynthesis
- D. ☐ to transport sucrose
- 2** State two functions of root hair cells and explain how the root hair is adapted to carry them out. [3 marks]
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- 3** Outline the pathway taken by water from the soil to the mesophyll cells of a leaf. [4 marks]
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- 4** 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

5 A student places a freshly cut stem of a white flower in water containing a red stain. After 24 hours the petals have red veins. Describe how the student could use the stem to show where water travels, and state what they should see. **[4 marks]**

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6 Suggest two variables the student should control when comparing the uptake of stain in two different plants. **[2 marks]**

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Mark scheme

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

1. [1]

A A (1)

2. [3]

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

3. [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)

4. [1]

B B (1)

5. [4]

- cut a thin transverse section (of the stem) (1)
- view with a hand lens / microscope (1)
- red stain seen in small areas / the vascular bundles (1)
- these are the xylem, so water moves in the xylem (1)

6. [2]

- same type / species / size of plant (1)
- same volume / concentration of stain (1)
- same time / temperature / light (1)
- Max 2