

My Question Paper

| Question | Maximum Mark | Mark Awarded |
|-------------------|--------------|--------------|
| 1 | 13 | |
| Total Mark | | |

1. (a) Plants carry out the process of transpiration.

State what is meant by the term *transpiration*.

[2]

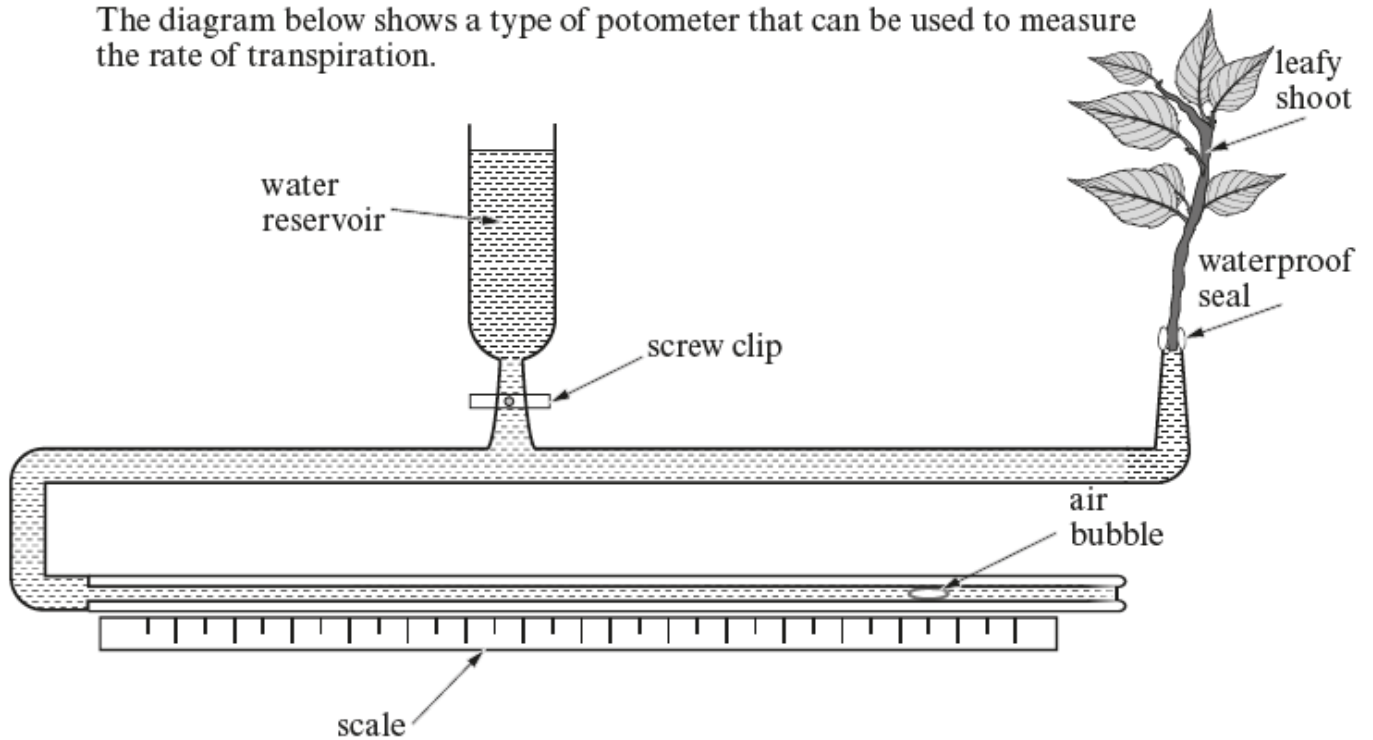
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The diagram below shows a type of potometer that can be used to measure the rate of transpiration.



- (b) State **two** practical measures which should be taken when setting up the apparatus to ensure the potometer functions correctly. Give reasons for your answers.

[4]

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(c) Water passes through the xylem of the root and stem of a plant before reaching its leaves.

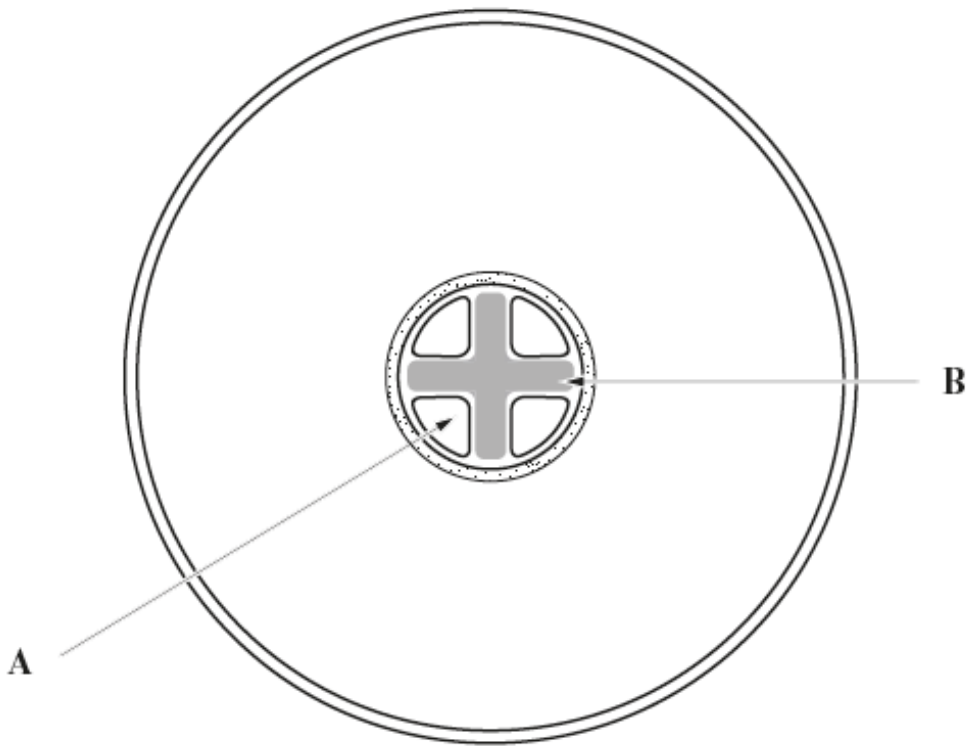
(i) Name the original source of energy that moves water through a plant

[1]

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(ii) Explain how water moves up the xylem.

[2]

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(d) The diagram below shows the cross section of a root.



(i) Name the **two** tissues labelled **A** and **B** on the diagram above.

[2]

A..... **B**.....

(ii) Explain how it is possible to tell that the diagram above is of a root and not a stem.

[2]

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Marking Scheme

1.

| Question | | Marking details | Marks Available |
|------------------|-----|--|-----------------|
| 2. | (a) | loss of water <u>vapour/ evaporation</u> of water; from (surface of) leaf /through stomata; Accept lenticels | 2 |
| | (b) | (i) TWO precautions and TWO reasons <ul style="list-style-type: none"> • Shoot cut under water/inserted under water/flood inside of apparatus with water/ assemble under water; to prevent air entering/ bubbles; • Shoot with large number of leaves; to ensure measurable rate of transpiration; • Avoid wetting leaves/ ensure leaves are dry; blocks stomata/ reduces rate of transpiration; • Leave time for apparatus to settle down; allow plant to adapt to new conditions/ to equilibrate; • Seal joints with Vaseline/ ensure screw clip is closed; to prevent air entering apparatus/ prevent leakage; • Ensure bubble set at appropriate position/ right hand end; to enable a (suitable) reading to be taken; Reference to not allowing air bubbles to enter = 1 mark (if no precautions are given) | 4 max |
| | (c) | (i) Sun(light); | 1 |
| | | (ii) Molecules of water moving together/ water pulled up; Because of <u>cohesion</u> of <u>molecules</u> ; <u>adhesion</u> to (walls of) { <u>xylem</u> / hydrophilic lining/ vessel wall}; root pressure {forces/ pushes} water upwards; IGNORE capillarity | 2 max |
| | (d) | (i) A= phloem; B= xylem; | 2 |
| | | (ii) {Xylem/ vascular <u>tissue</u> } is at the centre/ xylem is star shaped/ central stele; NOT bundle No vascular <u>bundles</u> / peripheral vascular <u>bundles</u> in stem; Endodermis visible in root/ no pith; | 2 max |
| Question 2 total | | | [13] |

Examiner's Comments

1. Although the majority of candidates could give a correct definition of transpiration, far too many stated that it was the loss of water rather than water vapour and that it was a loss from the plant as opposed to the leaves/stomata.

Many candidates appeared not to have handled a potometer or used one in practical work. The vast majority made vague references to leakages and air bubbles rather than specific details of setting up the apparatus.

In answer to part (c)(i) most candidates were able to describe in detail how water moved up through the xylem, though root pressure was poorly understood by those who mentioned it.

In answer to part (d) most candidates correctly identified phloem and xylem but few could give a coherent argument as to why this showed a root rather than a stem. Far too many referred to the xylem and phloem being in a 'vascular bundle' at the centre of the root. A significant number confused endodermis and epidermis and many maintained that they could see the casparian strip.

This comment originally referred to question 2 on paper 1072/01 (03/06/2013)