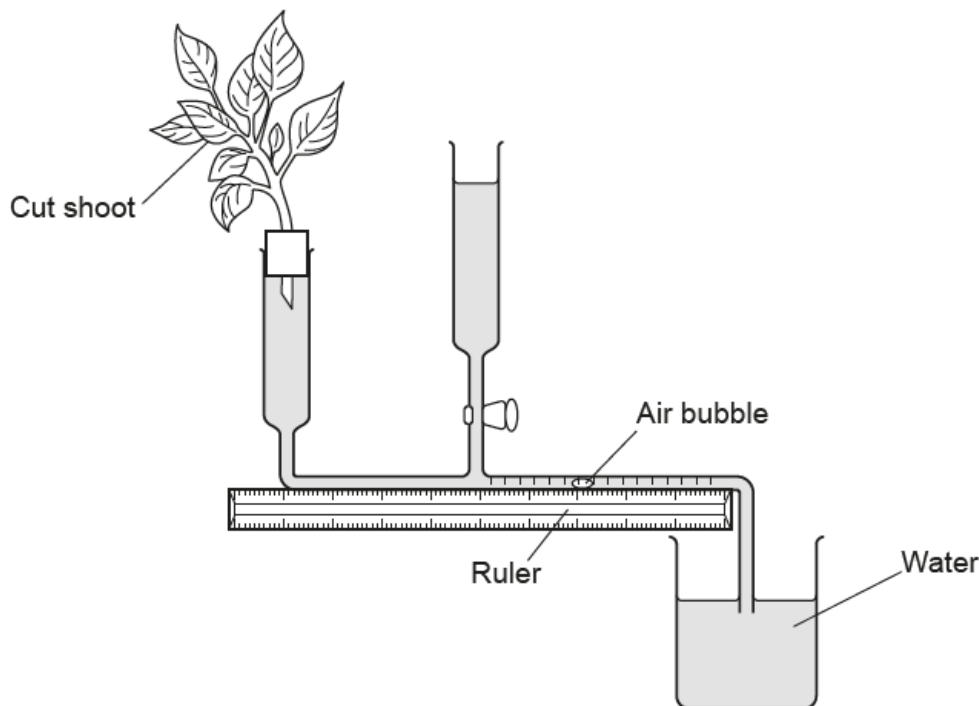


**Practical Skills – 2021/20 GCSE Gateway Biology Combined Science A**

**1. Nov 2021/Paper\_J250/01/No.14**

A student investigates the environmental factors that affect water uptake by plants.

The diagram shows the apparatus they use.



(a) (i) What is the name of the apparatus shown in the diagram?

Put a ring around the correct answer.

gas syringe      funnel      potometer      water bath

[1]

(ii) Describe how the student would use the air bubble to measure water uptake.

.....  
 .....  
 .....  
 ..... [2]

(iii) Write down **two** environmental factors that **increase** the rate of water uptake by plants.

1 .....  
 2 .....  
 [2]

(b) When they set up the apparatus, the student cut the shoot under water.

Suggest why.

.....  
 ..... [1]

(c) (i) Most of the water taken in by the plant is lost in transpiration.

Complete the table to compare the processes of **transpiration** and **translocation**.

	Transpiration	Translocation
<b>Substances transported</b>	water and .....	water and sugar
<b>Vessels used for transport</b>	xylem	.....
<b>Direction water moves in vessels</b>	..... .....	..... .....

[4]

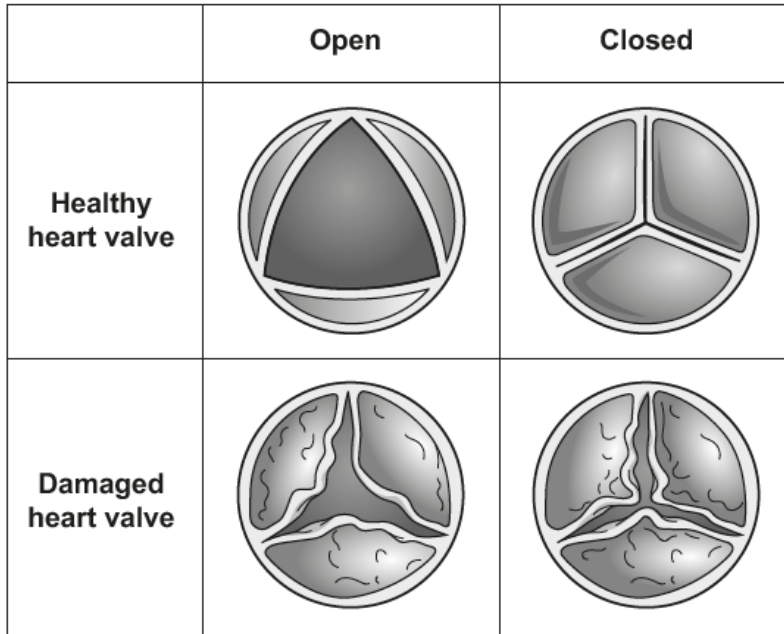
(ii) Water is transported in xylem vessels.

Write down **one** way xylem vessels are adapted to this function.

..... [1]

## 2. Nov 2021/Paper\_J250/07/No.14

(a) The diagrams show a healthy heart valve and a damaged heart valve.



A patient with a damaged heart valve may have these symptoms:

- shortness of breath
- feeling lightheaded, dizzy or faint.

Use the diagrams to explain why the damaged heart valve may cause these symptoms.

.....

.....

.....

..... [2]

(b) Adult stem cells can be used to grow new heart valves for the patient.

(i) The adult stem cells used are taken from the patient's own body.

Describe the function of stem cells inside the human body.

.....

..... [1]

- (ii) Stem cells could also be taken from a human embryo.

Suggest **two** advantages of using the patient's own adult stem cells rather than embryonic stem cells.

1 .....

.....

2 .....

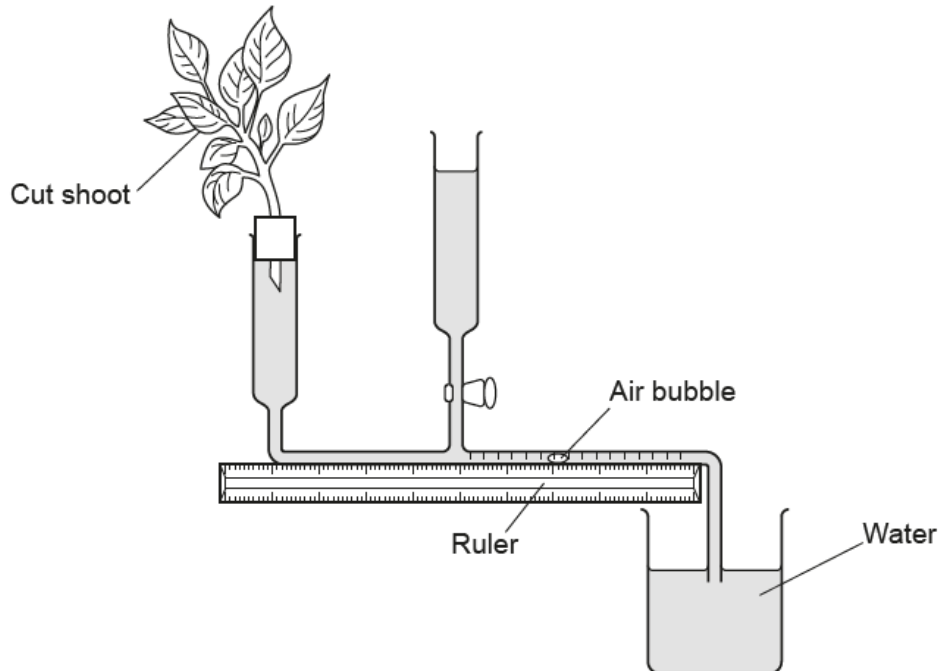
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[2]

3. Nov 2021/Paper\_J250/07/No.13

A student investigates the environmental factors that affect water uptake by plants.

The diagram shows the apparatus they use.



- (a) The student measures the distance the air bubble moves in 5 minutes. They then cover the cut shoot with a **black** plastic bag. The student then measures the distance the air bubble moves in 5 minutes again.

The air bubble moves less distance in 5 minutes when the cut shoot is covered.

Explain why.

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.....

..... [2]

- (b) Most of the water taken in by the plant is lost through transpiration.

Describe the process of water uptake **and** transpiration.

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.....

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..... [3]

- (c) Translocation occurs in phloem vessels.

Explain **two** ways phloem vessels are adapted to their function.

1 .....

.....

2 .....

.....

..... [2]