Past-paper walk-through

Xylem and phloem ▪ 8.1

eXercise

Questions in this set

- 0610/21 N25 Q12 ▪ 1 mark
- 0610/23 N25 Q9 ▪ 1 mark
- 0610/22 J25 Q14 ▪ 1 mark
- 0610/23 J25 Q13 ▪ 1 mark
- 0610/42 M25 Q5 ▪ 12 marks

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- // separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = "or words to that effect" – the wording need not match.

Question 12

0610/21 N25 ▪ Q12 ▪ 1 mark

12 What is a structural feature of xylem vessels?

A contain many mitochondria

B made up of cells joined end to end

C presence of cross walls

Question 12

D thin walls

Solution 12

Answer: **B**

Why

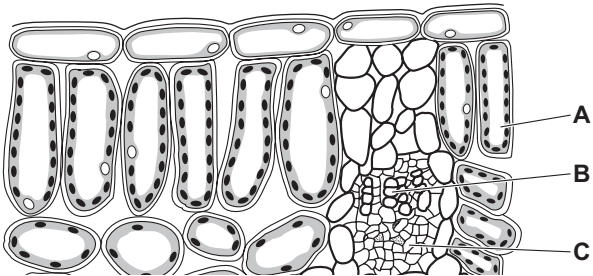
- Xylem vessels are formed from dead cells joined end to end.
- The end walls break down, leaving a continuous hollow tube.
- The walls are thick and lignified, and there are no mitochondria because the cells are dead.

Question 9

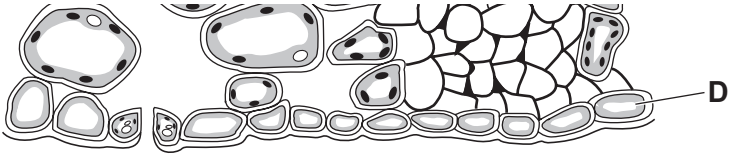
0610/23 N25 ▪ Q9 ▪ 1 mark

9 The diagram shows part of a cross-section of a leaf.

Which part is the xylem?



Question 9



Solution 9

Answer: **B**

Why

- Xylem lies on the *upper* side of the vein in a leaf, with phloem below it.
- Xylem cells are dead and hollow with thick, lignified walls.
- So look for the thick-walled empty vessels inside the vascular bundle.

Question 14

0610/22 J25 ▪ Q14 ▪ 1 mark

14 Which row shows the features of xylem vessels?

	vessel walls	mitochondria present
A	thick	yes
B	thick	no
C	thin	yes

Question 14

C	thin	yes
D	thin	no

Solution 14

Answer: **B**

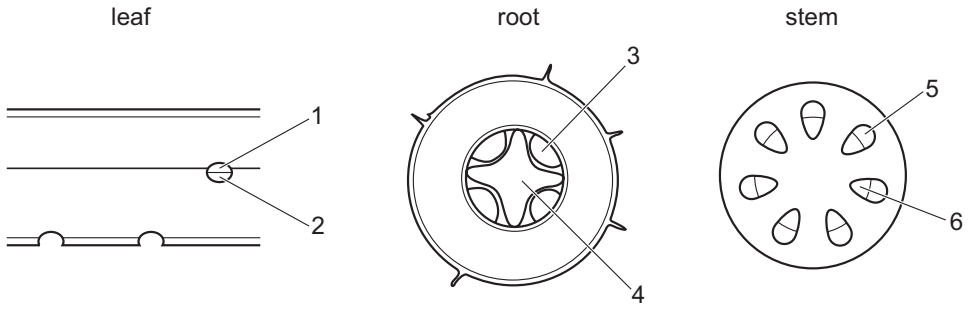
Why

- Xylem vessels must resist the tension of water being pulled up, so their walls are thick and lignified.
- They are dead and hollow, with no cytoplasm at all.
- So they contain no mitochondria – water transport in xylem needs no energy from the vessel itself.

Question 13

0610/23 J25 ▪ Q13 ▪ 1 mark

13 The diagrams show cross-sections of a leaf, a root and a stem.



Question 13

NOT TO SCALE

In which row do the numbers represent the xylem in the leaf, the root and the stem?

	leaf	root	stem
A	1	3	5
B	1	4	6
C	2	3	5
D	2	4	6

Solution 13

Answer: **B**

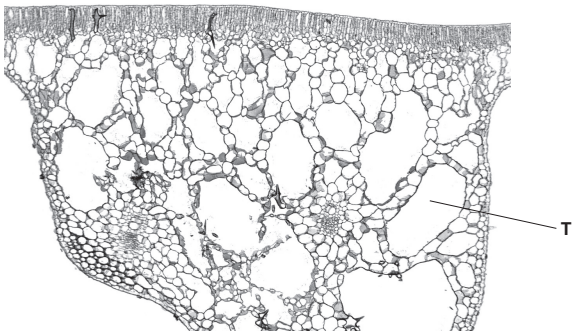
Why

- Xylem is always on the *inner* side of a vascular bundle.
- In a leaf that means the upper side of the vein; in a stem, inside the phloem ring.
- In a root the xylem forms the central star, with phloem between its arms.

Question 5

0610/42 M25 ▪ Q5 ▪ 12 marks

5 **(a)** Fig. 5.1 shows a cross-section of a leaf.



Question 5

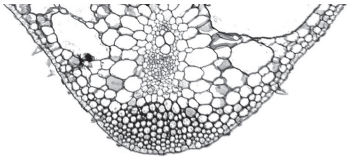


Fig. 5.1

(i) On Fig. 5.1, draw a circle around **one** vascular bundle. [1]

(ii) On Fig. 5.1, draw a label line and the letter **X** to identify the palisade mesophyll tissue. [1]

(iii) State the name of the cell structure in palisade mesophyll cells where photosynthesis occurs.

Question 5

(iv) Describe the functions of the tissues in a vascular bundle in a leaf.

Question 5

(b) The leaf shown in Fig. 5.1 is from an aquatic plant adapted to live in water. The leaves float on the surface of the water.

(i) State the term used to describe plants that are adapted to live in water.

Question 5

(ii) Identify feature **T** shown in Fig. 5.1 **and** explain how this feature adapts the leaf to float on the surface of the water.

Question 5

[2]

(iii) Explain **one** other adaptation of this group of aquatic plants.

Question 5

[Total: 12]

Solution 5

(a)(i)

Mark scheme

- circle drawn around one vascular bundle ;
- 1

(a)(ii)

Mark scheme

- X drawn to identify palisade mesophyll tissue ;
- 1

Solution 5

(a)(iii)

Mark scheme

- chloroplasts ;
- 1

Solution 5

(a)(iv)

Mark scheme

- ref to xylem and phloem ;
- phloem responsible for, translocation / transport of sucrose or amino acids ;
- xylem transports, water / mineral ions ;
- xylem provides support ;
- 4

Solution 5

(b)(i)

Mark scheme

- hydrophyte ;
- 1

Solution 5

(b)(ii) Mark scheme

- T:
- air space ;
- explanation:
- creates buoyancy / decreases density, (of leaf) ;
- 2
- 0610/42
- February/March 2025
- Guidance

Solution 5

(b)(iii) Mark scheme

- stomata on, upper epidermis / upper side of leaf ;
- allows gas exchange / AW ;
- or
- thin / no, cuticle ;
- no need to prevent water loss ;
- or
- AVP ;;
- 2 Explanation must be linked to correct

Solution 5

- description