

7.1 Structure of Transport Tissues

Question Paper

Course	CIE A Level Biology (9700) exams from 2022
Section	7. Transport in Plants
Topic	7.1 Structure of Transport Tissues
Difficulty	Hard

Time allowed: 10

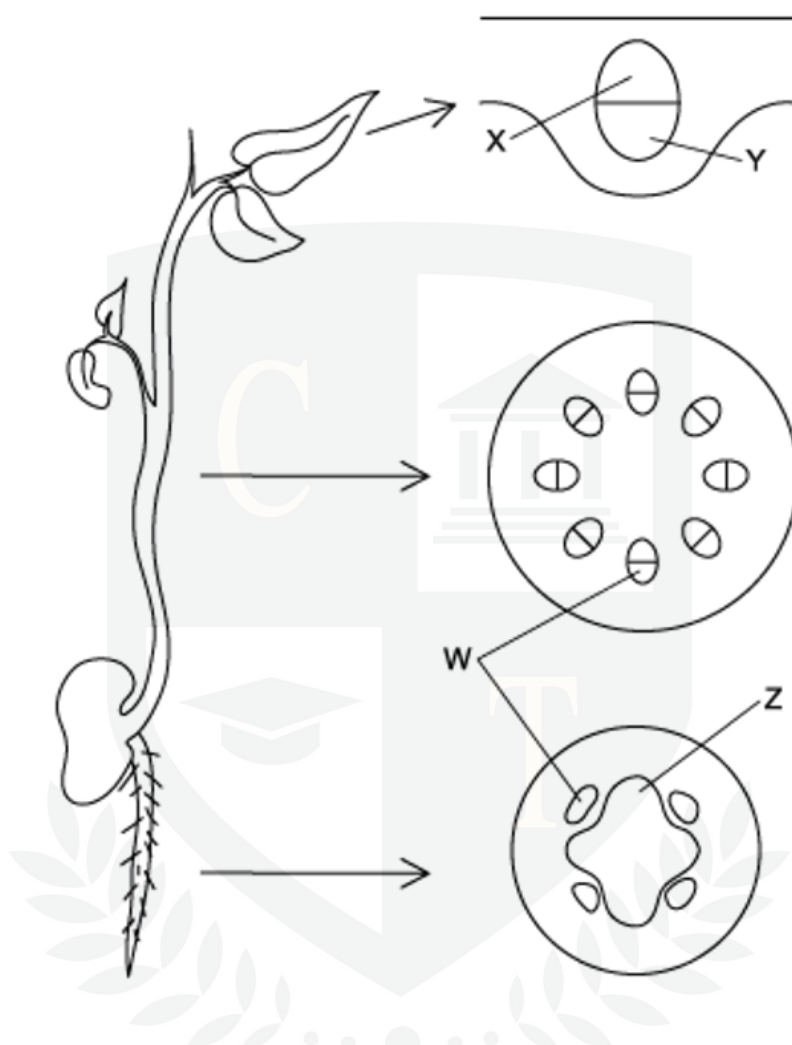
Score: /10

Percentage: /100

Question 1



The diagram shows three transverse plant sections.



What are the correct labels for **W**, **X**, **Y** and **Z**?

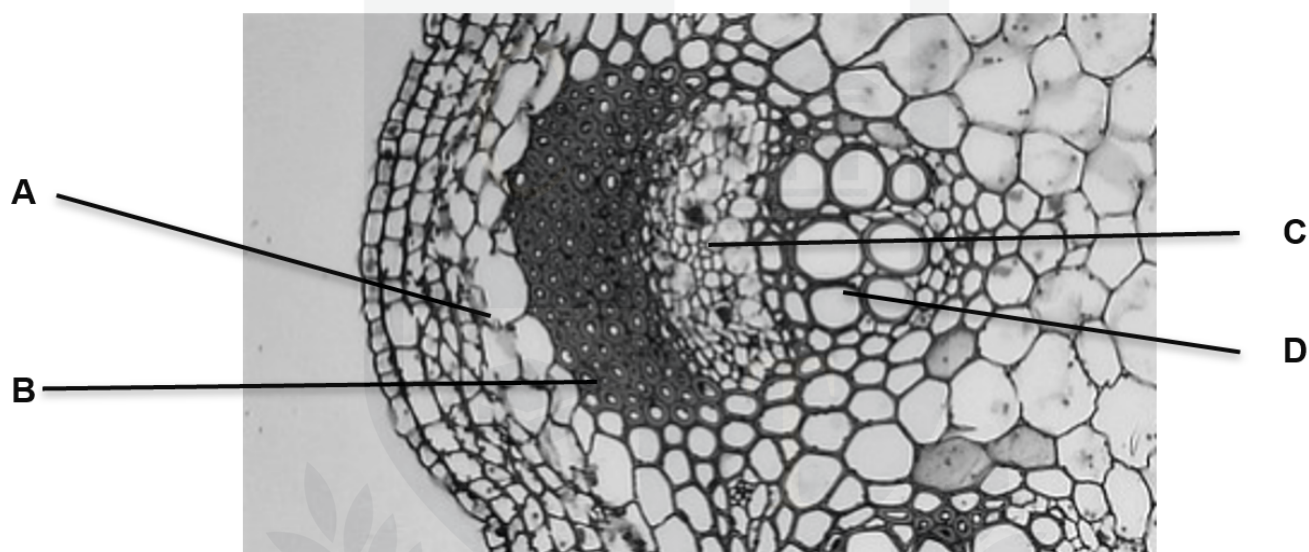
	W	X	Y	Z
A	phloem	phloem	xylem	xylem
B	xylem	phloem	xylem	phloem
C	phloem	xylem	phloem	xylem
D	xylem	xylem	phloem	phloem

[1 mark]

Question 2

This image shows the transverse section of a stem

Which is the phloem?



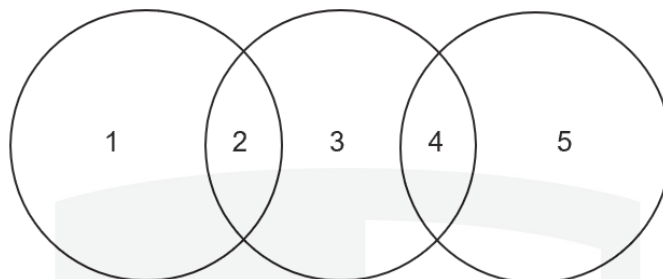
(Parenchymatous Pith in Young Helianthus - Wikimedia Commons)

[1 mark]

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Question 3

The diagram shows the relationship between xylem vessel elements, phloem sieve tube elements and companion cells.



Which row is correct?

	1	2	3	4	5
A	xylem vessel elements	lignified tissue	companion cells	mitochondria	sieve tube elements
B	companion cells	lignified tissue	xylem vessel elements	hollow structure	sieve tube elements
C	sieve tube elements	cytoplasm	companion cells	nucleus	xylem vessel elements
D	companion cells	endoplasmic reticulum	sieve tube elements	nucleus absent	xylem vessel elements

[1 mark]

Question 4

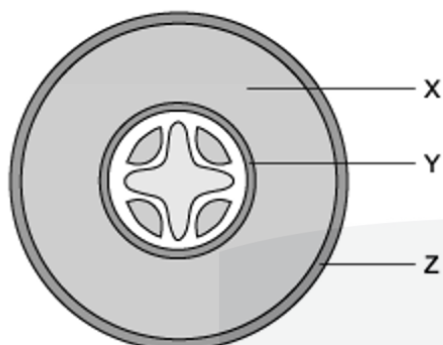
Four students were asked to suggest a set of five labels to add to a plan diagram of a transverse section of a dicotyledonous root.

	1	2	3	4	5
A	xylem	phloem	cortex	mitochondria	endodermis
B	cortex	vascular bundle	xylem	epidermis	phloem
C	epidermis	endodermis	companion cells	vascular bundle	xylem
D	xylem	cortex	sieve tube elements	cortex	vascular bundle

[1 mark]

Question 5

The diagram shows a transverse plant section.



What are the functions of **X**, **Y** and **Z**?

	X	Y	Z
A	storage of carbohydrates	regulates movement of water into and out of the vascular system	provides a physical barrier to pathogens
B	storage of carbohydrates	provides structural support for the plant	has a waxy cuticle to prevent water loss
C	allows movement of water from root hairs to vascular system	regulates movement of water into and out of the vascular system	has a waxy cuticle to prevent water loss
D	allows movement of water from root hairs to vascular system	provides structural support for the plant	provides a physical barrier to pathogens

[1 mark]

Question 6

Which labels would be suitable to add to a plan diagram of a transverse section of a dicotyledonous leaf?

- 1 palisade mesophyll
- 2 upper epidermis
- 3 spongy mesophyll
- 4 xylem vessel elements
- 5 phloem

A all 5 **B** 1, 2, 3 and 4 **C** 1, 4 and 5 **D** 1, 2, 3 and 5

[1 mark]

Question 7

Which row correctly identifies xylem vessel elements and sieve tube elements?

	xylem vessel element		sieve tube element		companion cell	
	cytoplasm	nucleus	cytoplasm	nucleus	cytoplasm	nucleus
A	✓	✓	X	X	X	✓
B	X	✓	✓	✓	✓	X
C	X	X	✓	X	✓	✓
D	X	X	✓	✓	✓	✓

Key: ✓= present X= absent

[1 mark]

Question 8

What is the most important function of companion cells in mature phloem tissue?

- A providing structural support for the sieve tube element
- B providing a source of sugars for the sieve tube element
- C providing cytoplasmic contact with the sieve tube element for loading
- D providing a nucleus for mitosis in the sieve tube element

[1 mark]

Question 9

Which of these is not a function of plasmodesmata in plant cells?

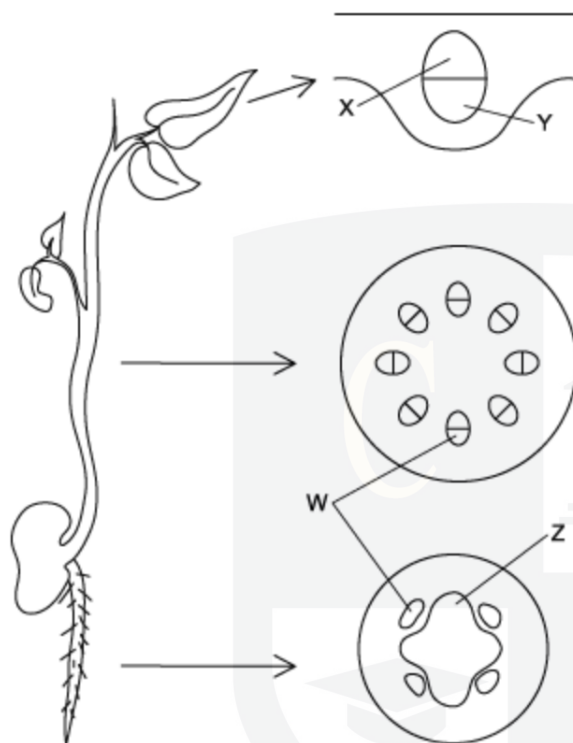
- A allow movement of water via symplastic pathway
- B enable cell recognition
- C allow communication between cells
- D allow movement of nutrients between cells

[1 mark]

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Question 10

The diagram shows three transverse plant sections.



Which of the following statements are correct?

- 1 **Y** has lignified tissue
- 2 the cells in **W** are dead
- 3 **X** transports the products of photosynthesis
- 4 **Z** has companion cells and sieve tube elements
- 5 movement in **Y** occurs in only one direction

A 1 and 3 **B** 2, 3 and 4 **C** 1, 4 and 5 **D** None

[1 mark]

