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	Medium

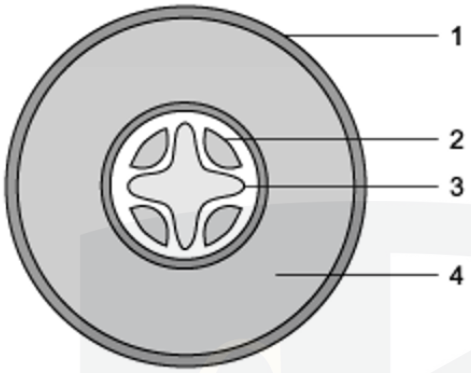
Time allowed: **10**

Score: **/10**

Percentage: **/100**

Question 1

The diagram shows a transverse section of a plant structure.



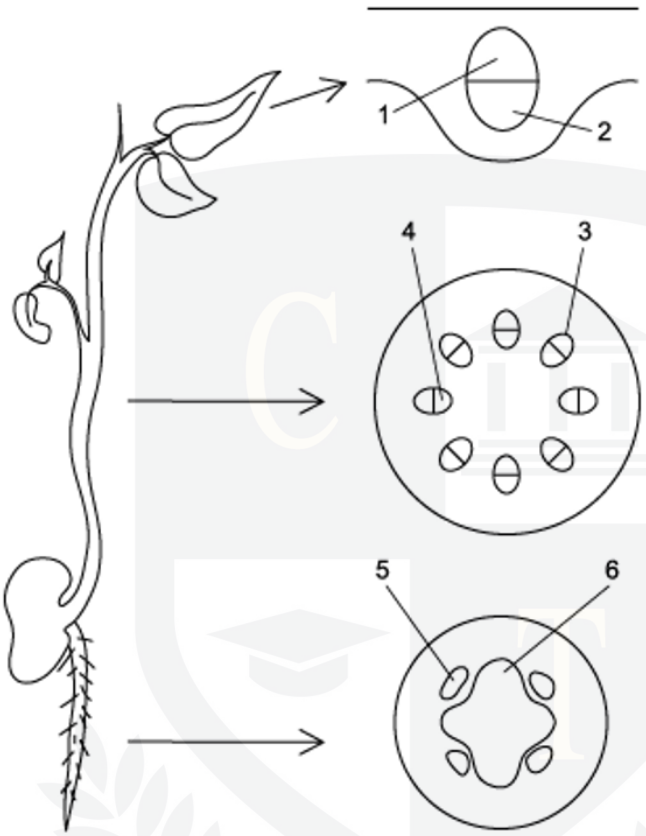
What are the correct labels for **1**, **2**, **3** and **4**?

	1	2	3	4
A	cuticle	xylem	phloem	pith
B	cuticle	phloem	xylem	pith
C	epidermis	xylem	phloem	cortex
D	epidermis	phloem	xylem	cortex

[1 mark]

Question 2

The diagrams represent the cross section of the stem, root and leaf of a non-woody dicotyledonous plant. In each section the distribution of the tissues is shown.



Which sequence of numbers correctly identifies the distribution of xylem and phloem in the stem, root and leaf?

	xylem	phloem
A	1 3 5	2 4 6
B	2 3 5	1 4 6
C	1 4 6	2 3 5
D	2 4 6	1 3 5

[1 mark]

Question 3

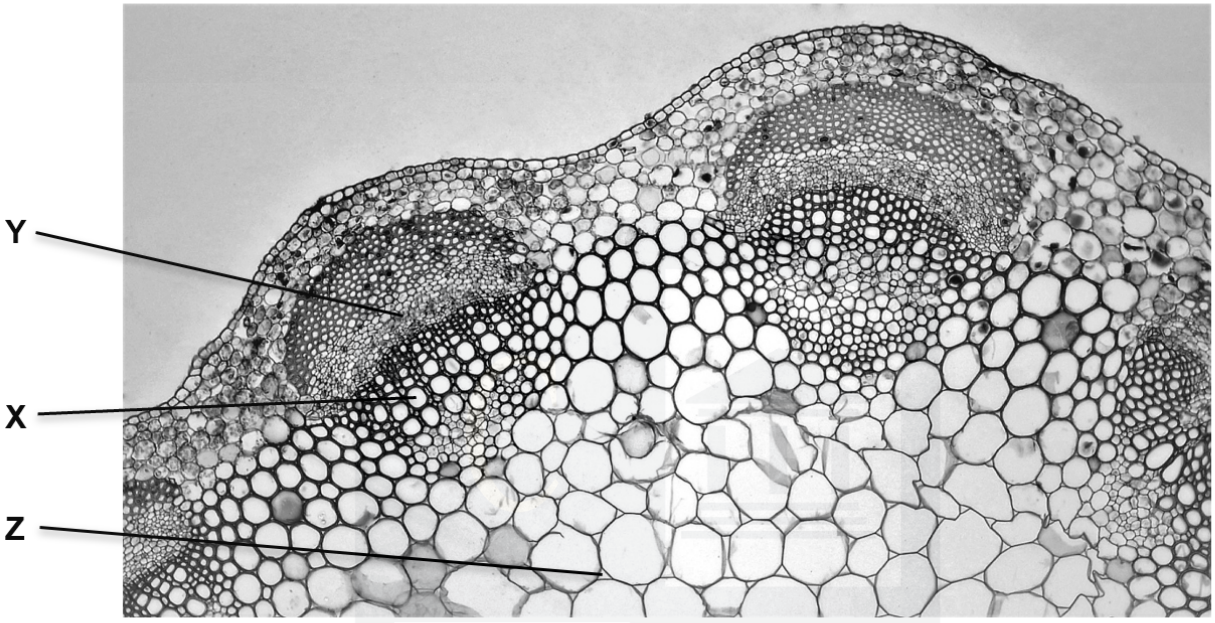
Which features of these cells make them suitable for their function?

	xylem vessel elements	companion cells
A	lignified walls provide support	nuclei allow cell division
B	nuclei allow cell division	cellulose wall provide support
C	no living tissue present	absence of cytoplasm allows mass flow
D	numerous mitochondria supply ATP	lignified walls provide support

[1 mark]

Question 4

The photomicrograph shows a cross section of the stem of a plant.



(Herbaceous Dicot Stem Cortex and Pith in Late Season Trifolium - Wikimedia Commons)

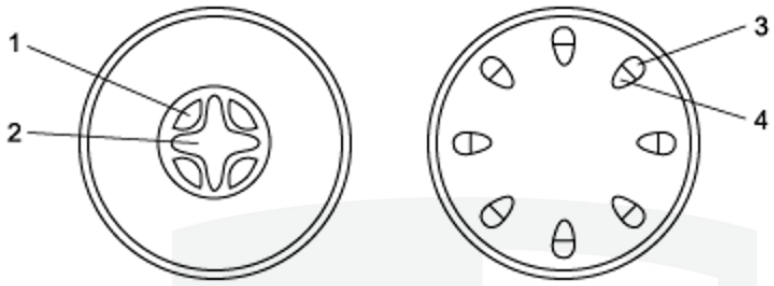
	X	Y	Z
A	xylem vessel element	cortex cell	companion cell
B	xylem vessel element	sieve tube element	airspace
C	sieve tube element	epidermal cell	pith cell
D	sieve tube element	xylem vessel element	cortex cell

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

[1 mark]

Question 5

The diagram shows transverse sections of two plant structures.



What are the correct labels for structures **1**, **2**, **3** and **4**?

	1	2	3	4
A	transports in two directions	transports in one direction	transports in one direction	transports ions and minerals
B	transports sugars	transports in one direction	transports in two directions	transports products of photosynthesis
C	transports sugars	transports in one direction	transports products of photosynthesis	transports ions and minerals
D	transports water	transports in two directions	transports in two directions	transports products of photosynthesis

[1 mark]

Question 6

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

	xylem vessel element			sieve tube element		
	nucleus	cytoplasm	end wall	nucleus	cytoplasm	end wall
A	✗	✗	✗	✗	✓	✓
B	✗	✓	✓	✗	✓	✓
C	✗	✗	✗	✓	✗	✗
D	✗	✗	✓	✓	✓	✗

Key: ✓= present X= absent

[1 mark]

Question 7

Which description states some of the features of xylem vessels?

A contains cells joined end to end, containing peripheral cytoplasm, cell walls with secondary thickening of lignin, located to the outside of phloem in vascular bundles

B cells joined to form a tube, sieve plates between cells, surrounded by the endodermis in roots

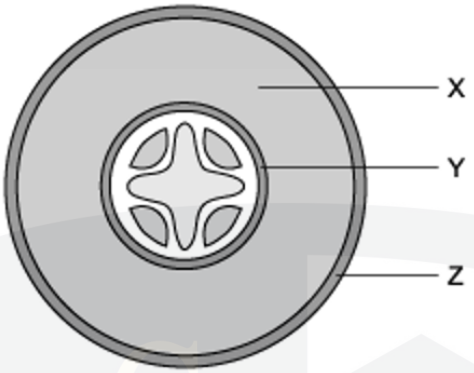
C dead elongated cells, lignified cell walls with pits at intervals, associated with companion cells in the roots only

D contains elongated cells with no end walls, located in vascular bundles in the stem and centrally in the roots

[1 mark]

Question 8

The diagram shows a transverse plant section.



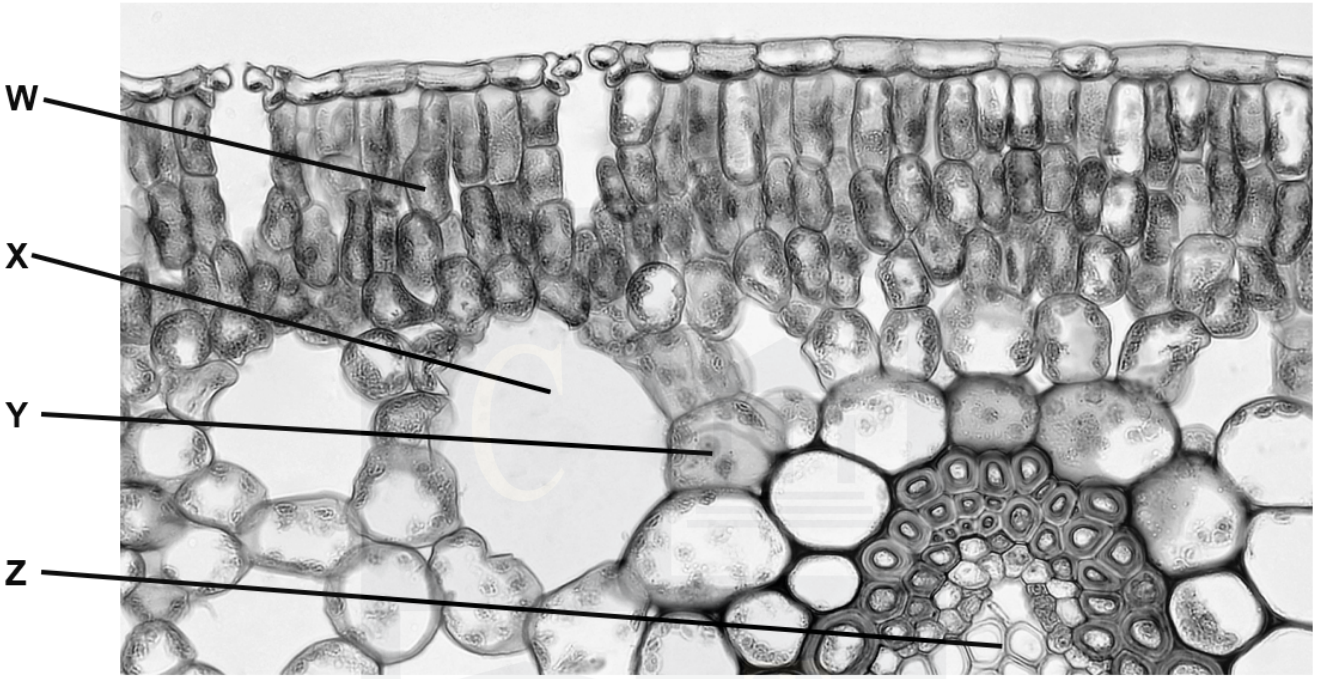
What are the correct labels for **X**, **Y** and **Z**?

	X	Y	Z
A	pith	endodermis	epidermis
B	cortex	endodermis	epidermis
C	pith	cortex	cuticle
D	endodermis	cortex	cuticle

[1 mark]

Question 9

The diagram shows the transverse section of a leaf



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

	W	X	Y	Z
A	palisade mesophyll	air space	phloem	xylem
B	guard cell	phloem	spongy mesophyll	phloem
C	guard cell	spongy mesophyll	cortex	phloem
D	palisade mesophyll	air space	spongy mesophyll	xylem

[1 mark]

Question 10

What is the function of plasmodesmata in plant cells?

A allow symplastic movement of substances between cells

B to act as a barrier to minerals and ions

C facilitate cell recognition

D allow active transport of sucrose between cells

[1 mark]