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Paper 1 (MCQ) - All Variants

(Syllabus 5090)

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period	2014 to 2025
contents	June & November, Paper 1 (All Variants), With Answers
form	Topic By Topic
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Revision

- November **2024** Paper 1 (All Variants)
- June / November **2025** Paper 1 (All Variants)

TOPIC 1

Cells

Cell structure and function, Specialised cells, tissues and organs

1. Which of the following have both cytoplasm and cell walls?

A liver cells **B** red blood cells **C** root hair cells **D** xylem vessels

[June 2014/P11/Q1]

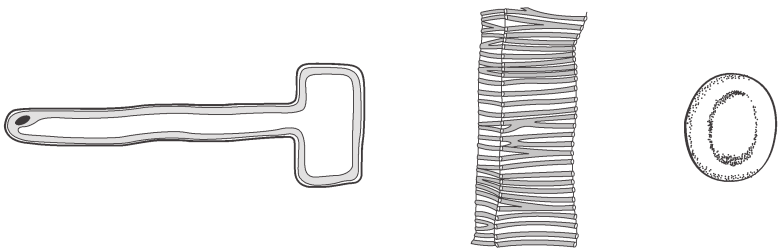
2. What are found in plant cells but **not** in animal cells?

1 cell membrane
2 nucleus
3 cell wall
4 chloroplast

A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

[June 2014/P12/Q1]

3. The diagram shows three cellular structures.



1 2 3

Which statements about these cells are correct?

	1	2	3
A	adapted to carry oxygen	lacks a nucleus	adapted to carry water
B	adapted to carry water	lacks a nucleus	is in contact with the soil
C	is in contact with the soil	adapted to carry water	adapted to carry oxygen
D	is in contact with the soil	is in contact with the soil	lacks a nucleus

[Nov 2014/P12/Q1]

4. The cell wall of a plant cell is removed using an enzyme.
What would happen if this cell is then placed in distilled water?

A It would take longer for the cell to become turgid.

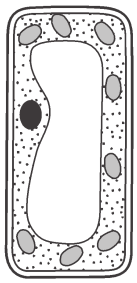
B Proteins in the cytoplasm would leave through the cell membrane.

C The cell would become smaller as water passes out.

D The cell would burst as water moves into it.

[June 2015/P11/Q1]

5. The diagram shows a plant cell.

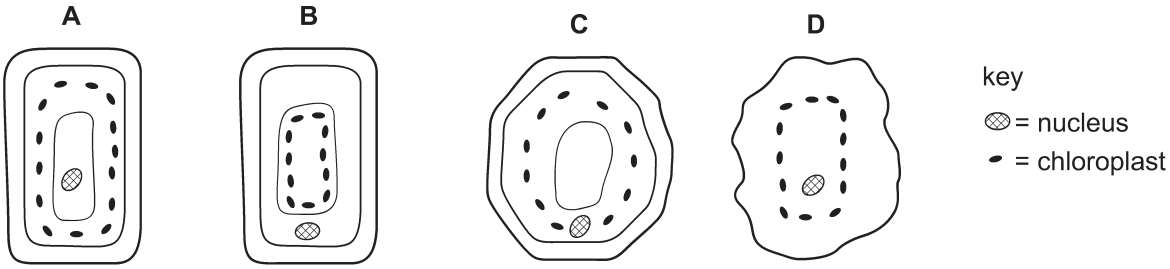


Which structure identifies this as a plant cell rather than an animal cell?

A cell membrane **B** cell wall **C** cytoplasm **D** nucleus

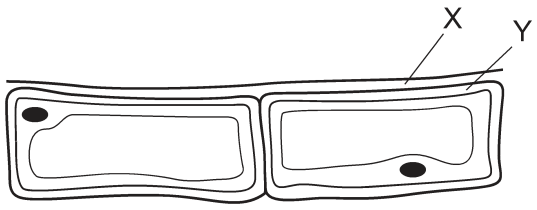
[June 2015/P12/Q1]

6. Which diagram shows the positions of the chloroplasts and the nucleus in a cell?



[Nov 2015/P12/Q1]

7. The diagram shows the upper layers of a leaf.



What are the structures labelled X and Y?

	X	Y
A	cell membrane	cell wall
B	cell wall	cell membrane
C	cell wall	cuticle
D	cuticle	cell wall

[Nov 2015/P12/Q5]

8. Which organelles are found in both animal and plant cells?

1 cell membrane
2 cell wall
3 nucleus
4 sap vacuole

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

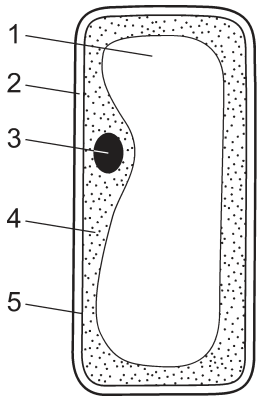
[June 2016/P12/Q1]

9. Which row correctly shows the function of a cell structure and its location?

	cell structure	function	location
A	cell membrane	controls the passage of substances into and out of cells	both plant and animal cells
B	cell membrane	maintains turgor	both plant and animal cells
C	cell wall	controls the passage of substances into and out of cells	plant cells only
D	cell wall	maintains turgor	animal cells only

[Nov 2016/P11/Q1]

10. The diagram shows a plant cell.

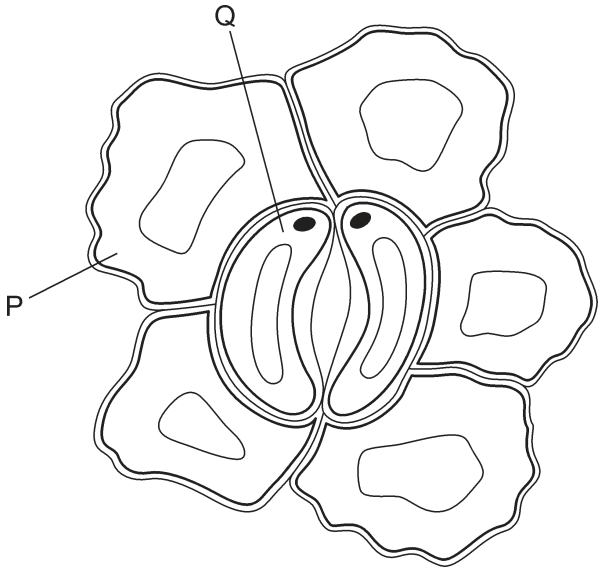


Which two structures are **not** found in animal cells?

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

[Nov 2016/P12/Q1]

11. The diagram shows cells in the epidermis of a leaf.



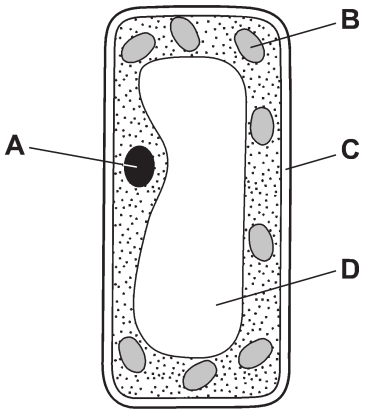
To complete the diagram, which structural features should be added to the cells P and Q?

	P		Q	
	chloroplasts	nucleus	chloroplasts	nucleus
A	✓	✓	✗	✗
B	✓	✗	✓	✓
C	✗	✓	✓	✗
D	✗	✗	✗	✓

key
✓ = yes
✗ = no

[Nov 2017/P11/P12/Q1]
Repeat [Nov 2014/P11/Q1]

12. The diagram shows a palisade cell.
Which structure is the site of photosynthesis?



[June 2018/P11/Q1]

13. Which feature indicates that a root cell is from a plant and **not** an animal?

A cell membrane **B** cell wall **C** chloroplast **D** cytoplasm

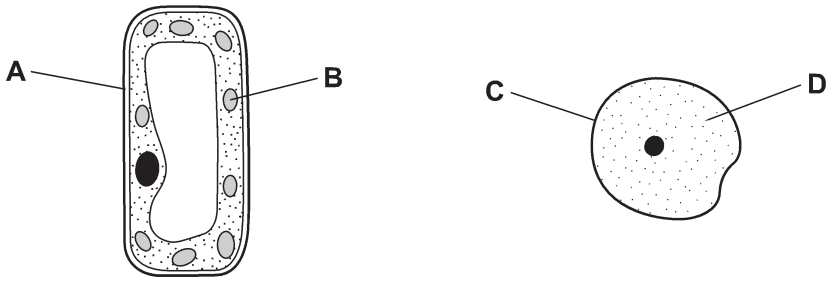
[June 2018/P12/Q1]

14. A cell is observed under a microscope.
Which feature identifies it as a plant cell?

A The cell contains a single large sap vacuole.
B The cell contains glucose and amino acids.
C The cell contains stored fat.
D The cell surface membrane is partially permeable.

[Nov 2018/P12/Q1]

15. The diagram shows a cell from a plant leaf and a cell from an animal's skin.
Which part will stain blue-black with iodine solution?



[June 2019/P11/Q1]

16. Which two structures are found in all plant epidermal cells?

A cell wall and chloroplasts **B** cell wall and nucleus
C chloroplasts and starch grains **D** nucleus and starch grains

[June 2019/P12/Q1]
Repeat [June 2016/P11/Q1]

17. During a lesson about animal and plant cells, a student reads out a number of statements about cell structure. Only three of his statements are correct.

1 All cells have a cell wall.
2 Cell walls are made of cellulose.
3 Chromosomes carry DNA.
4 Cell walls contain starch.
5 All cells have a cell membrane.
6 A sap vacuole helps an animal cell maintain its turgor.
7 Chromosomes are found in the cytoplasm.

Which three statements are correct?

A 1, 3 and 7 **B** 2, 3 and 5 **C** 2, 4 and 6 **D** 4, 5 and 7

[Nov 2019/P11/Q1]

18. A human cheek cell and a spongy mesophyll cell from a leaf are examined under a microscope. Which structures are seen in both cells?

A cell membrane, nucleus and cytoplasm
B cell wall, cell membrane and nucleus
C cytoplasm, cell wall and cell membrane
D nucleus, cytoplasm and cell wall

[Nov 2019/P12/Q1]

19. Which structure is present in a liver cell and in a leaf cell?

A cell wall **B** chloroplast **C** cytoplasm **D** sap vacuole

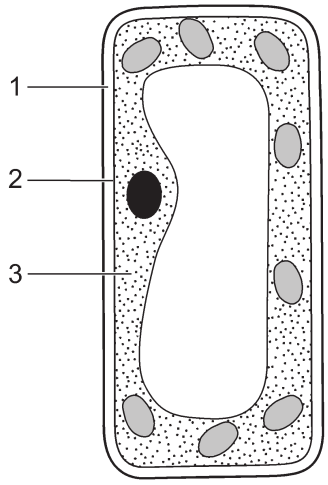
[June 2020/P11/Q1]

20. Starting with the smallest, and ending with the largest, what is the correct sequence of these parts of an organism?

A chromosome → gene → nucleus → cell → tissue
B chromosome → gene → nucleus → tissue → cell
C gene → chromosome → nucleus → cell → tissue
D gene → chromosome → nucleus → tissue → cell

[June 2020/P12/Q1]

21. The diagram shows the structure of a cell from a leaf of a green plant.



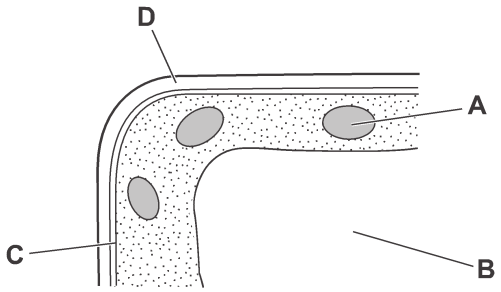
What are the numbered parts of the cell?

	1	2	3
A	cell membrane	cell wall	cytoplasm
B	cell membrane	cytoplasm	cell wall
C	cell wall	cytoplasm	cell membrane
D	cell wall	cell membrane	cytoplasm

[Nov 2020/P11/Q1]

22. The diagram shows part of a plant cell.

Which part controls the entry of substances into the cell?



[Nov 2020/P12/Q1]

23. Which structures are present in plant cells but **not** in animal cells?

A cell membrane, cytoplasm, chloroplasts

B cell wall, chloroplasts, sap vacuole

C cell wall, cell membrane, cytoplasm

D cytoplasm, nucleus, chloroplasts

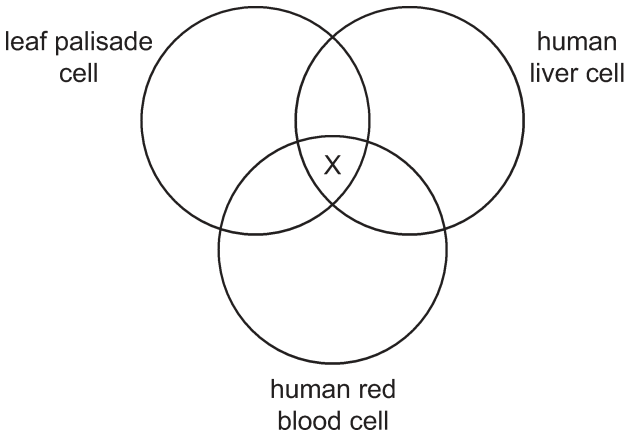
[June 2021/P11/Q1]

24. Which row is correct?

	cell	tissue	organ	organ system
A	chloroplast	mesophyll	liver	digestive
B	sap vacuole	red blood cell	blood	nervous
C	red blood cell	sap vacuole	stomach	liver
D	neurone	vascular bundle	leaf	excretory

[June 2021/P12/Q1]

25. The diagram represents the cell structures of a human liver cell, a leaf palisade cell and a human red blood cell.



Which cell structure is X?

A cell wall **B** chloroplast **C** cytoplasm **D** nucleus

[Nov 2021/P11/Q1]

TOPIC 1

Answer Keys

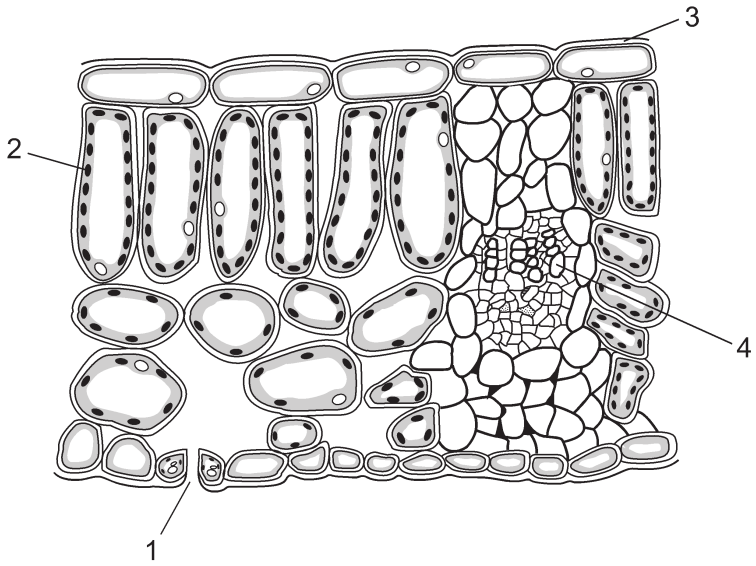
1. C	2. D	3. C	4. D	5. B	6. C
7. D	8. A	9. A	10. A	11. C	12. B
13. B	14. A	15. B	16. B	17. B	18. A
19. C	20. C	21. D	22. C	23. B	24. D
25. C	26. B	27. C	28. C	29. B	30. B
31. A	32. A	33. B	34. C	35. B	36. D

TOPIC 7

Transport in Flowering Plants

Uptake and Transport of Water & Ions, Transpiration and Translocation

1. The diagram shows the structure of a leaf of a dicotyledonous plant.



What are the functions of the parts labelled on the diagram?

	1	2	3	4
A	gaseous exchange	photosynthesis	reducing evaporation	transport
B	photosynthesis	gaseous exchange	transport	reducing evaporation
C	photosynthesis	reducing evaporation	gaseous exchange	transport
D	transport	reducing evaporation	gaseous exchange	photosynthesis

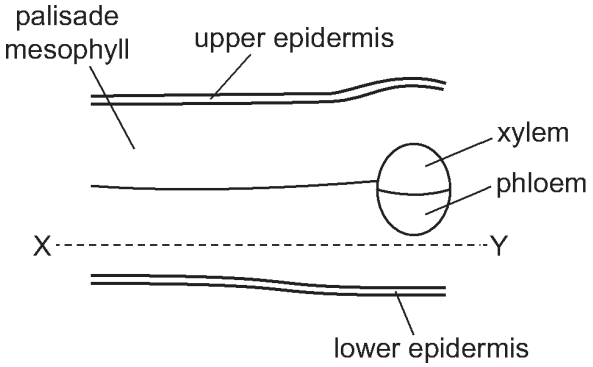
[June 2014/P11/Q5]

2. Which effects will an increase in temperature and an increase in humidity have on the transpiration rate of a plant?

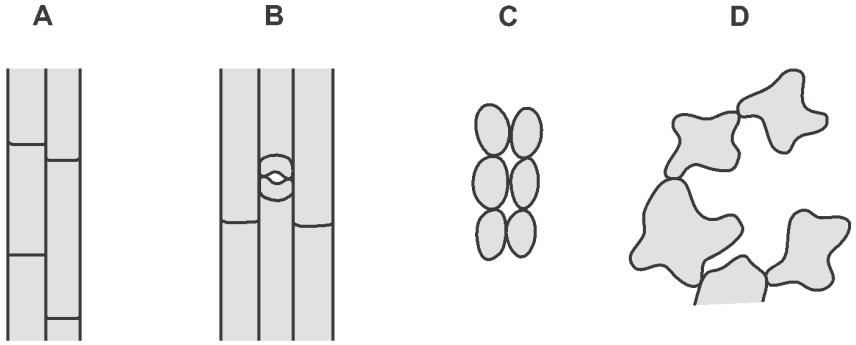
	transpiration rate	
	with increased temperature	with increased humidity
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

[June 2014/P11/Q12]

3. The diagram shows the arrangement of the tissues of a leaf as seen in cross-section under the microscope.



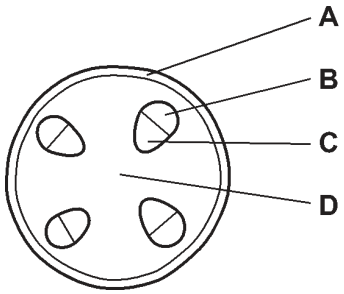
What is the arrangement of the cells in the section X-Y?



[June 2014/P12/Q7]

4. The diagram shows a section through the stem of a dicotyledonous plant.

Which tissue transports sugars through the stem?



[June 2014/P11/P12/Q11]

5. What is the main source of the energy that causes water to rise up a plant stem?

A difference in water potential between cell sap and soil water

B heat from the Sun

C light absorbed by chlorophyll

D respiration of sugars made in photosynthesis

[June 2014/P12/Q12]

6. Which statement describes transpiration?

A evaporation of water from mesophyll cells and its loss through the stomata

B gaseous exchange between the leaves and the atmosphere

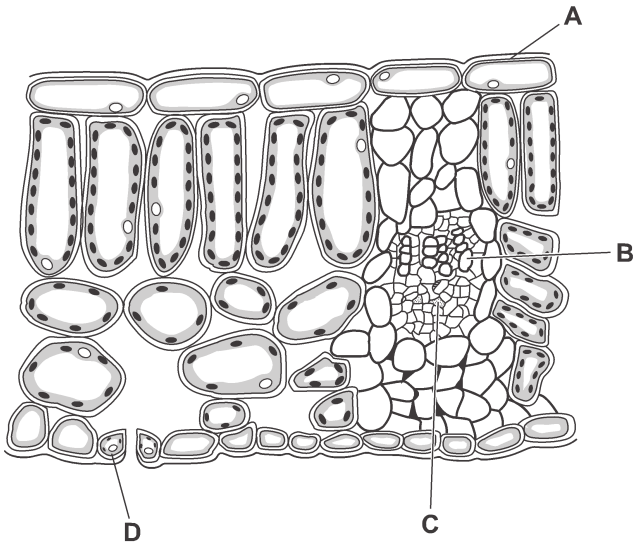
C movement of water by osmosis from the roots to the leaves

D movement of water up through the xylem and into the mesophyll cells

[Nov 2014/P11/Q12]

7. The diagram shows a section through part of a dicotyledonous leaf, as seen under the microscope.

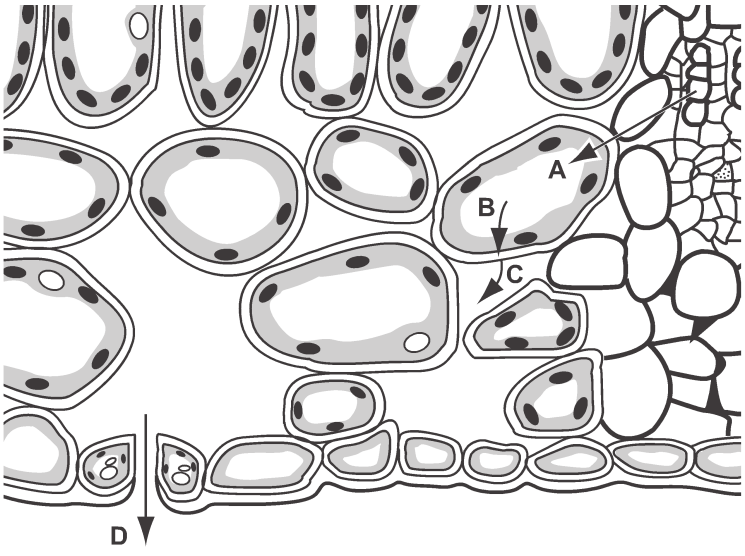
Where is the xylem?



[Nov 2014/P12/Q5]

8. The diagram shows the movement of water molecules in a leaf from the xylem to the atmosphere.

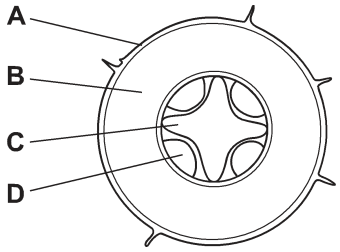
At which stage does evaporation occur?



[Nov 2014/P12/Q12]

9. The diagram shows a section through a root.

Which tissue transports amino acids?



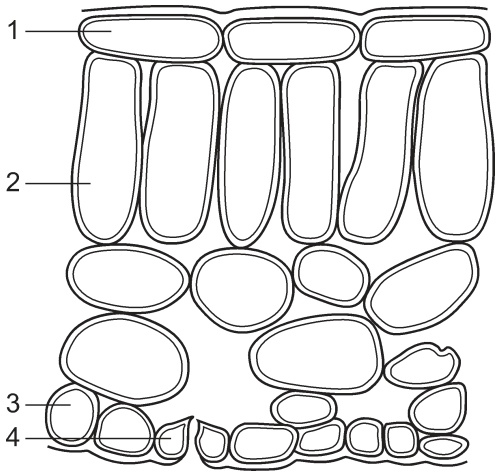
[Nov 2014/P11/P12/Q11]

10. Under which set of conditions will the transpiration rate of a well-watered plant be fastest?

A a cool, dry, windless day
B a cool, rainy, windy day
C a hot, dry, windy day
D a hot, rainy, windy day

[June 2015/P11/Q11]

11. The diagram shows cells in a section through a leaf of a typical green plant. (No cell contents are shown.)



Which cells usually contain chloroplasts?

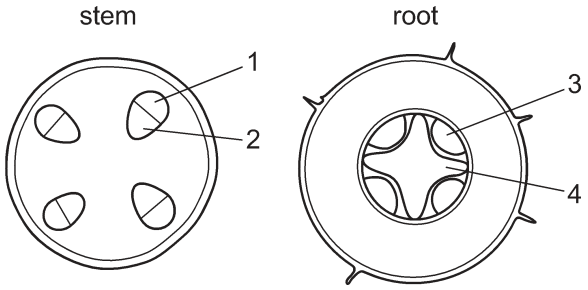
A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

[June 2015/P11/P12/Q7]

12. The diagrams show transverse sections of a plant stem and of a plant root.

Which regions contain xylem vessels?

A 1 and 3
B 1 and 4
C 2 and 3
D 2 and 4



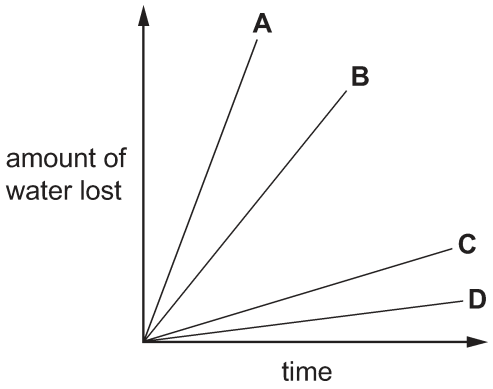
[June 2015/P12/Q11]

13. In an experiment to investigate transpiration, the leaves of four identical shoots are treated as follows.

1 upper surfaces covered with waterproof jelly
2 lower surfaces covered with waterproof jelly
3 upper and lower surfaces covered with waterproof jelly
4 untreated

The graph shows the water lost by the four shoots.

Which line shows the result for shoot 4?



[June 2015/P12/Q12]

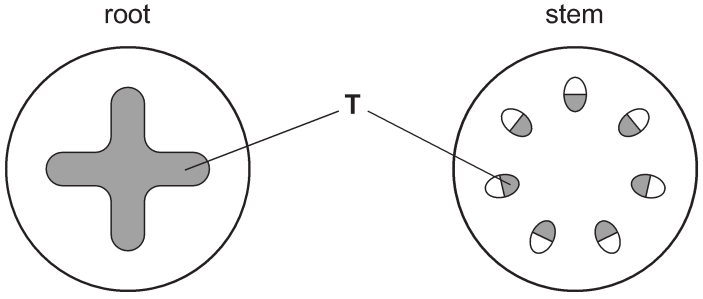
14. Which features of the mesophyll layer in a leaf aid rapid diffusion of carbon dioxide into the cells?

	air spaces	layer of moisture on the outside of the cell walls
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key
✓ = aids diffusion
✗ = does not aid diffusion

[Nov 2015/P11/Q6]

15. The diagram shows cross-sections through the root and stem of the same plant.



What is tissue **T**?

A epidermis **B** mesophyll **C** phloem **D** xylem

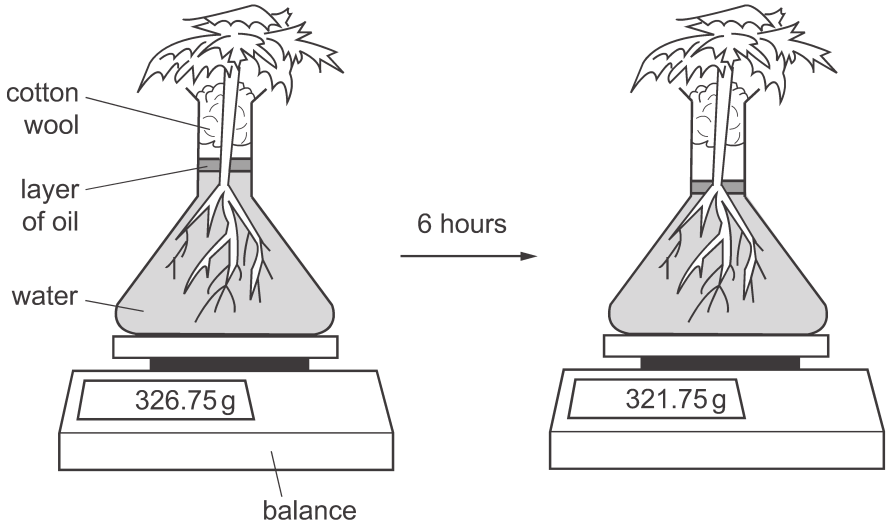
[Nov 2015/P11/Q11]

16. Samples of four different tissues are removed from the same plant.
The concentration of water in each of the four tissues is measured.
Which tissue is likely to have the highest water concentration?

A leaf epithelium **B** leaf mesophyll **C** root epidermis **D** xylem

[Nov 2015/P12/Q11]

17. The diagrams show a plant in a flask of water. It is left in the light at 16 °C for six hours.

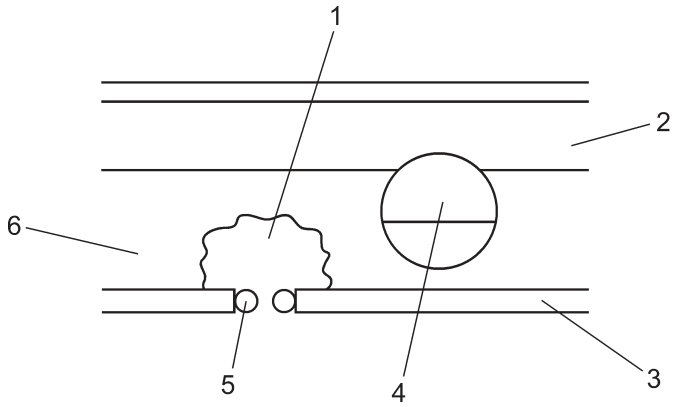


What explains the change in mass after six hours?

A absorption of water into the root hairs
B evaporation of water from the flask
C photosynthesis in the leaves of the plant
D transpiration from the leaves of the plant

[Nov 2015/P11/P12/Q12]

18. The diagram shows a cross-section of a dicotyledonous leaf.

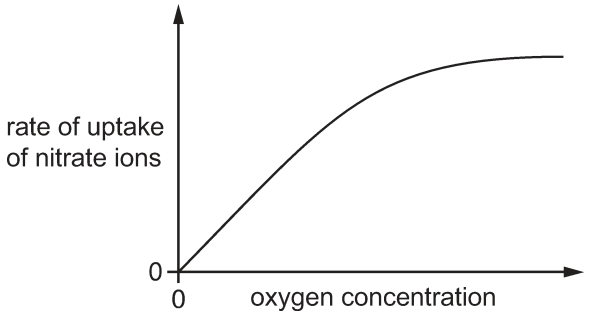


Which labelled parts of the leaf carry out photosynthesis?

A 1, 2 and 3 **B** 1, 3 and 4 **C** 2, 5 and 6 **D** 4, 5 and 6

[June 2016/P11/Q6]

19. The graph shows the effect of oxygen concentration on the uptake of nitrate ions from the soil into a root hair cell.



What can be concluded from this information?

A Nitrate ions enter the root hair cell by active transport.

B Nitrate ions enter the root hair cell by osmosis.

C Nitrate ions leave the root hair cell by diffusion.

D Nitrate ions leave the root hair cell in low oxygen concentrations.

[June 2016/P11/Q12]

20. What shows how the rate of transpiration changes when conditions in the atmosphere change?

	reduced wind	increased humidity
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

[June 2016/P12/Q11]

21. A growing plant is regularly watered with a solution. The composition of the solution is changed after which the plant's leaves become yellow in colour.

How can this problem be corrected?

A adding amino acids to the solution

B adding magnesium ions to the solution

C bubbling carbon dioxide through the solution

D bubbling oxygen through the solution

[Nov 2016/P12/Q6]

22. In which direction do water molecules move in the phloem and in the xylem of a plant stem?

	phloem	xylem
A	down only	up only
B	up only	down only
C	up only	both up and down
D	both up and down	up only

[Nov 2016/P11/P12/Q11]

TOPIC 7

Answer Keys

1. A	2. C	3. D	4. B	5. B	6. A
7. B	8. C	9. D	10. C	11. D	12. D
13. A	14. A	15. D	16. D	17. D	18. C
19. A	20. A	21. B	22. D	23. D	24. C
25. D	26. D	27. B	28. B	29. D	30. B
31. C	32. C	33. A	34. D	35. B	36. A
37. A	38. D	39. D	40. A	41. D	42. C
43. B	44. A	45. C	46. B	47. B	48. C
49. B	50. C	51. B	52. B	53. A	54. C
55. B	56. B	57. A	58. B	59. D	60. A
61. B	62. D	63. D	64. C	65. B	66. A
67. A	68. D	69. D	70. C	71. C	