# Specialised Cells, Tissues & Organs

## Question Paper

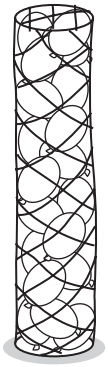
| | |
|---|---|
| Level | O Level |
| Subject | Biology |
| Exam Board | Cambridge International Examinations |
| Topic | Cell Structure and Organisation |
| Sub Topic | Specialised Cells, Tissues & Organs |
| Booklet | Question Paper |

**Time Allowed:** **27 minutes**

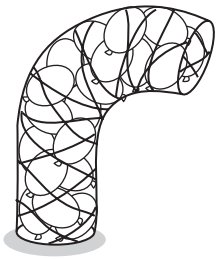
**Score:** **/22**

**Percentage:** **/100**

1 The diagrams show a cylindrical net packed with rubber balloons full of air. The structure is used by a teacher to explain wilting.



all the balloons fully inflated



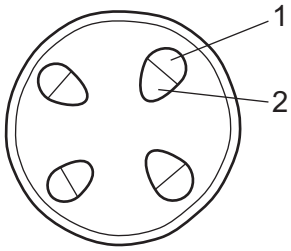
the same number of balloons with some of the air let out

What is represented by the parts of the structure shown?

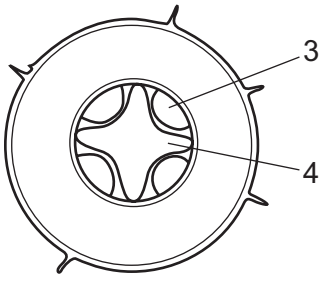
| | air | ballo | net | rubber |
|---|---|---|---|---|
| **A** | cells | cell sap | cell walls | epidermis |
| **B** | cell sap | cells | epidermis | cell walls |
| **C** | cell walls | epidermis | cell sap | cells |
| **D** | epidermis | cell walls | cells | cell sap |

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

stem




root




Which regions contain xylem vessels?

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

**3** 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

4 Which of the following have both cytoplasm and cell walls?

**A** liver cells

**B** red blood cells

**C** root hair cells

**D** xylem vessels

5 Which structures are present in a root hair cell?

| | nucleus | chlo |
|---|---|---|
| **A** | ✓ | ✓ |
| **B** | ✓ | ✗ |
| **C** | ✗ | ✓ |
| **D** | ✗ | ✗ |

key

✓ = present

✗ = absent

6 Some processes which occur in flowering plants are listed.

1 ion uptake by roots hairs

2 water uptake by root hairs

3 ion movement up the xylem in the stem

4 water vapour loss by the mesophyll cells of the leaves

Which processes are controlled by cell surface membranes?

**A** 1 only

**B** 1 and 3

**C** 2 only

**D** 3 and 4

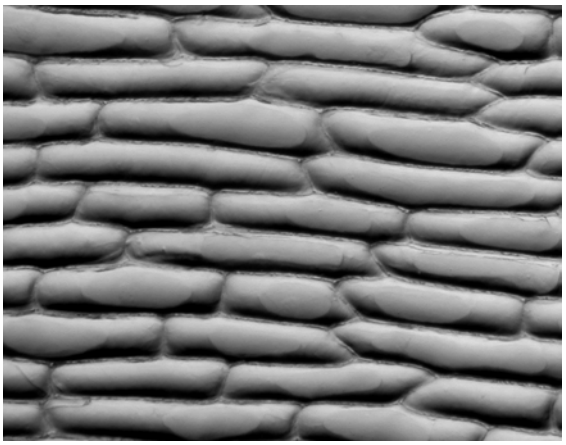
7 The sentence describes the uptake of water by a plant.

Water moves into the root hairs of a plant by osmosis through a .....1..... permeable cell membrane, ……2…… a water potential gradient.

Which words correctly complete gaps 1 and 2?

| | 1 | 2 |
|---|---|---|
| **A** | fully | down |
| **B** | fully | up |
| **C** | partially | down |
| **D** | partially | up |

8 The photomicrograph shows onion epidermis.



Which term describes this onion epidermis?

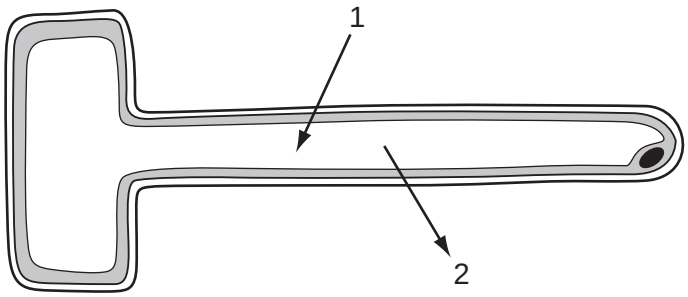
**A** cell

**B** organ

**C** organ system

**D** tissue

9 The diagram shows a root hair.




Which arrows show the direction in which it is **possible** for nitrate ions and water molecules to move?

| | nitrate ions | water molecules |
|---|---|---|
| **A** | 1 only | 1 and 2 |
| **B** | 1 and 2 | 1 and 2 |
| **C** | 1 and 2 | 2 only |
| **D** | 2 only | 1 only |

10 Which adaptations of a root hair cell make it suitable for water uptake?

| | partially permeable cell membrane | surface area to volume ratio of the cell |
|---|---|---|
| **A** | absent | high |
| **B** | absent | low |
| **C** | present | high |
| **D** | present | low |

11 Which terms describe the parts of a plant?

| | leaf | leaf mesophyll | leaf epidermis |
|---|---|---|---|
| **A** | organ | cell | tissue |
| **B** | organ | tissue | tissue |
| **C** | organ system | tissue | cell |
| **D** | tissue | cell | cell |

12 Which processes can take place in a root hair cell when oxygen is **not** available?

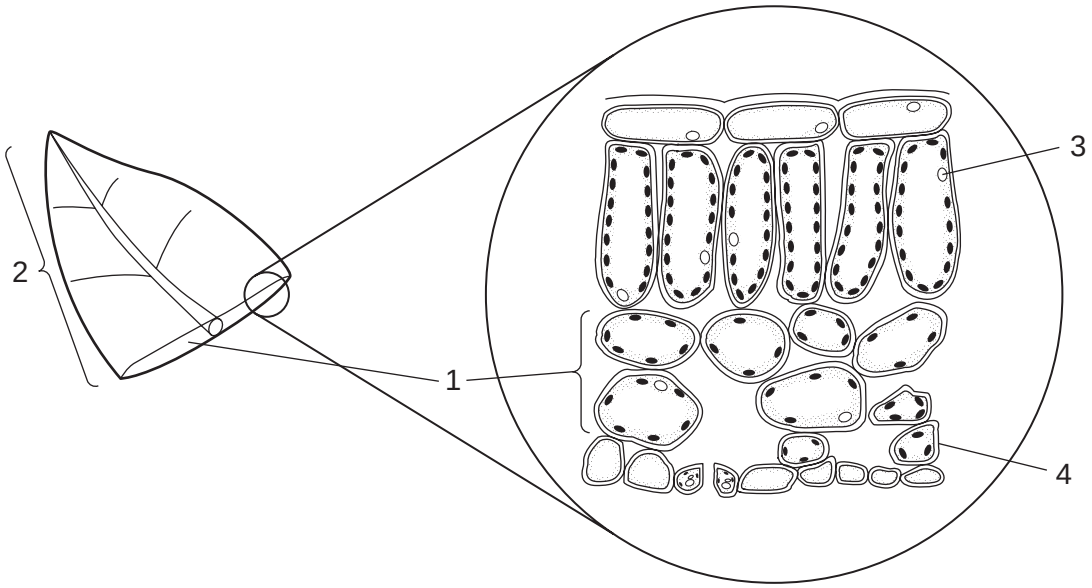
**A** active transport only

**B** diffusion only

**C** active transport and osmosis only

**D** diffusion and osmosis only

13 The diagram shows the structure of a leaf.




Which letter identifies a cell, a tissue and an organ?

| | cell | tissue | organ |
|---|---|---|---|
| **A** | 3 | 2 | 4 |
| **B** | 1 | 4 | 3 |
| **C** | 4 | 1 | 2 |
| **D** | 2 | 3 | 1 |

14 The concentration of nitrate ions in a root cell is higher than in the surrounding soil solution.

How do the nitrate ions move into the root cell?

**A** active transport

**B** diffusion

**C** osmosis

**D** transpiration

15 What is the function of each type of plant cell?

| | palisade cells | phloem cells | root hair cells |
|---|---|---|---|
| **A** | photosynthesis | sugar transport | ion uptake |
| **B** | photosynthesis | sugar transport | transpiration |
| **C** | transpiration | photosynthesis | ion uptake |
| **D** | transpiration | photosynthesis | sugar transport |

16 The table shows some characteristics of four types of cell.

Which cell could be a root hair cell?

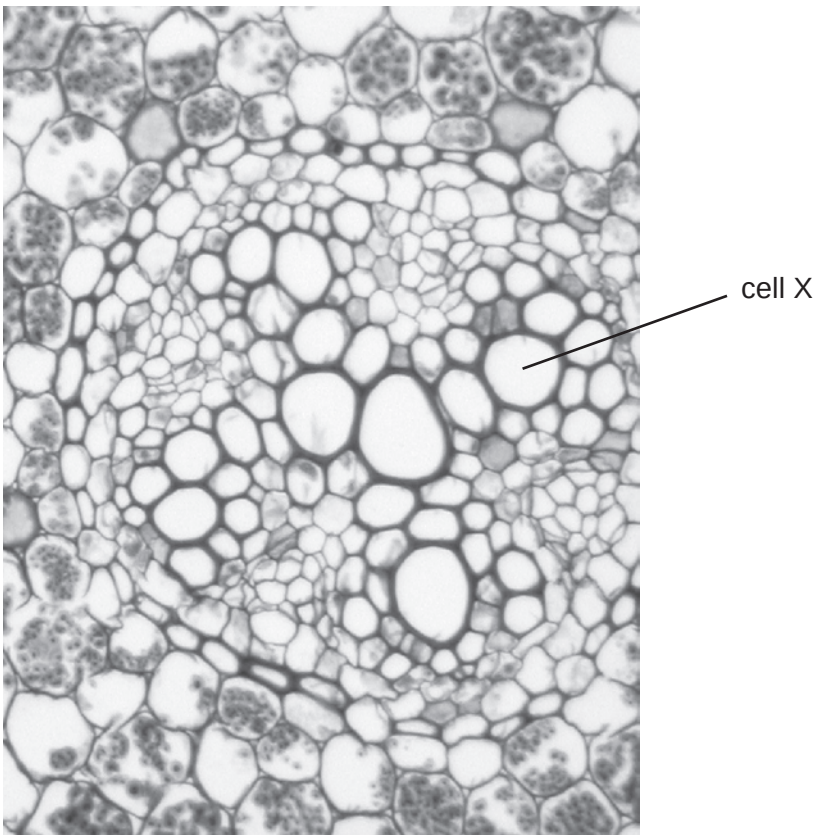
| | nucleus | chlo |
|---|---|---|
| **A** | ✓ | ✓ |
| **B** | ✓ | ✗ |
| **C** | ✗ | ✓ |
| **D** | ✗ | ✗ |

key

✓ = present

✗ = absent

17 The photomicrograph shows part of a section of a plant.




Samples of the contents of cell X were tested.

What results are expected?

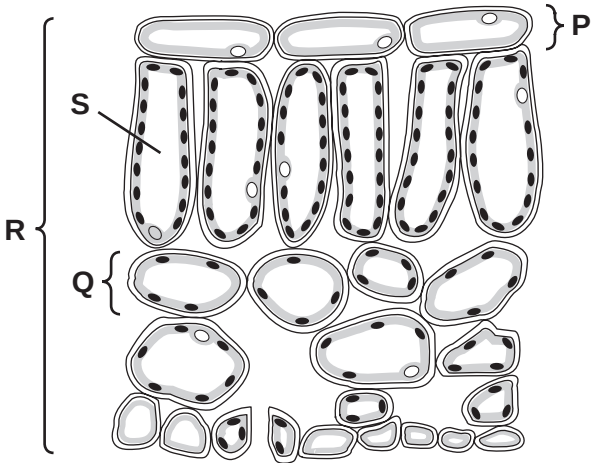
| | Benedict's reagent | iodine |
|---|---|---|
| **A** | + | + |
| **B** | + | – |
| **C** | – | + |
| **D** | – | – |

key

+ = positive resul

– = negative resul

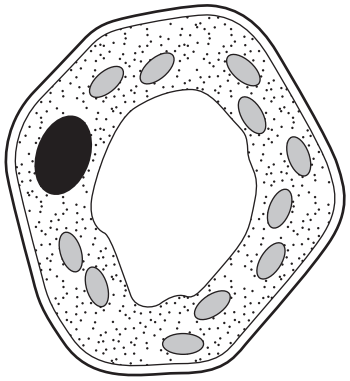
18 The diagram shows a section through a leaf.




Which is an organ and which is a tissue?

| | organ | tissue |
|---|---|---|
| **A** | **P** | **R** |
| **B** | **Q** | **S** |
| **C** | **R** | **P** |
| **D** | **S** | **Q** |

19 The diagram shows one type of plant cell.



What type of cell is it?

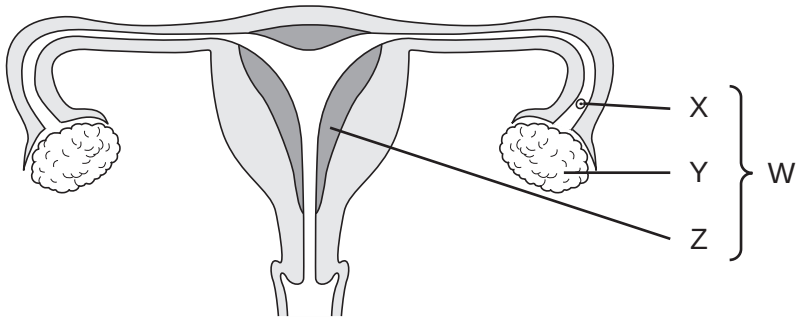
**A** epidermal cell of a leaf

**B** mesophyll cell of a leaf

**C** root hair cell

**D** xylem cell

20 The diagram shows the female reproductive system.



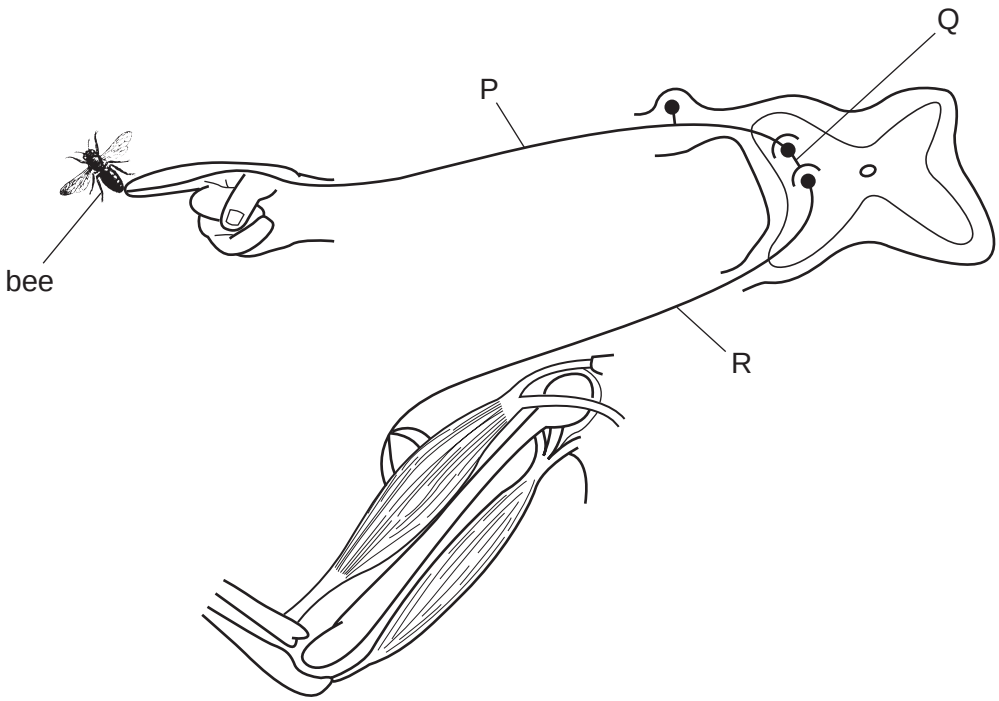

Which level of organisation are the structures W, X, Y and Z?

| | cell | tissue | organ | organ system |
|---|---|---|---|---|
| **A** | W | Y | X | Z |
| **B** | X | Z | Y | W |
| **C** | Y | X | Z | W |
| **D** | Z | W | Y | X |

**21** Which shows the increasing level of complexity in plants?

| | simplest → most complex | | | |
|---|---|---|---|---|
| **A** | cell | chloroplast | organ | tissue |
| **B** | cell | tissue | chloroplast | organ |
| **C** | chloroplast | cell | tissue | organ |
| **D** | chloroplast | organ | tissue | cell |

22 The diagram shows a reflex arc in which a bee sting causes the arm to be moved quickly.




If the relay neurone at Q is damaged, how will the transmission of nerve impulses in the reflex arc be affected?

**A** They cannot pass from P to Q.

**B** They cannot pass from P to R.

**C** They cannot pass from Q to P.

**D** They cannot pass from R to Q.