

# Cell Structure

## Question Paper 1

<b>Level</b>	International A Level
<b>Subject</b>	Biology
<b>Exam Board</b>	CIE
<b>Topic</b>	Cell Structure
<b>Sub Topic</b>	Cell Structure
<b>Booklet</b>	Theory
<b>Paper Type</b>	Question Paper 1

**Time Allowed :** 64 minutes

**Score :** / 53

**Percentage :** /100

**Grade Boundaries:**

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

1 Fig. 2.1 is a transmission electron micrograph of cells from a spinach leaf.

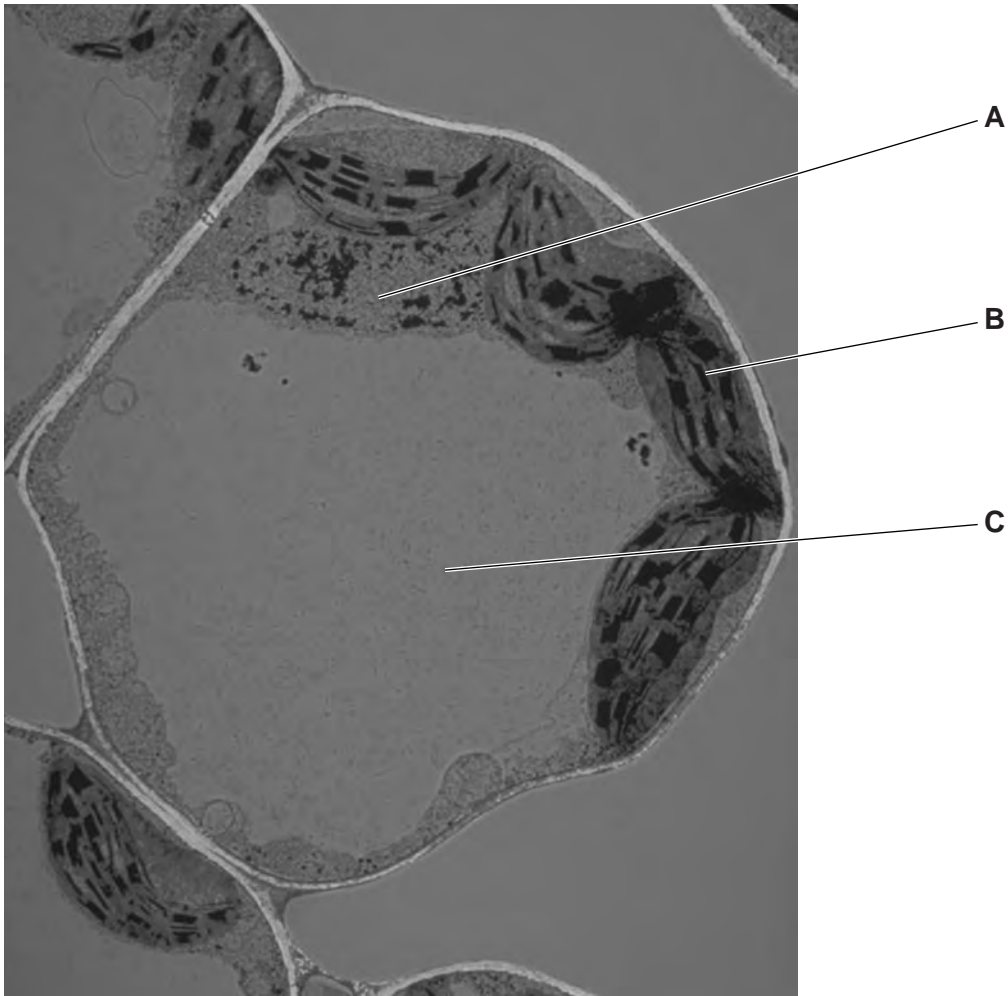


Fig. 2.1

(a) Name the organelles **A**, **B** and **C**.

**A** .....

**B** .....

**C** .....

[3]

(b) List two cell structures that could be present in animal cells that are not present in plant leaf cells.

1. ....

2. ....

[1]

- (c) Water is transported up the stem, to the spinach leaf, in the xylem. Once it leaves the xylem it moves via the apoplast and symplast pathways, to reach the cells in Fig. 2.1.

Outline the differences between the apoplast and symplast pathways after the water has left the xylem.

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[4]

- (d) Water, containing dissolved mineral ions such as magnesium, enters spinach leaf cells.

(i) State **two** ways that water is used in the leaf cell.

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2. ....  
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[2]

(ii) State **one** role of magnesium ions in the leaf cell.

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[1]

[Total: 11]

2 Fig. 2.1 shows a drawing made from an electron micrograph of two adjacent cells in a leaf.

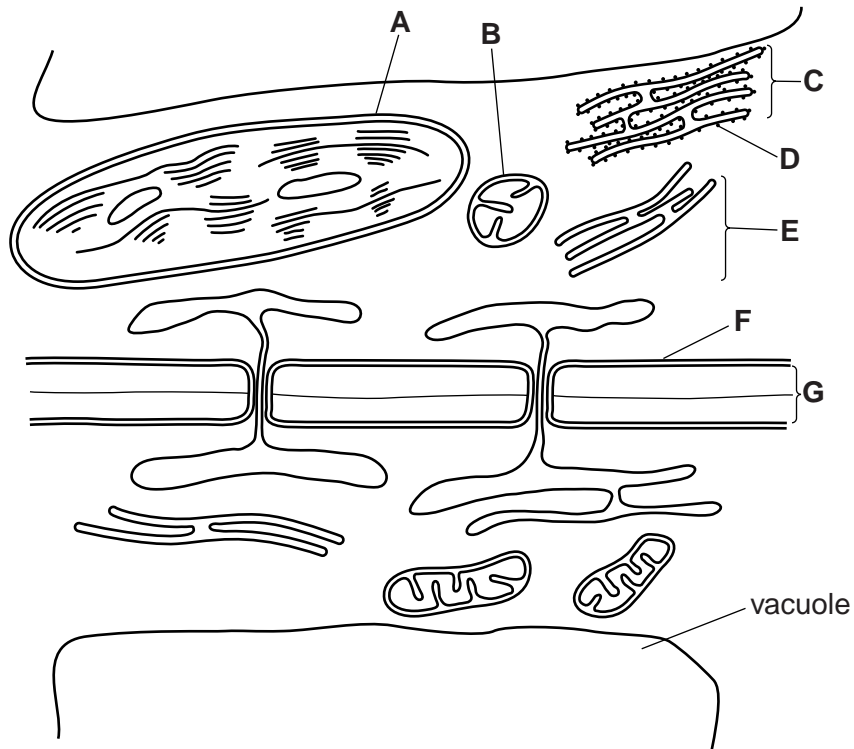


Fig. 2.1

(a) Structures **A** and **B** are both visible using the light microscope, but the internal detail of these organelles shown in Fig. 2.1 is only visible using the electron microscope.

Explain why the internal details of structures **A** and **B** are only visible when using the electron microscope and not when using the light microscope.

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**(b)** Name in full the structures labelled **C**, **D** and **E**.

- C** .....
- D** .....
- E** ..... [3]

**(c)** State **one** role of vacuoles in plant cells.

..... [1]

**(d)** Structures **F** and **G** have very different permeability properties.

Explain how the composition of structures **F** and **G** determines the permeability properties of these structures.

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**(e)** Fig. 2.1 shows two plasmodesmata connecting the adjacent cells.

Describe the roles of plasmodesmata in transport in plants.

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..... [3]

- 3 Fig. 1.1 is a diagram of an electron micrograph of a plant cell.  
Fig. 1.2 is a diagram of an electron micrograph of an animal cell.  
Both diagrams are incomplete.

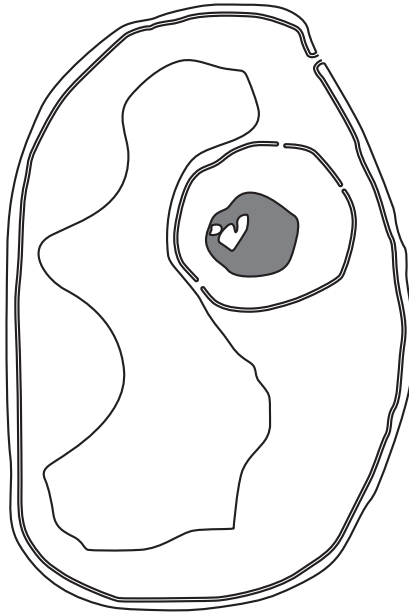


Fig. 1.1

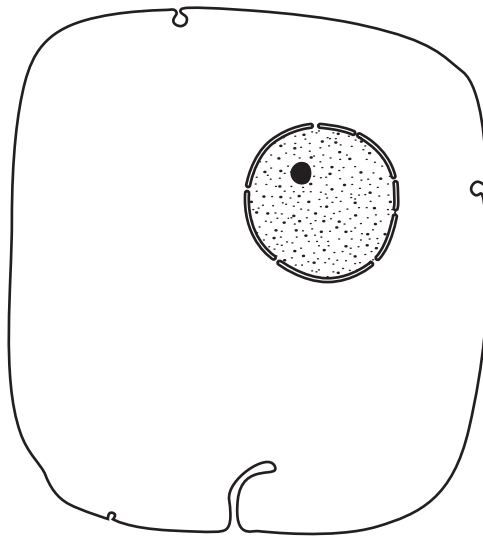


Fig. 1.2

- (a) Explain how Fig. 1.1 can be identified as a plant cell.

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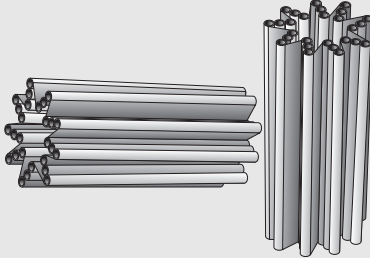

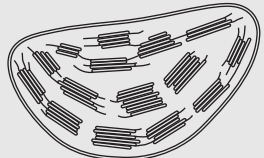
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- (b) Some organelles are missing from Figs 1.1 and 1.2. Information about these organelles is shown in the shaded boxes in Table 1.1.

Complete the empty boxes in Table 1.1 by adding the correct information below each column heading.

**Table 1.1**

name of organelle	diagram of organelle(s) as seen under the electron microscope (not to scale)	one function of organelle	cell type(s) in which organelle is located
mitochondrion			animal and plant
		assemble microtubules to produce the mitotic spindle	
rough endoplasmic reticulum		protein synthesis	
Golgi apparatus			animal and plant
		photosynthesis	plant only

[8]

[Total: 10]

4 Fig. 1.1 is a drawing made from an electron micrograph of a mammalian liver cell.

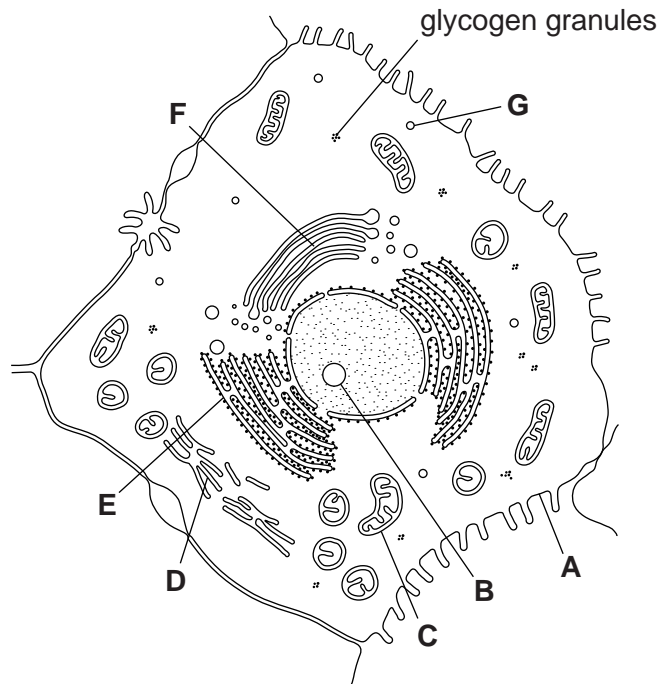


Fig. 1.1

(a) Complete the table by naming the structures **B** to **G** and stating **one** function of each. The first one (**A**) has been completed for you.

	name of organelle	function
<b>A</b>	cell surface membrane	controls movement of substances into and out of the cell
<b>B</b>		
<b>C</b>		
<b>D</b>		
<b>E</b>		
<b>F</b>		
<b>G</b>		



**(b)** As shown in Fig. 1.1, liver cells contain many storage granules of glycogen.

Describe the molecular structure of glycogen **and** explain how this structure makes it suitable for storage.

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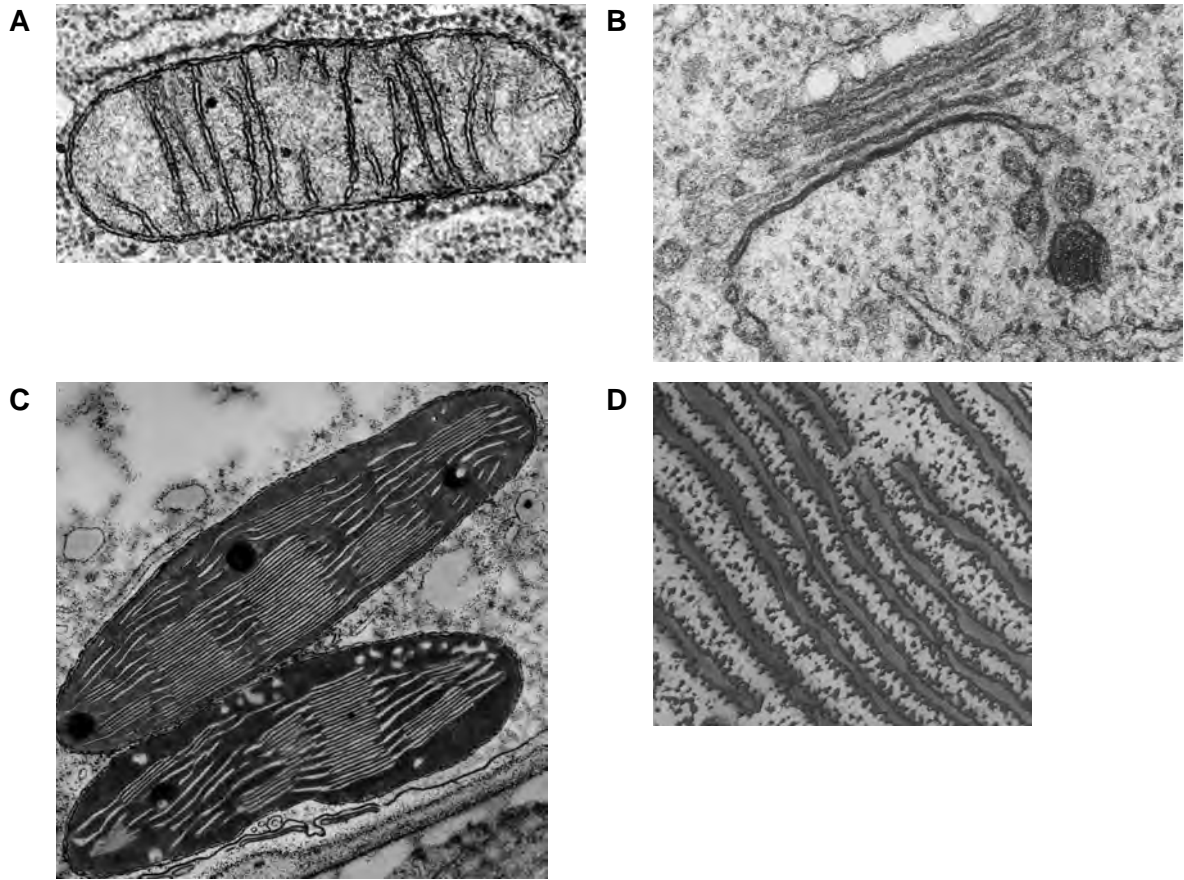
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..... [4]

[Total: 10]

5 Fig. 1.1 shows electron micrographs of some eukaryotic cell organelles.



**Fig. 1.1**

For each of the organelles **A**, **B**, **C** and **D**, shown in Fig. 1.1, state the name and function of each.

**A** name .....

function.....

**B** name .....

function.....

**C** name .....

function.....

**D** name .....

function..... [8]

[Total: 8]