Structure of transport tissues

Question Paper 3

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Transport in plants
Sub Topic	Structure of transport tissues
Booklet	Theory
Paper Type	Question Paper 3

Time Allowed: 64 minutes

Score : /53

Percentage: /100

Grade Boundaries:

A*	А	В	С	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

Fig. 5.1 is a light micrograph of some unicellular photosynthetic organisms called *Chlamydomonas*.

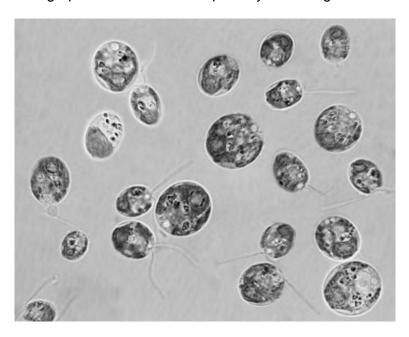


Fig. 5.1

(a)	Cilio	arrydomonas moves tillodgii water.
	-	lain why the light microscope rather than the electron microscope is used to observe the vement of Chlamydomonas.
		[2]
(b)	Chla	amydomonas live in water and obtain minerals, such as magnesium ions, from the water.
	(i)	State one role of magnesium ions in photosynthetic organisms.
		[1]
	(ii)	State two properties of water which make it possible for organisms such as <i>Chlamydomonas</i> to live in water.
		1
		2

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[Total: 14]

2 B-lymphocytes respond to the presence of a non-self antigen by dividing as shown in Fig. 4.1.

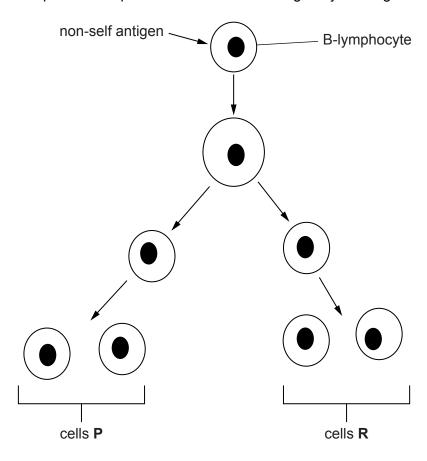


Fig. 4.1

(a)	(i)	Explain what is meant by the term <i>non-self antigen</i> .
		[2]
	(ii)	Outline how B-lymphocytes recognise non-self antigens.
		rol

The cells labelled $\bf P$ on Fig. 4.1 continue to divide to give rise to many cells that differentiate into short-lived plasma cells. The plasma cells release antibody molecules.

(b)	(i)	Outline how plasma cells produce antibody molecules.
		[4]
	(ii)	Describe how antibody molecules are released from the plasma cell.
	(''')	Describe now antibody molecules are released from the plasma cell.
		[2]
(c)	The The	e cells labelled R on Fig. 4.1 divide to give more cells that do not differentiate into plasma cells.
	Ехр	plain the role of these cells.
		[3]

The mass of DNA in the cells shown in Fig. 4.1 was determined. The results are shown in Fig. 4.2.

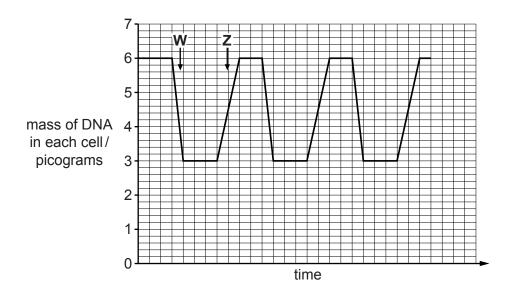
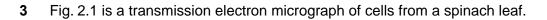


Fig. 4.2

(d)	State what happens at W and Z to change the mass of DNA in each cell.
	w
	Z
	[2
(e)	Acute lymphoblastic leukaemia (ALL) is a cancer of B-lymphocytes. It is very rare in adults but more common in children. A study in 2009 found that exposure to tobacco smoke in the home may put children at risk of developing ALL.
	Suggest how smoking by adults in the home may put their children at risk of cancers, such as ALL.
	co.

[Total: 18]



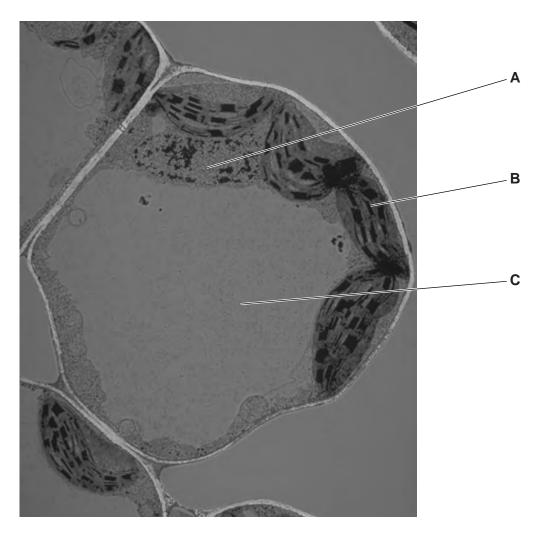
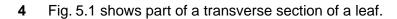


Fig. 2.1

(a)	Name the organelles A, B and C.
	A
	В
	C
	[3,
(b)	List two cell structures that could be present in animal cells that are not present in plant lea cells.
	1
	2
	[1

(c)		er is transported up the stem, to the spinach leaf, in the xylem. Once it leaves the xylem it wes via the apoplast and symplast pathways, to reach the cells in Fig. 2.1.
		line the differences between the apoplast and symplast pathways after the water has left xylem.
		[4]
(d)	Wat	er, containing dissolved mineral ions such as magnesium, enters spinach leaf cells.
	(i)	State two ways that water is used in the leaf cell.
		1
		2
	(ii)	[2] State one role of magnesium ions in the leaf cell.
	(")	[1]
		[Total: 11]



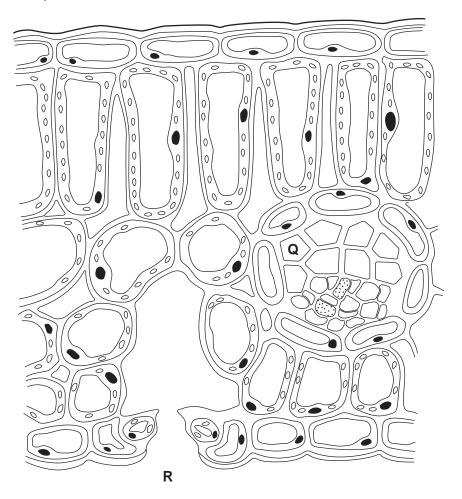


Fig. 5.1

(a)	Explain, in terms of water potential, how water moves from Q to R.
	[1]

(b)	State and explain three ways in which the structure of xylem vessels is adapted to transport water.
	1
	explanation
	2
	explanation
	3
	explanation
	[6]
	[Total: 10]

[Total: 10]