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BIOLOGY-0610/31, 32, 33
TOPIC-CELLS

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4 Fig. 4.1 shows a typical animal cell and a typical plant cell.

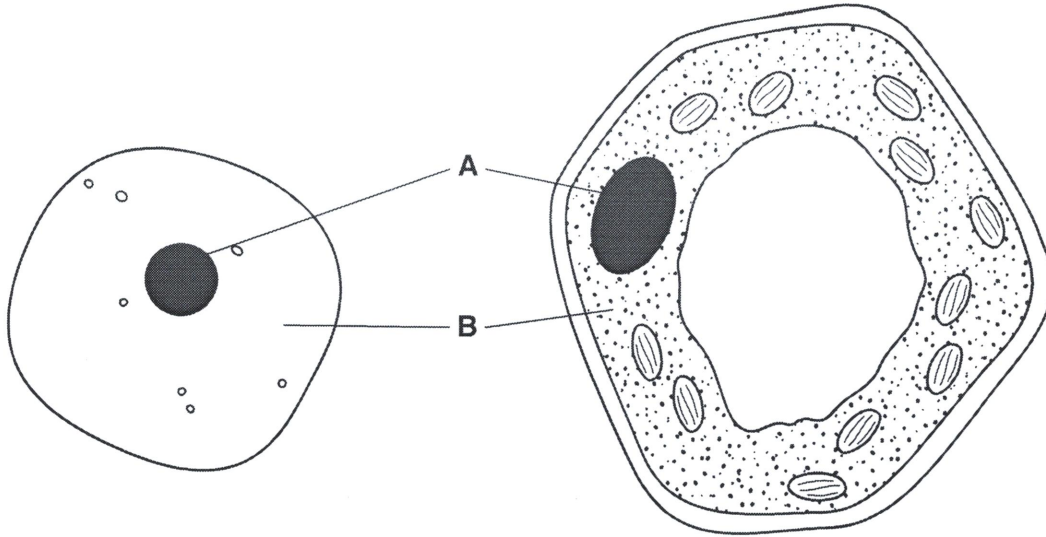


Fig. 4.1

(a) (i) Name the parts of the cells labelled **A** and **B**.

A

B [2]

(ii) Label on the diagram, with a letter **C**, another structure that occurs in both cells. [1]

(b) For each of the following types of cell, state **one** way in which it is different from the animal cell in Fig. 4.1. State the function of each type of cell.

(i) cell lining the trachea (windpipe)

difference

.....

function

..... [2]

(ii) red blood cell

difference

.....

function

..... [2]

(c) Materials can enter the cells shown in Fig. 4.1 by diffusion and osmosis.

(i) Define *diffusion*.

.....
.....
.....[2]

(ii) Describe how osmosis differs from diffusion.

.....
.....
.....
.....[2]

[Total : 11]



6 Fig. 6.1 shows a plant cell from a leaf.

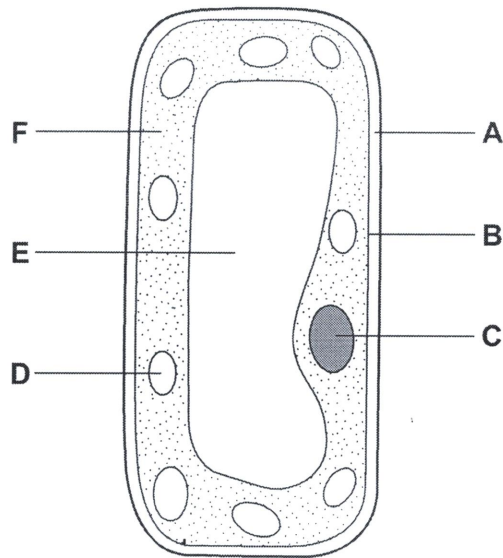


Fig. 6.1

(a) State the letters for the three parts of this cell that only occur in plant cells.

letters and [3]

(b) State **two** differences in structure between this leaf cell and a root hair cell.

Explain the reason for each difference.

difference

.....

reason

.....

difference

.....

reason

..... [4]

(c) (i) Describe **one** difference that exists between a red blood cell and a typical animal cell.

.....
..... [1]

(ii) State an advantage of this feature in a red blood cell.

.....
..... [1]

[Total: 9]



- 5 Five types of animal and plant cells and five possible functions of such cells are shown below.

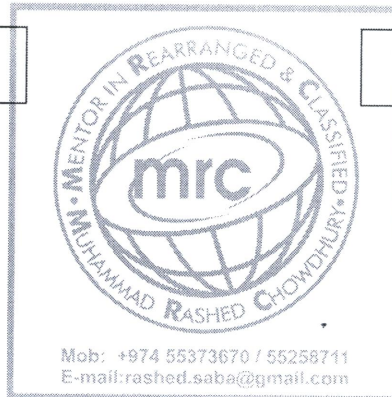
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Draw **one** straight line from each type of cell to a function of that cell.

type of cell	function of cell
red blood cell	absorption of mineral ions
root hair cell	transport of oxygen
white blood cell	movement of mucus
xylem	protection against pathogens
ciliated cell	structural support

[5]

[Total: 5]



1 Fig. 1.1 shows two cells.

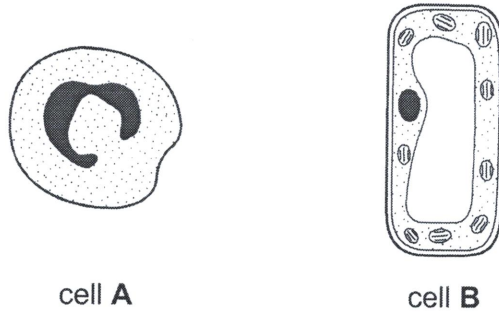


Fig. 1.1

(a) (i) State where, in a human, a cell of type **A** would normally be found.

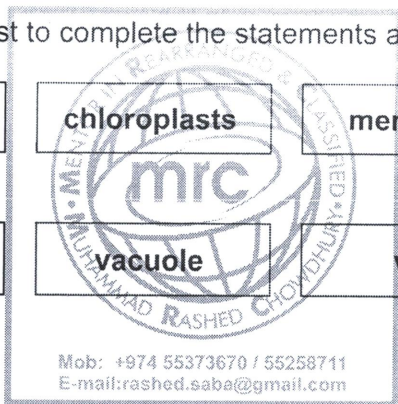
..... [1]

(ii) State where, in a plant, a cell of type **B** would be found.

..... [1]

(b) Use only words from the list to complete the statements about cell **B**.

air	cellulose	chloroplasts	membrane	mitochondria
nucleus	starch	vacuole	wall	cell sap



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Cell **B** has a thick outer layer called the cell This is made of The cytoplasm of cell **B** contains many that are used in the process of photosynthesis. The large permanent is full of and this helps to maintain the shape of the cell.

[5]

(c) Fig. 1.2 shows structures that produce urine and excrete it from the body of a mammal.

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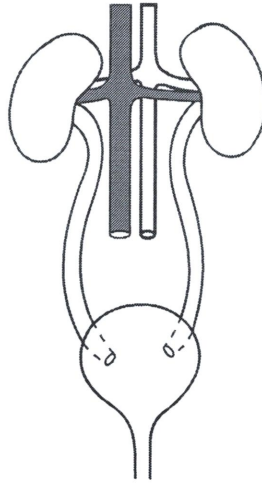


Fig. 1.2

- (i) On Fig. 1.2, label and name **one** organ. [1]
- (ii) Use examples from Fig. 1.2 to explain the difference between the terms *organ* and *organ system*.

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.....

.....

.....

.....

[3]

[Total 11]

9 Fig. 9.1 shows four animal cells.

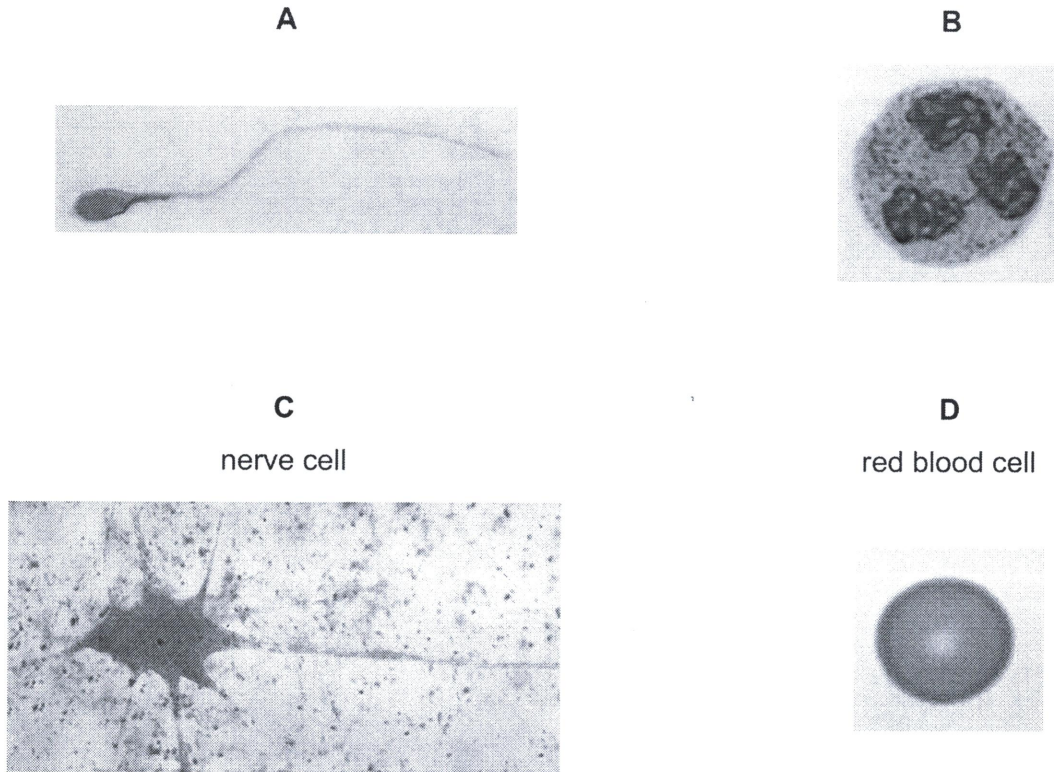


Fig. 9.1

(a) (i) Identify the cells labelled **A** and **B**.

A

B [2]

(ii) State the function of cell **A** and describe how it is adapted to this function.

.....
.....
.....
..... [2]

(iii) State **one** function of cell **B**.

.....
..... [1]

(b) The cells in Fig. 9.1 are all from the human body.

Complete Table 9.1 to show the number of chromosomes in these cells. One has been completed for you.

Table 9.1

type of cell	number of chromosomes
cell A
cell B
nerve cell C	46
red blood cell D

[3]

[Total: 8]

*For
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- 8 Fig. 8.1 shows a cell from the palisade layer of a leaf.

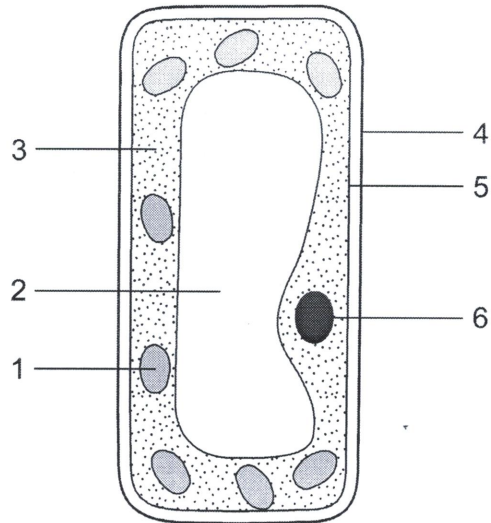


Fig. 8.1

- (a) In Table 8.1 tick (✓) the numbers that label the **three** features of the palisade cell which are also found in animal cells.

Table 8.1

label number	present in both animal and plant cells
1	
2	
3	
4	
5	
6	

[3]

(b) State and describe the function of **two** features of the palisade cell that are **only** found in plant cells.

feature

function

.....

feature

function

..... [4]

(c) Fig. 8.2 shows some red blood cells, which are animal cells.

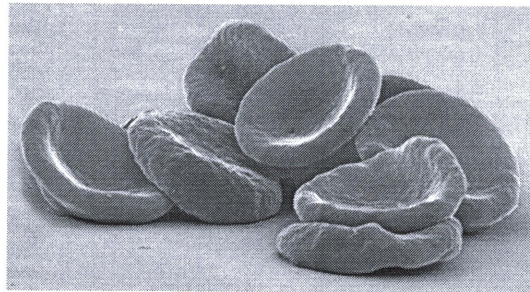


Fig. 8.2

(i) Which feature normally present in an animal cell is absent from a red blood cell?

..... [1]

(ii) State the function of a red blood cell **and** describe **one** way in which the red blood cell is adapted to carry out its function.

.....

.....

.....

..... [2]

[Total: 10]

4 Cells are adapted to their function, and may be arranged into tissues.

(a) Define the term *tissue*.

.....
 [1]

(b) Fig. 4.1 shows four cell types.

Draw lines to join the diagrams with the description of each cell's function.

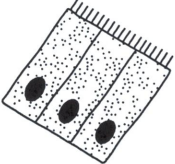
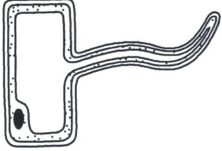
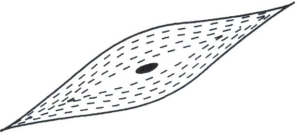

cell type	cell function
	absorption
	contraction
	protection in respiratory system
	transport



Fig. 4.1

[3]

(c) Living cells may take in useful materials by diffusion.

(i) Define the term *diffusion*.

.....

 [2]

- (ii) Complete Table 4.1 by naming the substances that move by diffusion in the following parts of the body.

Table 4.1

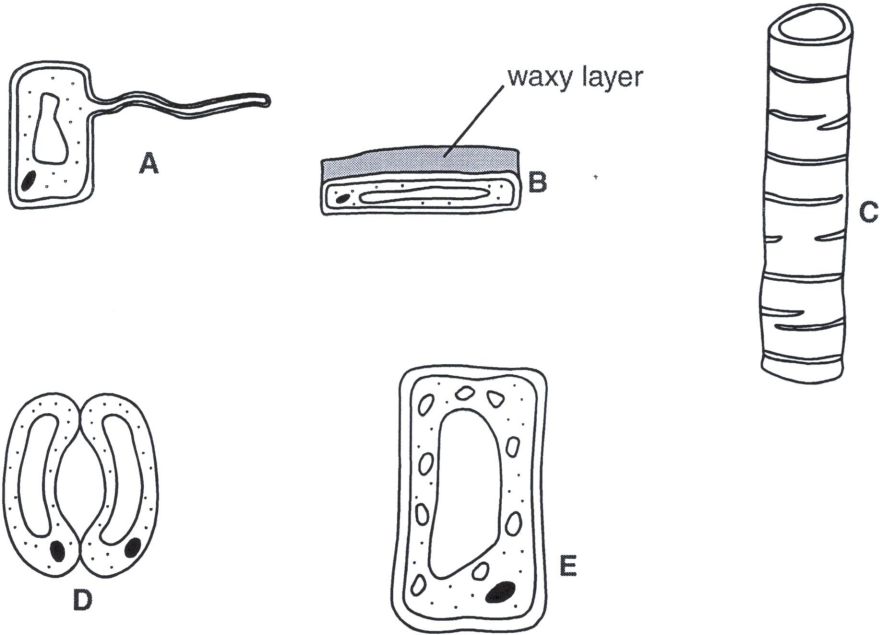
part of body	direction of diffusion	name of substance that diffuses
lungs	from air in alveolus to red blood cell	
small intestine	across villus to blood in capillary	
biceps	from muscle cell to blood in capillary	

[3]

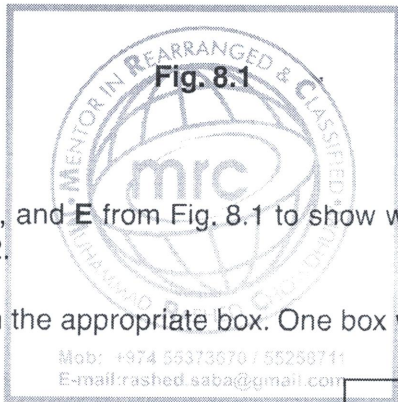
[Total: 9]



8 Fig. 8.1 shows different plant cells **A**, **B**, **C**, **D**, and **E**.



not drawn to scale



(a) Fig. 8.2 shows a plant.

Use the letters **A**, **B**, **C**, **D**, and **E** from Fig. 8.1 to show where these cells would be found on the plant shown in Fig. 8.2.

Write each of the letters in the appropriate box. One box will be left blank.

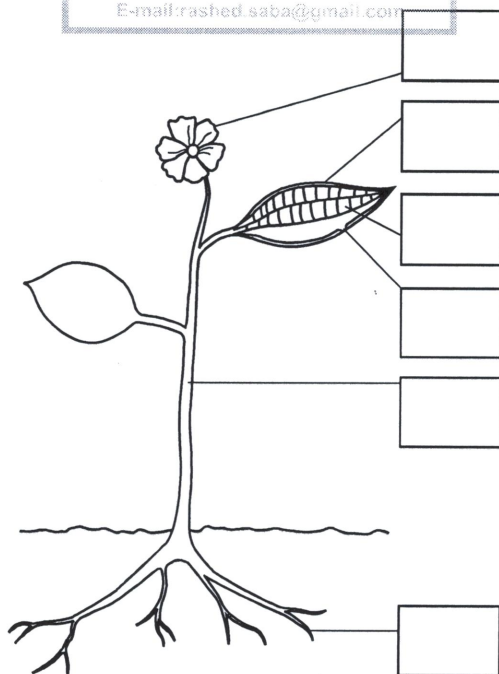


Fig. 8.2

[5]

4 Fig. 4.1 shows a root hair cell.

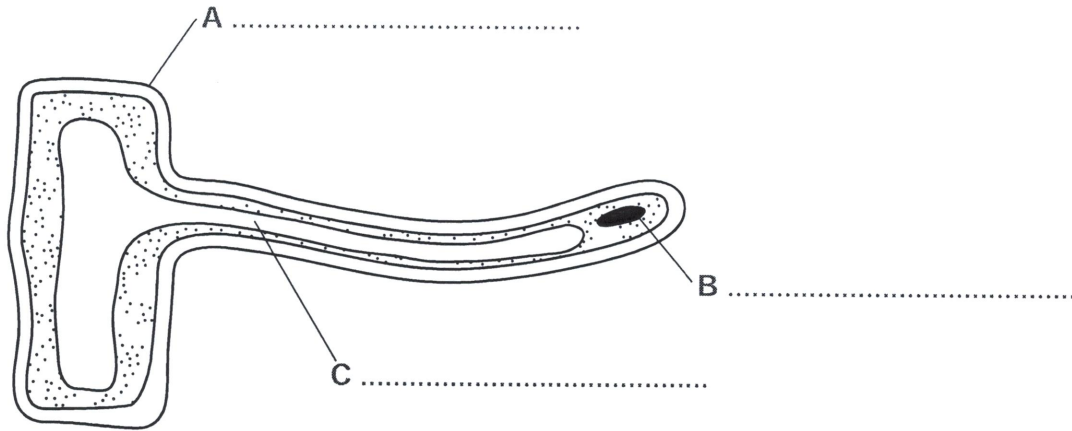


Fig. 4.1

(a) (i) Name the features labelled **A**, **B** and **C**.

Write your answers on Fig. 4.1.

[3]

(ii) Feature **A** is made of cellulose. What is cellulose made from?

.....[1]

(iii) State **two** functions of a root hair cell.

1

.....

2

.....

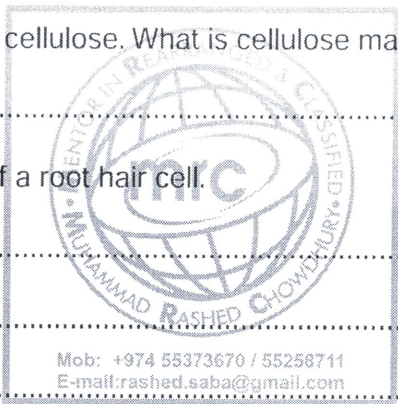
[2]

(iv) Describe how a root hair cell is adapted for its function.

.....

.....

.....[1]



(b) Fig. 4.2 shows a palisade mesophyll cell.

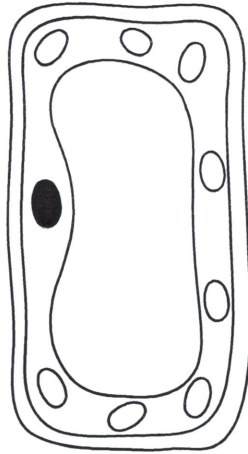


Fig. 4.2

The cell in Fig. 4.2 contains structures which are **not** present in root hair cells.

State the name of these structures **and** explain their function.

.....

.....

.....

.....

.....

..... [3]



[Total: 10]

2 Fig. 2.1 is a drawing of a piece of plant tissue.

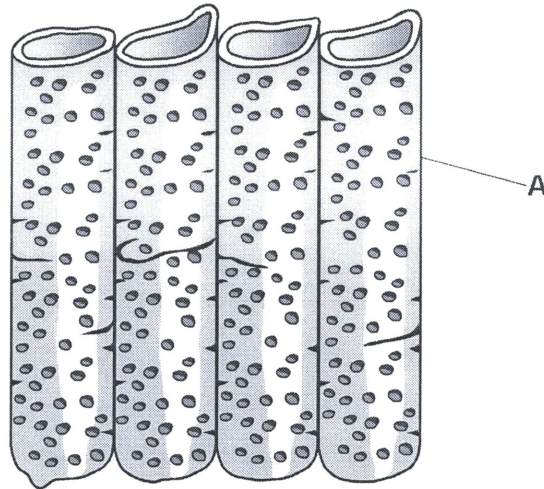


Fig. 2.1

(a) (i) What name is given to this type of tissue?
Choose your answer from the list.

- palisade mesophyll root hair xylem

.....[1]

(ii) Name the part labelled A in Fig. 2.1.

.....[1]

(b) This tissue is important for both transport and support in the plant.

Explain how the structure of this tissue allows it to perform these functions:

transport

.....

support

.....

[2]

(c) The cells in this tissue do **not** contain some of the structures found in most plant cells.

State **one** structure that is missing from the tissue shown in Fig. 2.1.

.....[1]

[Total: 5]

- 3 Table 3.1 shows the names of some specialised cells, each matched with a letter.

Table 3.1

specialised cell	letter
cell in the retina	A
liver cell	B
neurone	C
palisade mesophyll cell	D
root hair cell	E
red blood cell	F
sperm cell	G
white blood cell	H

Table 3.2 shows eight functions carried out by specialised cells.

Complete Table 3.2 by writing in the letter of the cell from Table 3.1 responsible for the function.

You may use each letter once, more than once or not at all. An example has been done for you.

Table 3.2

cell function	letter of cell responsible
detection of light	A
formation of urea	
antibody formation	
conduction of nerve impulses	
fertilisation of an egg cell	
glucose production	
oxygen transport	
phagocytosis	

[7]

[Total: 7]


- 4 The boxes on the left contain the names of cells and tissues specialised for carrying out a particular function.

The boxes on the right contain descriptions of specialised functions.

Draw **one** straight line to link each specialised cell or tissue with its correct function.

An example has been done for you.

cell or tissue	function
ciliated cells	absorption of water
root hair cells	transport of oxygen
red blood cells	movement of mucus
phloem	transport of sucrose
xylem	phagocytosis
egg cells	reproduction
white blood cells	transport of water

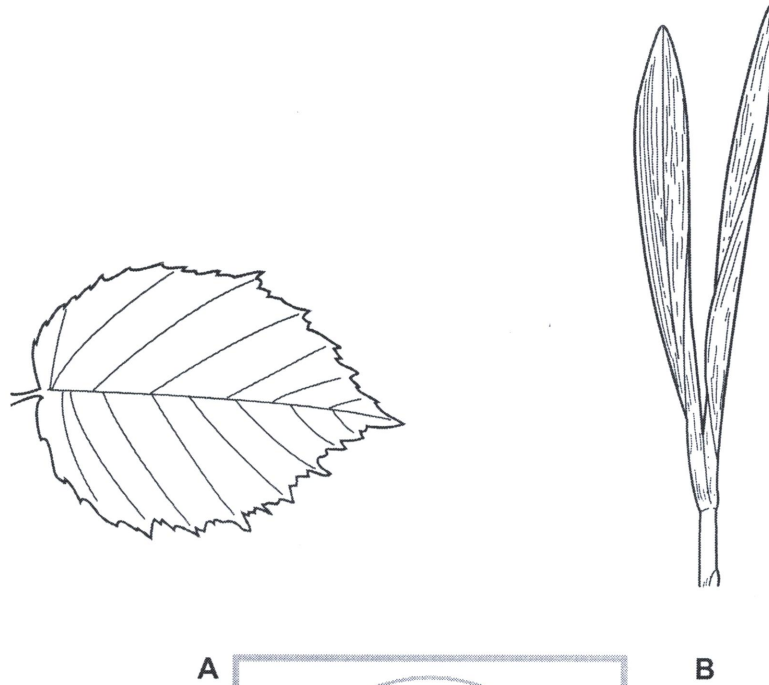


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[5]

[Total: 5]

1 (a) Figs. 1.1 – 1.4 show organisms or parts of organisms (not drawn to scale).

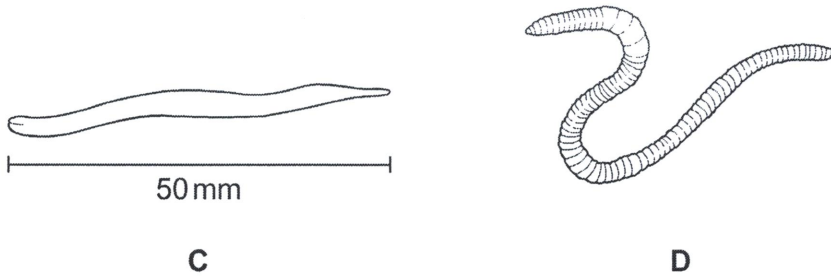


A B

Fig. 1.1

(i) State which of the drawings shows a monocotyledon leaf. State **one** reason for your choice.

.....
 [1]



C D

Fig. 1.2

(ii) State which of the drawings shows an annelid. State **one** reason for your choice.

.....
 [1]

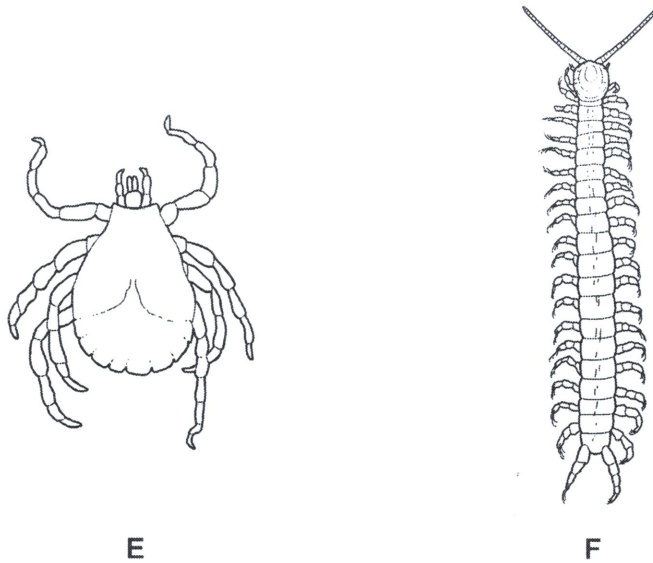


Fig. 1.3

(iii) State which of the drawings shows an arachnid. State **one** reason for your choice.

.....

..... [1]

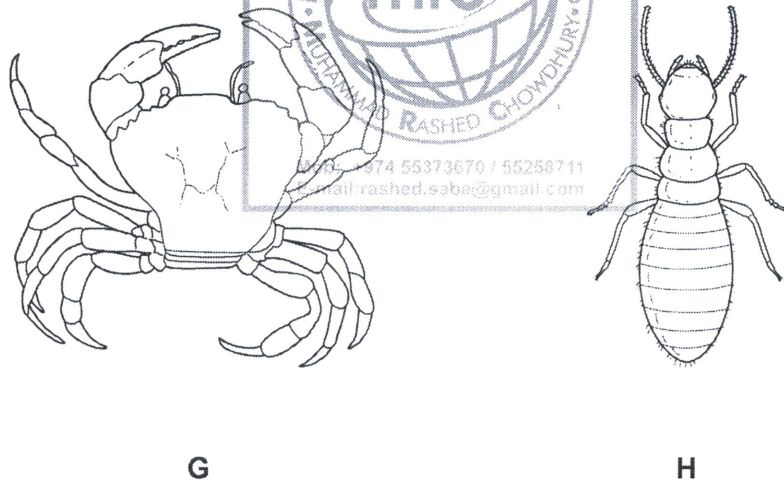


Fig. 1.4

(iv) State which of the drawings shows a crustacean. State **one** reason for your choice.

.....

..... [1]

- (b) The length of the drawing of worm **C**, in Fig. 1.2, is shown. The actual length of the worm is 5 mm. Calculate the magnification of this drawing. Show your working.

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magnification

[2]

[Total: 6]

