

Transport in Cells

Question Paper 1

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Biology
Exam Board	AQA
Topic	4.1 Cell Biology
Sub-Topic	Transport in Cells
Difficulty Level	Bronze Level
Booklet	Question Paper 1

Time Allowed: 60 minutes

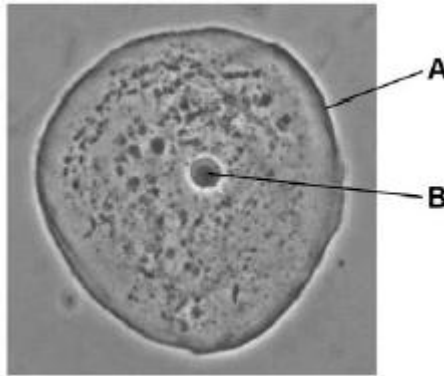
Score: /60

Percentage: /100

Grade Boundaries:

Q1. Figure 1 shows an animal cell.

Figure 1



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(a) What is structure **A**?

Tick **one** box.

Cell membrane

☐

Cell wall

☐

Chromosome

☐

Cytoplasm

☐

(1)

(b) What is structure **B**?

Tick **one** box.

Chloroplast

☐

Mitochondria

☐

Nucleus



Vacuole



(1)

- (c) **Figure 2** shows a sperm cell.

Figure 2



Describe how a sperm cell is adapted to carry out its function.

.....

.....

(1)

- (d) Substances can move into and out of cells by three processes.

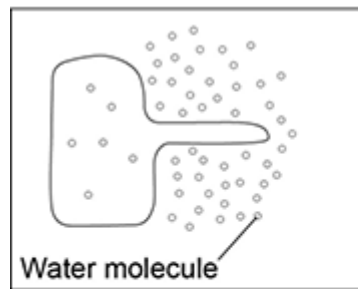
The diagrams show the concentration of different substances inside and outside a root hair cell.

How would each substance move into the root hair cell?

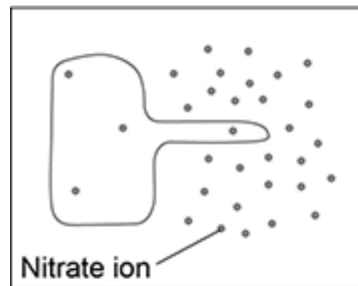
Draw **one** line from each root hair cell to the correct process.

Root hair cell

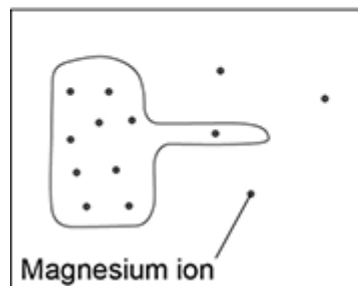
Process



Active transport



Diffusion

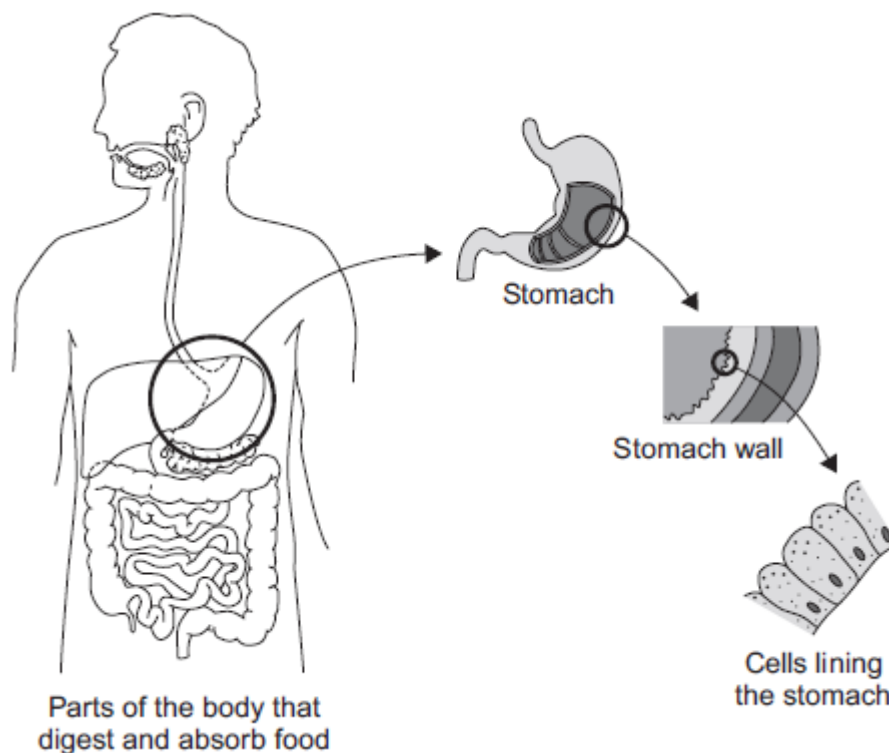


Osmosis

(2)
(Total 5 marks)

Q2. The diagram below shows the parts of the body that digest and absorb food.

It also shows some details about the structure of the stomach.



- (a) Complete the table to show whether each structure is an organ, an organ system or a tissue.

For each structure, tick (✓) **one** box.

Structure	Organ	Organ system	Tissue
Stomach			
Cells lining the stomach			
Mouth, oesophagus, stomach, liver, pancreas, small and large intestine			

(2)

- (b) (i) The blood going to the stomach has a high concentration of oxygen.
The cells lining the stomach have a low concentration of oxygen.

Complete the following sentence.

Oxygen moves from the blood to the cells lining the stomach by
the process of

(1)

- (ii) What other substance must move from the blood to the cells lining the stomach so that respiration can take place?

Draw a ring around the correct answer.

glucose

protein

starch

(1)

- (iii) In which part of a cell does aerobic respiration take place?

Draw a ring around the correct answer.

cell membrane

mitochondria

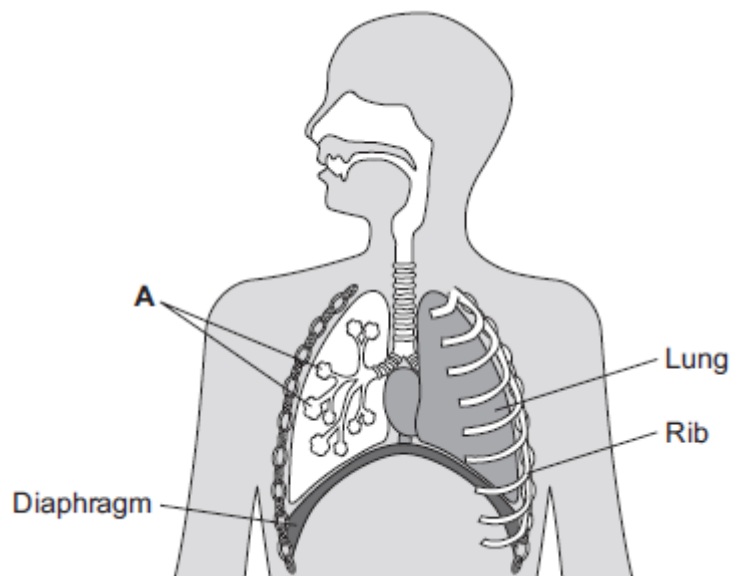
nucleus

(1)

(Total 5 marks)

Q3.Our lungs help us to breathe.

The image below shows the human breathing system.



- (a) (i) Name part **A**.

.....

(1)

- (ii) Give **one** function of the ribs.

.....

(1)

- (b) (i) Use the correct answer from the box to complete the sentence.

active transport	diffusion	osmosis
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Oxygen moves from the air inside the lungs into the blood by the process of

(1)

- (ii) Use the correct answer from the box to complete the sentence.

arteries	capillaries	veins
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Oxygen moves from the lungs into the blood through the walls of the

(1)

- (iii) Inside the lungs, oxygen is absorbed from the air into the blood.

Give **two** adaptations of the lungs that help the rapid absorption of oxygen into the blood.

1

.....

2

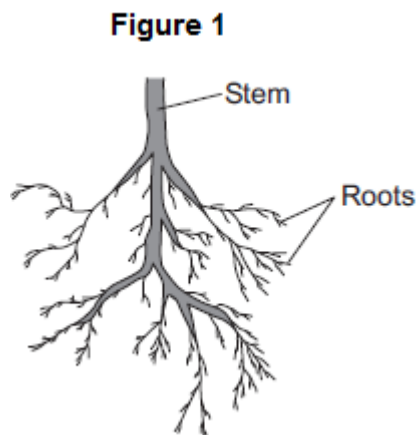
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(2)

(Total 6 marks)

Q4. Plants need different substances to survive.

Figure 1 shows the roots of a plant.



- (a) (i) Mineral ions are absorbed through the roots.

Name **one** other substance absorbed through the roots.

.....

(1)

- (ii) The plant in **Figure 1** has a higher concentration of mineral ions in the cells of its roots than the concentration of mineral ions in the soil.

Which **two** statements correctly describe the absorption of mineral ions into the plant's roots?

Tick (✓) **two** boxes.

The mineral ions are absorbed by active transport.

☐

The mineral ions are absorbed by diffusion.

☐

The mineral ions are absorbed down the concentration gradient.

☐

The absorption of mineral ions needs energy.

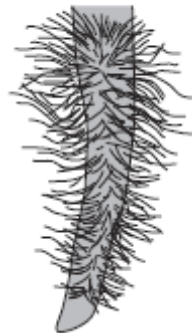
☐

(2)

- (iii) The plant in **Figure 1** has roots adapted for absorption.

Figure 2 shows a magnified part of a root from **Figure 1**.

Figure 2



Describe how the root in **Figure 2** is adapted for absorption.

.....

.....

.....

.....

(2)

- (b) The leaves of plants have stomata.

What is the function of the stomata?

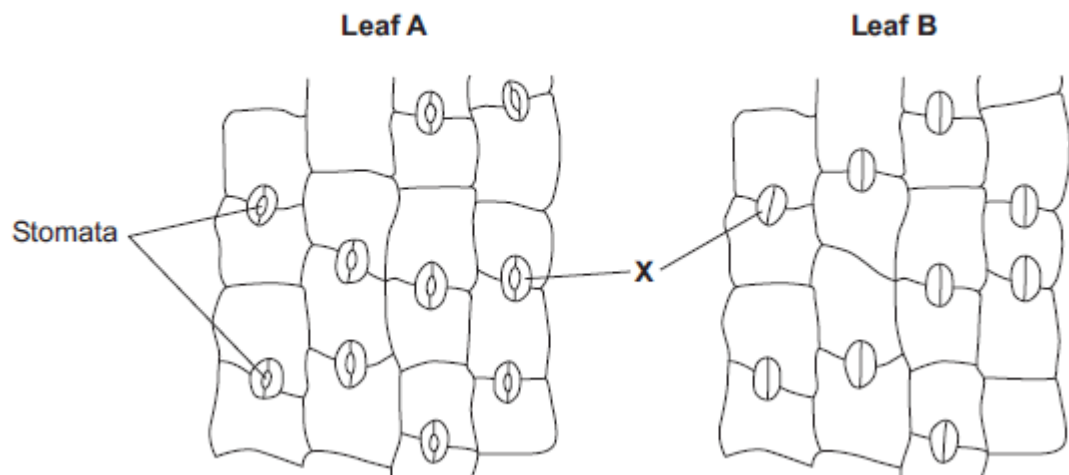
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.....

(1)

- (c) **Figure 3** shows the underside of two leaves, **A** and **B**, taken from a plant in a man's house.

Figure 3



- (i) In **Figure 3**, the cells labelled **X** control the size of the stomata.

What is the name of the cells labelled **X**?

Tick (✓) **one** box.

Guard cells

☐

Phloem cells

☐

Xylem cells

☐

(1)

- (ii) Describe how the appearance of the stomata in leaf **B** is different from the appearance of the stomata in leaf **A**.

.....

.....

(1)

- (iii) The man forgets to water the plant.

What might happen to the plant in the next few days if the stomata stay the

same as shown in leaf **A** in **Figure 3**?

.....

(1)
 (Total 9 marks)

Q5. Substances can move into cells and out of cells.

- (a) Draw a ring around the correct answer to complete each sentence.

Water moves into cells and out of cells by

active transport.
 osmosis.
 reabsorption.

The water moves through a

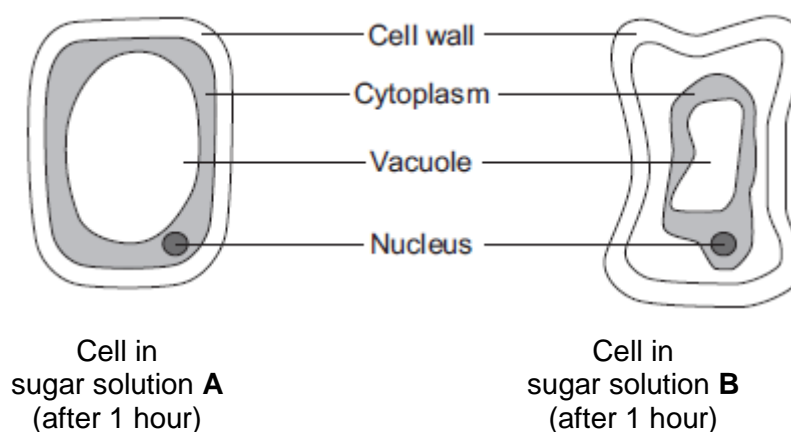
freely permeable
 non-permeable
 partially permeable

membrane.

(2)

- (b) Students put plant cells into two different strengths of sugar solutions, **A** and **B**.

The diagram below shows what the cells looked like after 1 hour.



- (i) Describe **two** ways in which the cell in sugar solution **B** is different from the cell in sugar solution **A**.

1

.....

2

.....

(2)

- (ii) A student put red blood cells into water.
Suggest what would happen to the cells.

.....

.....

.....

(1)

- (c) In the human body, glucose is absorbed into the blood from the small intestine.
The small intestine contains many villi.
Which **two** of the following help the absorption of glucose in the small intestine?

Tick (✓) **two** boxes.

Villi have a cell wall.

☐

Villi are covered in thick mucus.

☐

Villi give the small intestine a large surface area.

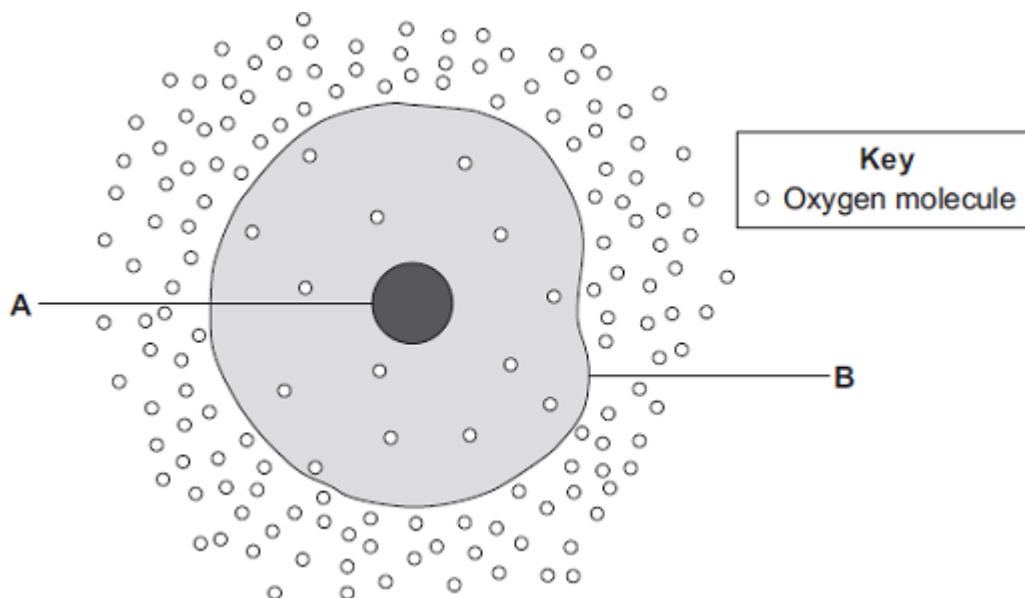
☐

Villi have many blood capillaries.

☐

(2)
(Total 7 marks)

Q6. The diagram shows a cell.



- (a) (i) Use words from the box to name the structures labelled **A** and **B** .

cell membrane	chloroplast	cytoplasm	nucleus
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A

B

(2)

- (ii) The cell in the diagram is an animal cell.

How can you tell it is an animal cell and **not** a plant cell?

Give **two** reasons.

1

.....

2

.....

(2)

- (b) Oxygen will diffuse into the cell in the diagram.

Why?

Use information from the diagram.

.....

.....

(1)

- (c) The cell shown in the diagram is usually found with similar cells.

Draw a ring around the correct answer to complete the sentence.

Scientists call a group of similar cells

an organ.

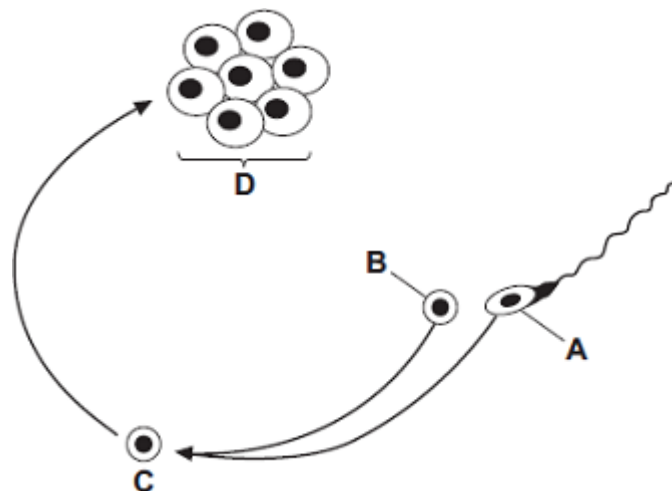
a system.

a tissue.

(1)

(Total 6 marks)

Q7. The diagram shows some of the stages in IVF (in vitro fertilisation).



- (a) Use words from the box to name structures **A**, **B**, **C** and **D**.

egg	embryo	fertilised egg	ovary	sperm
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Structure **A**

Structure **B**

Structure **C**

Structure **D**

(4)

- (b) What do doctors do next with structure **D**?

.....

.....

.....

.....

(2)

- (c) The table gives statistics for an IVF clinic.

	Age of women treated			
	Below 35 years	35 – 37 years	38 – 39 years	40 – 42 years
Number of women treated	414	207	106	53
Number of women who produced one baby	90	43	17	1
Number of women who produced twins	24	8	4	1
Number of women who produced triplets	1	0	0	0

- (i) About what proportion of the treated women aged 35 – 37 years produced one or more babies?

Draw a ring around your answer.

one quarter one third half

(1)

- (ii) This clinic does **not** give IVF treatment to women over 42 years of age.

Use data from the table to explain why.

.....

.....

.....

.....

(2)

- (iii) The committee which regulates IVF treatment now advises that only one embryo is used in each treatment.

Suggest **one** reason for this.

.....

.....

(1)

(Total 10 marks)

Q8. Substances can move into and out of cells.

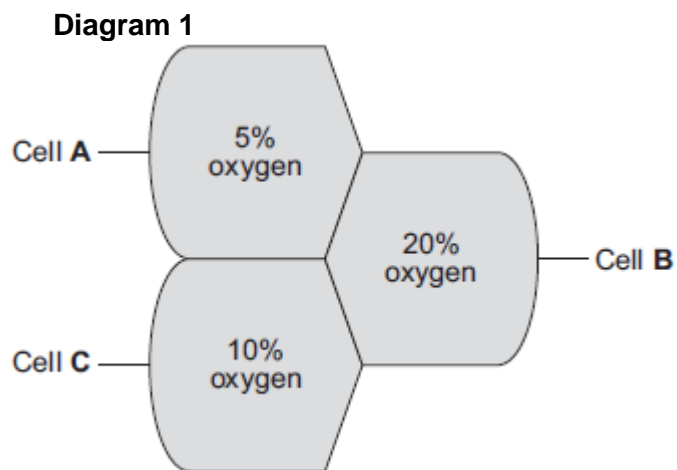
- (a) (i) How does oxygen move into and out of cells?

Draw a ring around **one** answer.

diffusion digestion photosynthesis

(1)

- (ii) **Diagram 1** shows the percentage concentration of oxygen in three cells, **A**, **B** and **C**.



Oxygen can move from cell to cell.

Into which cell, **A**, **B** or **C**, will oxygen move the fastest?

(1)

- (b) (i) How does water move into and out of cells?

Draw a ring around **one** answer.

breathing

osmosis

respiration

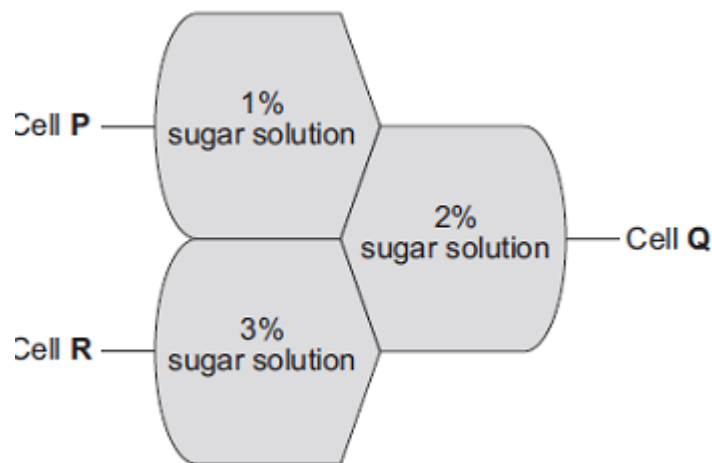
(1)

- (ii) Differences in the concentration of sugars in cells cause water to move into or out of cells at different rates.

Diagram 2 shows three different cells, **P**, **Q** and **R**.

The information shows the percentage concentration of sugar solution in cells **P**, **Q** and **R**.

Diagram 2



Water can move from cell to cell.

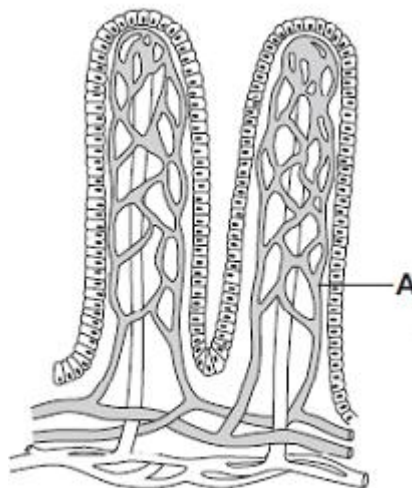
Into which cell, **P**, **Q** or **R**, will water move the fastest?

(1)
(Total 4 marks)

Q9. Villi are found in some parts of the digestive system.

Diagram 1 shows two villi.

Diagram 1



(a) Draw a ring around the correct answer to complete each sentence.

(i) Structure **A** is a

muscle.

nerve.

capillary.

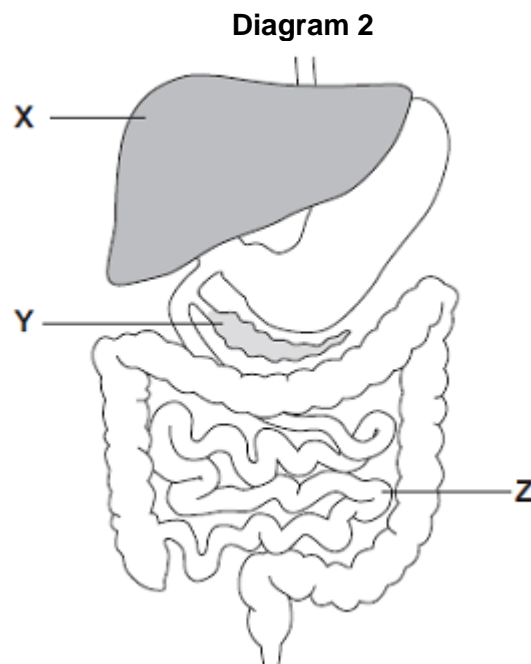
(1)

- (ii) The villi absorb the products of digestion by

dialysis.
diffusion.
osmosis.

(1)

- (b) **Diagram 2** shows the digestive system.



- (i) In which part of the digestive system, **X**, **Y** or **Z**, are most villi found?

(1)

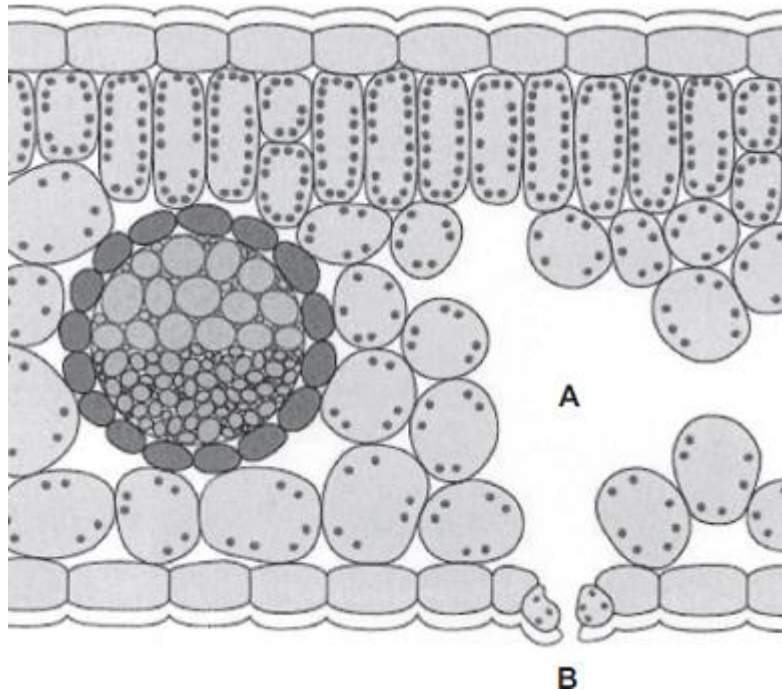
- (ii) There are about 2000 villi in each cm^2 of this part of the digestive system.

Why is it helpful to have lots of villi?

.....

(1)
(Total 4 marks)

Q10. The diagram shows a section through a plant leaf.



- (a) Use words from the box to name **two** tissues in the leaf that transport substances around the plant.

epidermis	mesophyll	phloem	xylem
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..... and
.....

(1)

- (b) Gases *diffuse* between the leaf and the surrounding air.

- (i) What is *diffusion*?

.....
.....

.....
.....

(2)

- (ii) Name **one** gas that will diffuse from point **A** to point **B** on the diagram on a sunny day.

.....

(1)

(Total 4 marks)