AQA GCSE Biology | 8461

SPECIFICATION POINT 4.1.3.3

Active transport

Past-paper questions

Tier	**Foundation**
Question groups	**6**
Available paper years	**2010–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

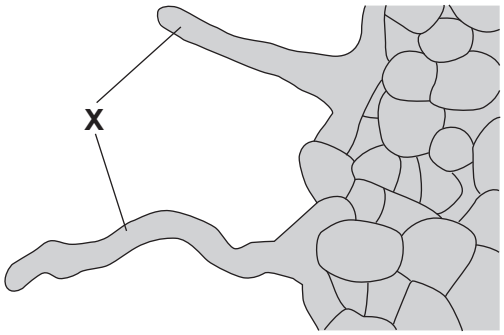
Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.1.3.3 Active transport

Question 01

June 2010 | BLY3F | Original Q1 | Legacy

1 The diagram shows part of a plant root. A large number of structures like the ones labelled **X** grow out of the surface of the root.



1 (a) (i) What is the name of structure **X**?

Draw a ring around **one** answer.

root hair **stoma** **villus**

(1 mark)

1 (a) (ii) Name **two** substances which structure **X** absorbs from the soil.

1 .....

2 .....

(2 marks)

4.1.3.3 Active transport

Question 01 · continued

1 (b) The substances in (a)(ii) are transported from the roots to the leaves. Carbon dioxide also enters the leaves.

Draw a ring round the correct answer to complete each sentence.

1 (b) (i) Carbon dioxide enters leaves through

alveoli.

stomata.

villi.

(1 mark)

1 (b) (ii) Carbon dioxide enters leaf cells by

active transport.

diffusion.

reabsorption.

(1 mark)

5

4.1.3.3 Active transport

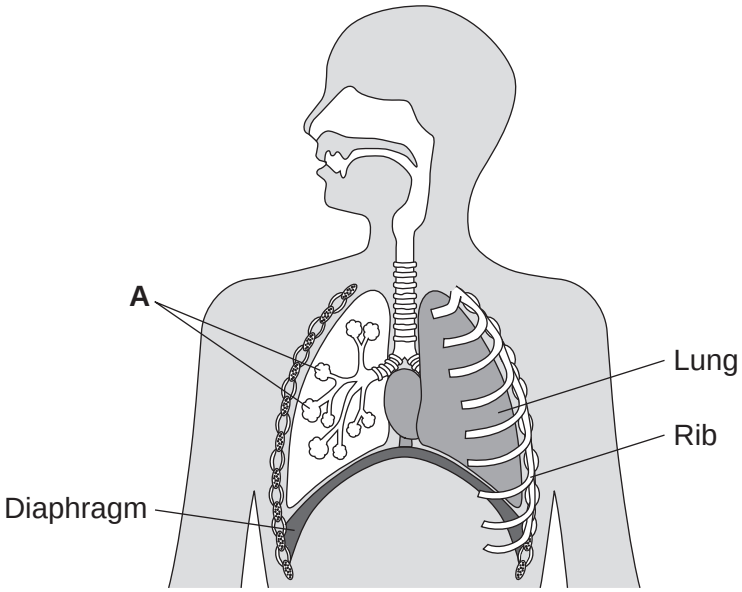
Question 02

June 2015 | BL3FP | Original Q1 | Legacy

1 Our lungs help us to breathe.

Figure 1 shows the human breathing system.

Figure 1



1 (a) (i) Name part **A** in **Figure 1**.

[1 mark]

.....

1 (a) (ii) Give **one** function of the ribs.

[1 mark]

.....

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

[1 mark]

active transport	**diffusion**	**osmosis**

Oxygen moves from the air inside the lungs into the blood by the process of ..... .

4.1.3.3 Active transport

Question 02 · continued

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

[1 mark]

arteries	capillaries	veins

Oxygen moves from the lungs into the blood through the walls

of the ..... .

1 (b) (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.

[2 marks]

1 .....

.....

2 .....

.....

6

4.1.3.3 Active transport

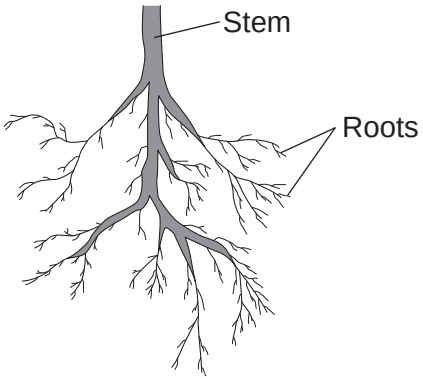
Question 03

June 2015 | BL3FP | Original Q5 | Legacy

5 Plants need different substances to survive.

Figure 4 shows the roots of a plant.

Figure 4



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

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

[1 mark]

.....

5 (a) (ii) The plant in **Figure 4** 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?

[2 marks]

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. ☐

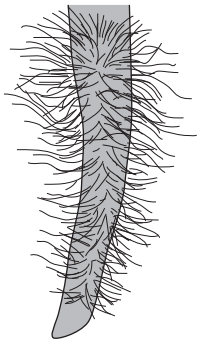
4.1.3.3 Active transport

Question 03 · continued

5 (a) (iii) The plant in **Figure 4** has roots adapted for absorption.

Figure 5 shows a magnified part of a root from **Figure 4**.

Figure 5



Describe how the root in **Figure 5** is adapted for absorption.

[2 marks]

.....

.....

.....

.....

5 (b) The leaves of plants have stomata.

What is the function of the stomata?

[1 mark]

.....

.....

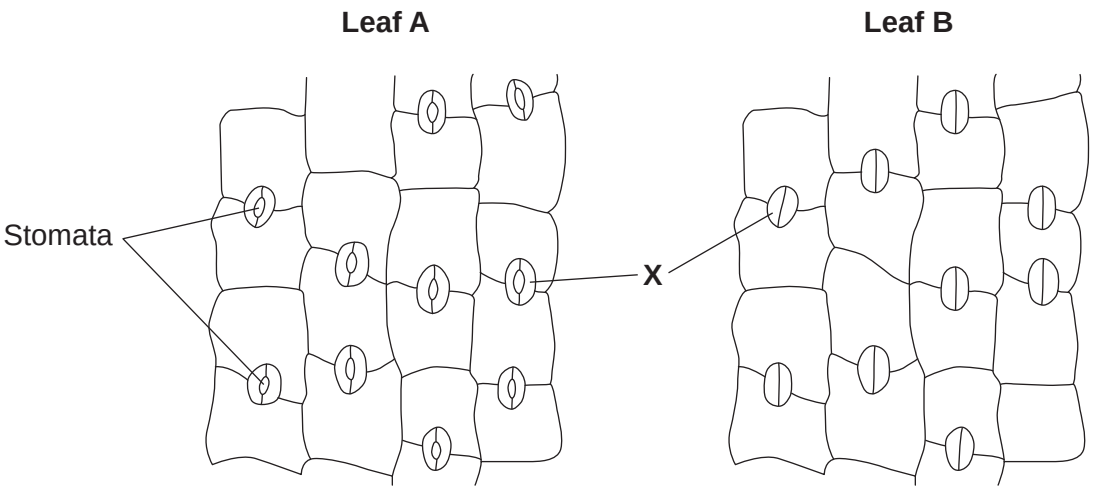
Question 5 continues on the next page

4.1.3.3 Active transport

Question 03 · continued

5 (c) **Figure 6** shows the underside of two leaves, **A** and **B**, taken from a plant in a man's house.

Figure 6



5 (c) (i) In **Figure 6**, the cells labelled **X** control the size of the stomata.

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

[1 mark]

Tick (✓) **one** box.

Guard cells ☐

Phloem cells ☐

Xylem cells ☐

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

[1 mark]

.....

.....

5 (c) (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 6**?

[1 mark]

.....

.....

9

4.1.3.3 Active transport

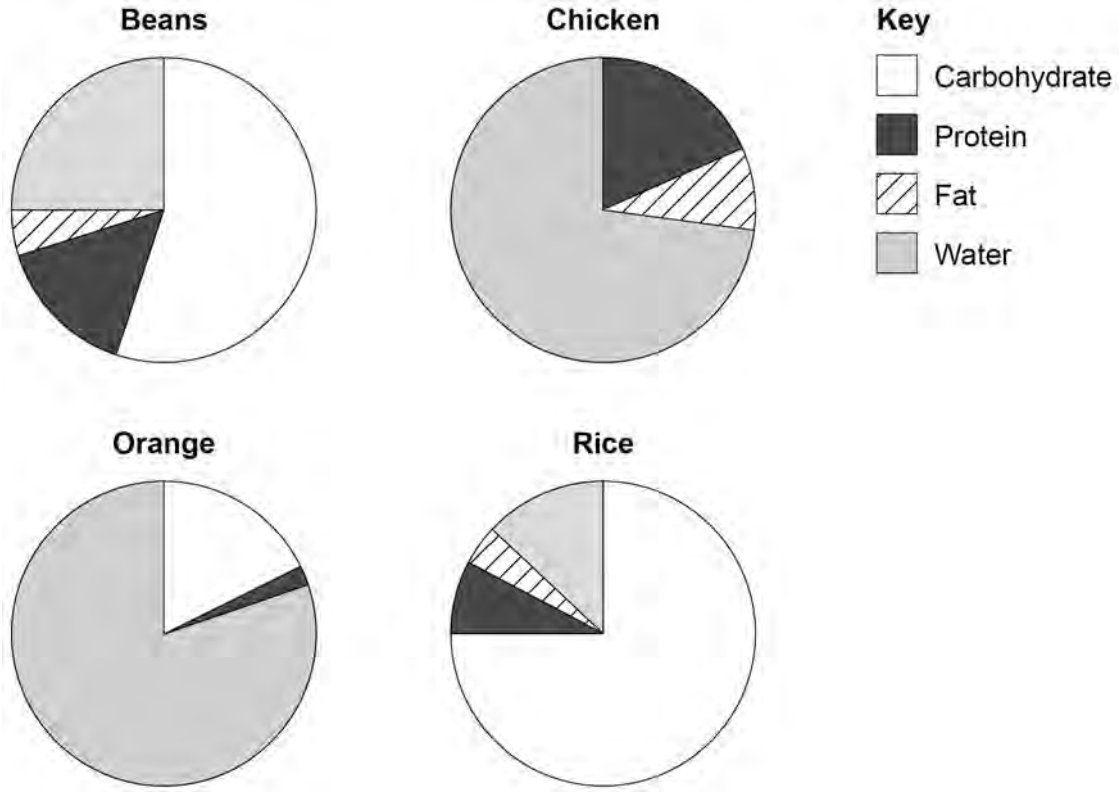
Question 04

June 2019 | 8461/1F | Original Q1

0 1 Many foods contain carbohydrates.

Figure 1 shows information about four different foods.

Figure 1



0 1 . 1 Which food contains the highest percentage of carbohydrate?

[1 mark]

Tick (✓) **one** box.

- Beans ☐
- Chicken ☐
- Orange ☐
- Rice ☐

4.1.3.3 Active transport

Question 04 · continued

0 1 . 2 Estimate the percentage of water found in beans.

[1 mark]

Percentage = _____ %

0 1 . 3 Look at **Figure 1**.

Why would eating only beans provide a more balanced diet than eating only chicken?

[1 mark]

_____

_____

0 1 . 4 Sugars are produced when enzymes break down starch.

What is the name of the enzyme which breaks down starch to produce sugars?

[1 mark]

Tick (✓) **one** box.

- Amylase ☐
- Bile ☐
- Lipase ☐
- Protease ☐

0 1 . 5 Which chemical could be used to test for glucose?

[1 mark]

Tick (✓) **one** box.

- Benedict's reagent ☐
- Biuret reagent ☐
- Iodine solution ☐
- Sulfuric acid ☐

4.1.3.3 Active transport

Question 04 · continued

0 1 . 6 What colour change would be seen in a positive test for glucose?

[1 mark]

From blue to _____.

0 1 . 7 People with diabetes have difficulty controlling the concentration of glucose in their blood.

The blood of four people was tested.

Table 1 shows the results.

Table 1

Person	Concentration of glucose in blood in arbitrary units
A	4.2
B	6.9
C	7.1
D	5.1

Table 2 shows the information used to help decide if a person has diabetes.

Table 2

Concentration of glucose in blood in arbitrary units	Conclusion
<5.6	No diabetes
5.6 to 7.0	Mild diabetes
>7.0	Severe diabetes

Which person has severe diabetes?

[1 mark]

Tick (✓) **one** box.

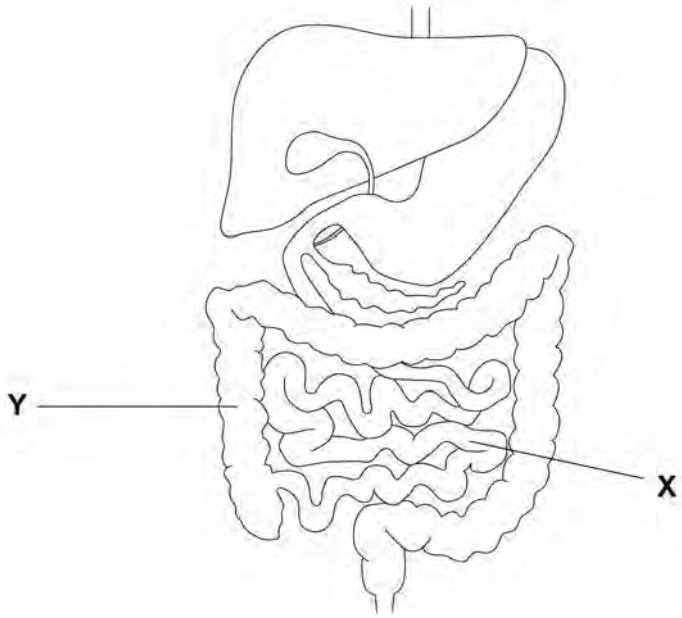
A ☐ **B** ☐ **C** ☐ **D** ☐

4.1.3.3 Active transport

Question 04 · continued

Figure 2 shows part of the human digestive system.

Figure 2



0 1 . 8 Glucose is absorbed into the bloodstream in part **X**.

Name part **X**.

[1 mark]

_____

0 1 . 9 Complete the sentences.

[2 marks]

Choose answers from the box.

active transport	**digestion**	**excretion**
osmosis	**respiration**	

Some glucose is absorbed into the bloodstream against the concentration gradient by the process of _____.

Water moves out of part **Y** and into the bloodstream by the process of _____.

10

4.1.3.3 Active transport

Question 05

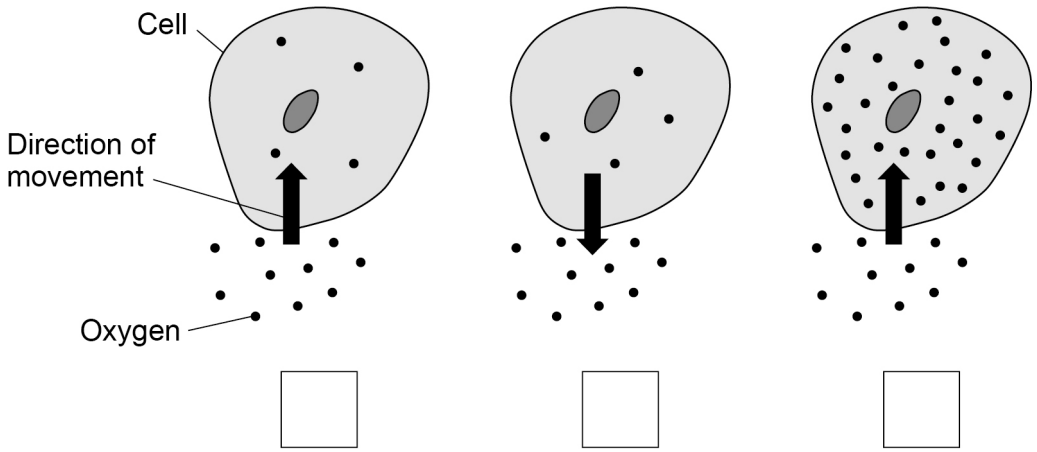
November 2021 | 8461/1F | Original Q1

0 1 This question is about cells.

0 1 . 1 Which diagram shows oxygen moving by diffusion?

[1 mark]

Tick (✓) **one** box.



☐ ☐ ☐

0 1 . 2 Complete the sentences.

[3 marks]

Choose answers from the box.

carbon dioxide	**chlorophyll**	**energy**
light	**mineral ions**	**water**

Plant cells absorb substances from the soil.

Plant cells use osmosis to absorb _____.

Plant cells use active transport to absorb _____.

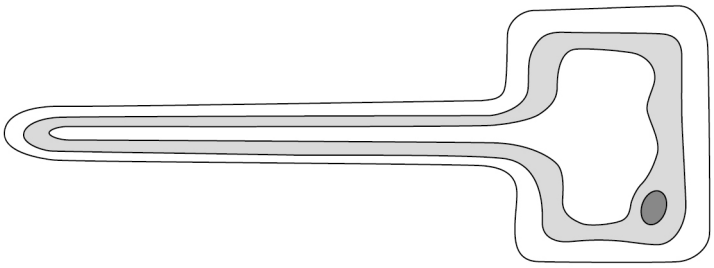
Active transport moves substances against the concentration gradient and needs _____.

4.1.3.3 Active transport

Question 05 · continued

Figure 1 shows a specialised cell that absorbs substances from the soil.

Figure 1



0 1 . 3 Name the type of specialised cell in **Figure 1**.

[1 mark]

0 1 . 4 Describe how the cell in **Figure 1** is adapted to increase the absorption of substances from the soil.

[1 mark]

Question 1 continues on the next page

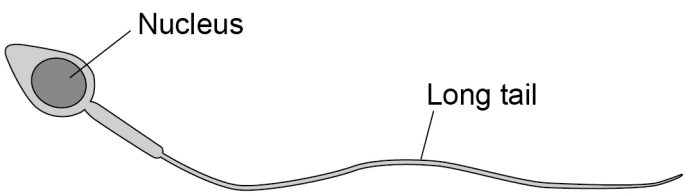
4.1.3.3 Active transport

Question 05 · continued

A sperm cell is another specialised cell.

Figure 2 shows a sperm cell.

Figure 2



0 1 . 5 Draw **one** line from each feature to how the feature helps the sperm cell carry out its function.

[2 marks]

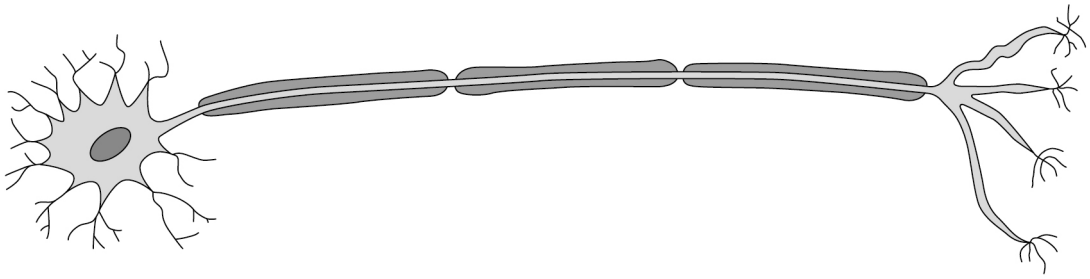
Feature of sperm cell	How the feature helps
Contains a nucleus	To break the outer layer of the egg
	To help the cell to swim to the egg
Has a long tail	To provide the chromosomes for fertilisation
	To release energy

4.1.3.3 Active transport

Question 05 · continued

Figure 3 shows another specialised cell.

Figure 3



0 1 . 6 Name the type of cell in **Figure 3**.

Describe **one** feature of the cell that helps it to carry out its function.

[2 marks]

Name of the cell _____

Feature of the cell _____

_____

10

4.1.3.3 Active transport

Question 06

0 8 A student investigated osmosis in pieces of potato.

This is the method used.

1. Cut a piece of potato into a cube.
2. Record the mass of the cube.
3. Place the cube into a beaker containing 0.4 mol/dm^3 salt solution.
4. After some time, remove the cube and record the mass.
5. Calculate the change in the mass of the cube.
6. Repeat steps 1 to 5 using two more different concentrations of salt solution.

0 8 . 1 Evaluate the student's method.

You should include how the student could improve the validity of their results.

[6 marks]

4.1.3.3 Active transport

Question 06 · continued

0 8 . 2 Why would a potato cube placed into distilled water increase in mass?

[1 mark]

Tick (✓) **one** box.

- The solution in the potato cells was less concentrated than the distilled water. ☐
- The solution in the potato cells was more concentrated than the distilled water. ☐
- The volume of water in the potato cells was greater than the volume of distilled water. ☐
- The volume of water in the potato cells was less than the volume of distilled water. ☐

0 8 . 3 Active transport is another process used by potato cells.

Give **one** way active transport is different from osmosis.

[1 mark]

_____

_____

8