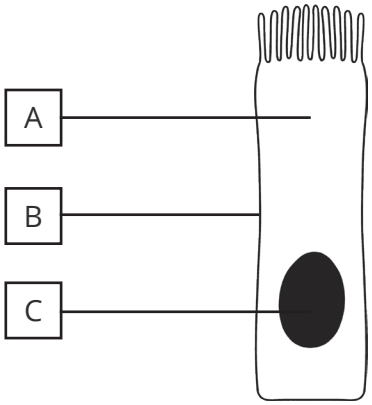
0 1 **Figure 1** shows a specialised cell.

Figure 1



0 1 . 1 Draw **one** line from each letter labelled in **Figure 1** to the name of the cell part.

[3 marks]

Label	**Cell Part**
	cell membrane
A	cell wall
B	cytoplasm
C	nucleus
	vacuole

0 1 . 2 What name is given to the cell in **Figure 1**?

Tick **one** box.

[1 mark]

- ciliated epithelial cell ☐
- nerve cell ☐
- root hair cell ☐
- sperm cell ☐

0 1 . 3 Gases move into and out of the cell by diffusion.

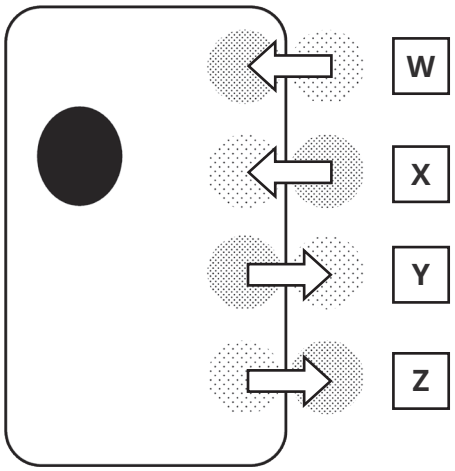
Define diffusion.

[1 mark]

0 1 . 4 **Figure 2** shows four ways in which substances move into and out of the cell.

The dots show the concentration of the molecules.

Figure 2



The cell carries out aerobic respiration. The equation for aerobic respiration is:

glucose + oxygen ⟶ carbon dioxide + water

Give the letter labelled in **Figure 2** that represents:

[2 marks]

the movement of carbon dioxide molecules

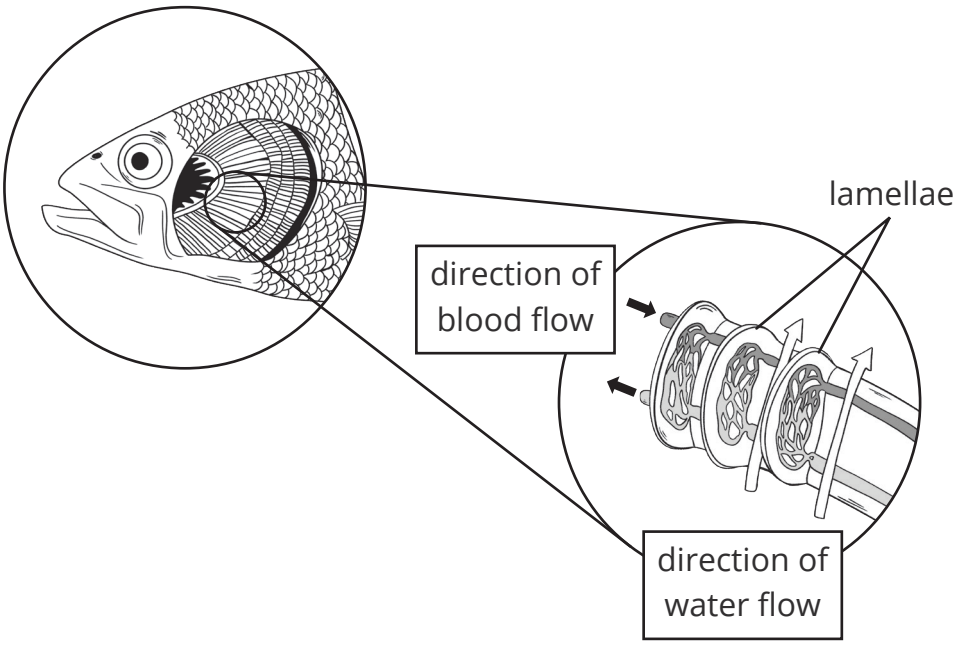
the movement of oxygen molecules

7

0 2 . 1 Fish use gills to absorb oxygen from water.

Figure 3 shows the structure of a gill filament.

Figure 3



The direction of the blood flow in the gills is in the opposite direction to the flow of water across the gill filaments.

Complete the sentences to explain why this is an advantage.

Choose answers from the box.

[3 marks]

carbon dioxide	decreases	steep
increases	shallow	oxygen

_____ in the water diffuses into the gill fibres.

This is transported away from the gills in the blood so a _____ concentration gradient is maintained.

This _____ the rate of diffusion.

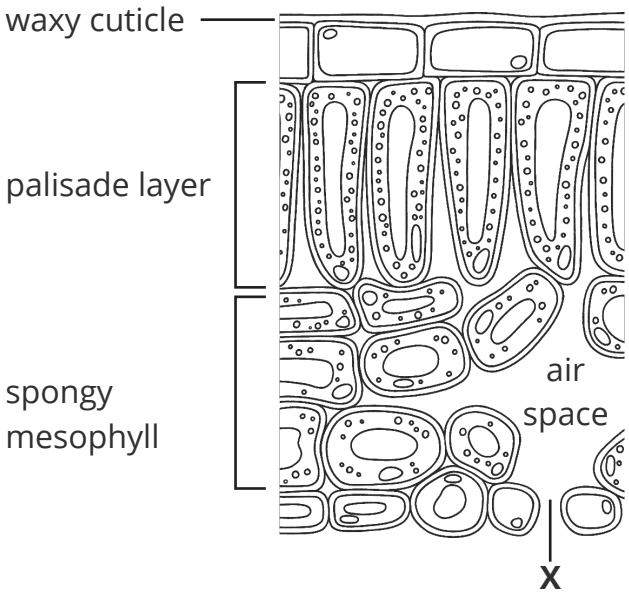
0 2 . 2 Explain **two** other ways that the gills of a fish are adapted for efficient gas exchange by diffusion.

[4 marks]

7

0 3 **Figure 4** shows a cross section of a plant leaf.

Figure 4



0 3 . 1 Name the opening labelled **X** into which gases can diffuse.

[1 mark]

0 3 . 2 Name the process that takes place in the palisade cells using carbon dioxide from the air.

[1 mark]

0 3 . 3 Explain how the air spaces in the spongy mesophyll layer increase the rate of diffusion through the leaf.

[2 marks]

4