

GCSE

BIOLOGY

Biology Test 1: Cell biology and Organisation (Foundation)

Total number of marks: 35

07

Figure 12 shows an animal cell viewed using a microscope.

Figure 12



07.1

The cell contains a nucleus.

What is the function of the nucleus?

Nucleus contains genetic material which controls the cell's activity. [1 mark]

07.2

Name **one** type of cell that does **not** contain a nucleus.

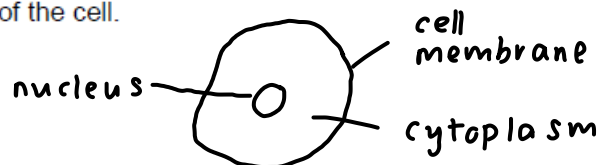
red blood cells

[1 mark]

07.3

Draw a simple diagram of the cell in Figure 12.

Label **two** parts of the cell.



[2 marks]

07.4

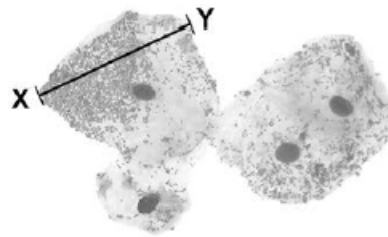
Name **one** structure found in a plant cell but **not** found in an animal cell.

cell wall

[1 mark]

Figure 13 shows some different cells.

Figure 13



07.5 The real length from point X to point Y is 0.06 mm

Calculate the magnification.

Use the equation:

$$\text{magnification} = \frac{\text{size of image}}{\text{real size of object}}$$

[3 marks]

$$\begin{aligned} \text{magnification} &= \frac{220 \text{ mm}}{0.06 \text{ mm}} \\ &= 3666.7 \\ &\approx 3670 \end{aligned}$$

$$\text{Magnification} = \times \underline{3670}$$

07.6 The cells shown in Figure 13 were viewed using a light microscope.

Give **two** advantages of using an electron microscope instead of a light microscope.

[2 marks]

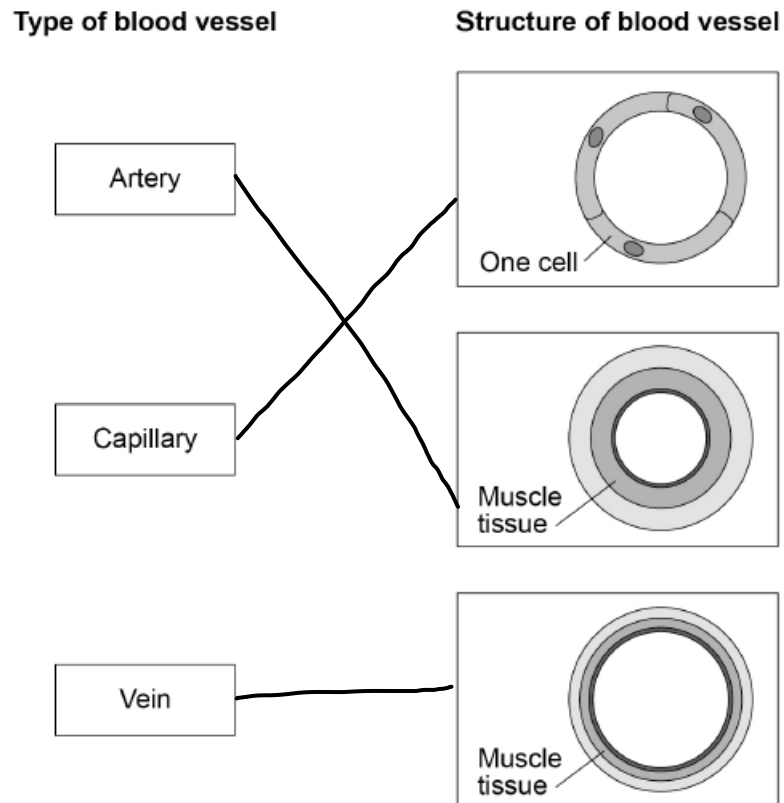
1 higher magnification

2 higher resolution

0 6 Blood is transported around the body in blood vessels.

0 6 . 1 Draw **one** line from each type of blood vessel to the structure of the blood vessel.

[2 marks]



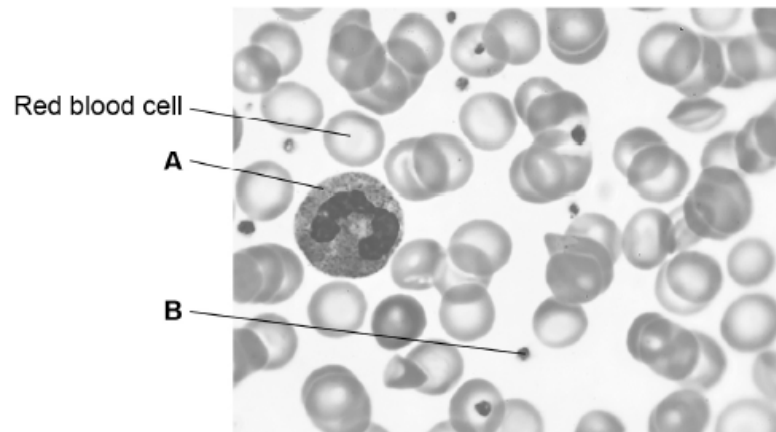
0 6 . 2 Explain how the structure of an artery is related to its function.

[2 marks]

Arteries have thick muscle tissues to pump blood and connective tissues which provide strength. The thick arterial wall withstands high pressure.

Figure 9 shows blood viewed through a microscope.

Figure 9



0 6 . 3 Name A and B in Figure 9.

[2 marks]

A phagocyte

B platelets

0 6 . 4 A red blood cell:

- has no nucleus
- contains a red pigment called haemoglobin.

Suggest how these adaptations help the red blood cell carry out its function.

[2 marks]

No nucleus more space for haemoglobin

Haemoglobin can bind reversibly to oxygen so can transport oxygen

0 6 . 5 The blood components are carried around the body in the liquid part of the blood.

What is the liquid part of the blood called?

[1 mark]

Tick (✓) **one** box.

Cell sap

Plasma

Saliva

Urine

Table 2 shows the results of a man's blood test.

Table 2

Blood component	Patient results	Normal range
Red blood cells	4.8	4.5 to 6.5
Lymphocytes	2.6	1.0 to 4.0
Neutrophils	5.1	1.8 to 7.5
Platelets	50	140 to 400

0 6 . 6 Which component of the man's blood is **not** within the normal range?

platelets

[1 mark]

0 6 . 7 Suggest a symptom the man might show.

blood does not clot following an injury

[1 mark]

0 8

Diffusion is an important process in animals and plants.

0 8 . 1

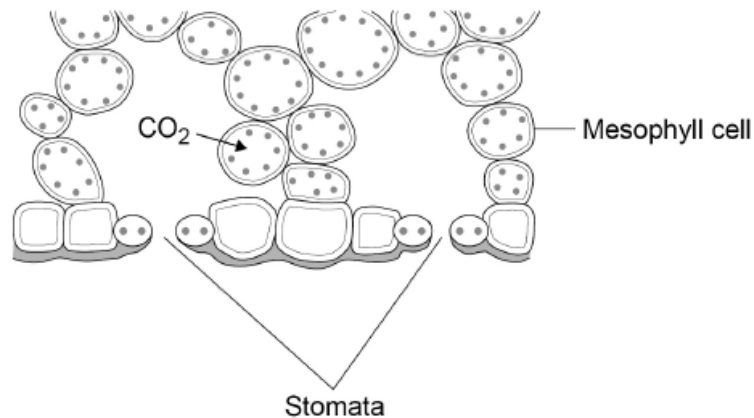
What is meant by the term diffusion?

Movement of substances from an area of high concentration to an area of low concentration, down the concentration gradient. [2 marks]

0 8 . 2

Figure 11 shows part of a leaf.

Figure 11



Molecules of carbon dioxide diffuse from the air into the mesophyll cells.

Which **two** changes will increase the rate at which carbon dioxide diffuses into the mesophyll cells?

[2 marks]

Tick (✓) **two** boxes.

Decreased number of chloroplasts in the cells

Decreased surface area of cells in contact with the air

Increased carbon dioxide concentration in the air

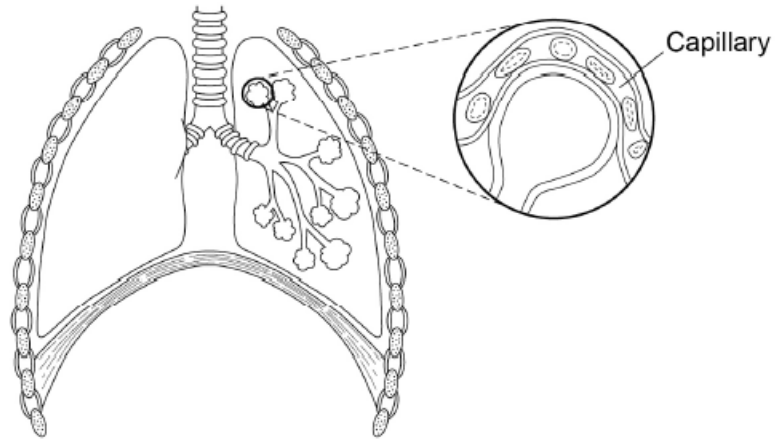
Increased number of stomata that are open

Increased oxygen concentration in the air

0 8 . 3 Diffusion also happens in the human lungs.

Figure 12 shows the human breathing system.

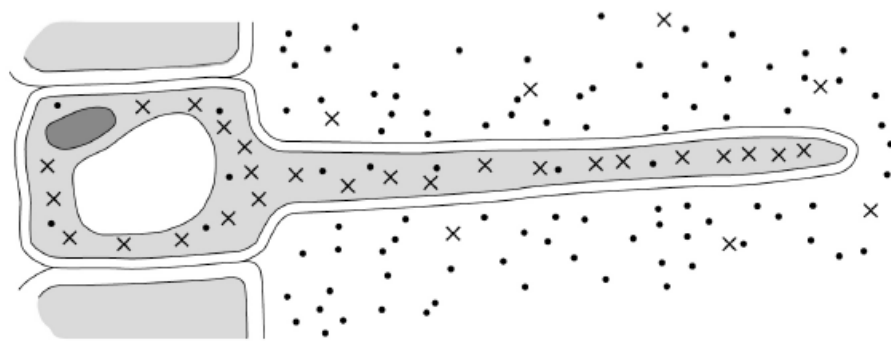
Figure 12



Explain how the human lungs are adapted for efficient exchange of gases by diffusion.
(see next page) [6 marks]

Figure 13 shows a root hair cell.

Figure 13



Key

•• Water molecules

×× Nitrate ions

0 8 . 4 Name the process by which water molecules enter the root hair cell.

osmosis

[1 mark]

08.3

There are a large number of alveoli in the lungs. Alveoli have a large surface area to volume ratio to provide a large surface area for gaseous exchange. Alveolar walls and capillary walls are one cell thick, to minimise the distance of diffusion. Alveoli are lined with a thin film of moisture which allows the gas to dissolve. Alveoli are surrounded by a rich supply of capillaries. Gases are removed continually to set up a steep concentration gradient for efficient gaseous exchange.

0 8 . 5 Nitrate ions need a different method of transport into the root hair cell.

Explain how the nitrate ions in **Figure 13** are transported into the root hair cell.

Use information from **Figure 13** in your answer.

[3 marks]

Name of process active transport

Explanation nitrate ions are transported against their concentration gradient using protein carriers. ATP is used.
