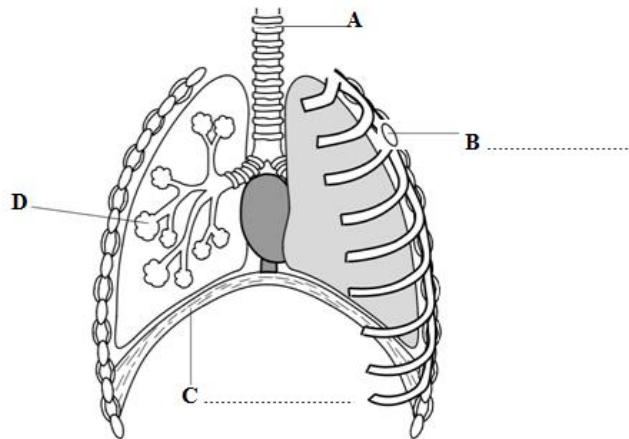


Lungs

Q:1 The diagram shows the human breathing system.



(a) On the diagram, label structures B and C. Choose your answers from the list in the box.

Alveoli diaphragm rib trachea

(2 marks)

(b) (i) Which letter, A, B, C or D, shows the site of gas exchange?

(1 mark)

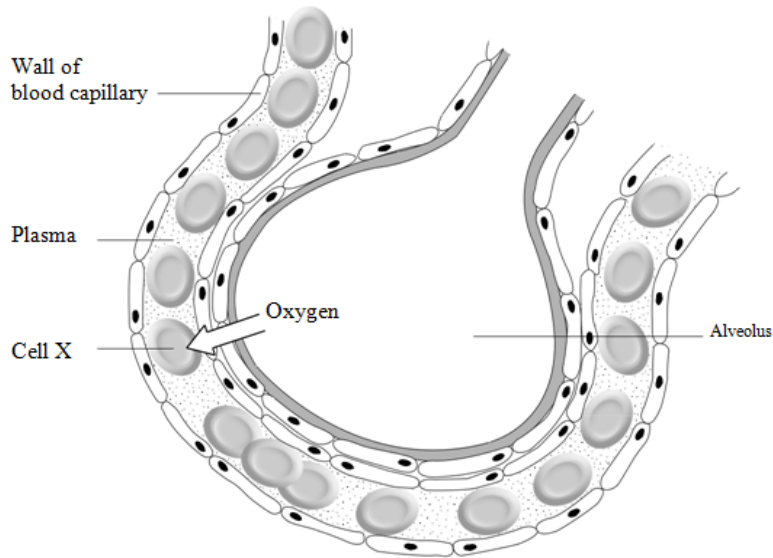
(ii) Which one of the following gases has a higher concentration in exhaled air than in inhaled air?

Draw a circle around one answer.

Carbon dioxide nitrogen oxygen

(1 mark)

Q:2 The diagram shows a small part of a lung.



(a) The arrow on the diagram shows the movement of oxygen from the air in the alveolus to cell X.

Complete the sentences by drawing a ring around the correct answer.

(a)(i) Cell X is a

- platelet
- red cell .
- white cell

(1 mark)

(a)(ii) Oxygen moves from the air in the alveolus into cell X by

- diffusion
- filtration
- respiration

(1 mark)

(a)(iii) The substance in cell X that combines with oxygen is called

- glycogen
- haemoglobin .
- lactic acid

(1 mark)

(a) (iv) Cell X does not have

a cell membrane
cytoplasm
a nucleus

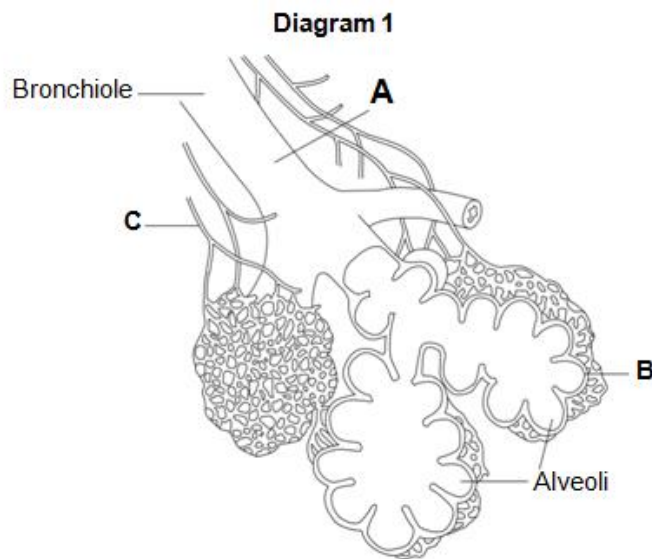
(1 mark)

(b) On the diagram, draw an arrow to show the movement of carbon dioxide during gas exchange.

(1 mark)

Q:3 People with asthma sometimes find it difficult to breathe.

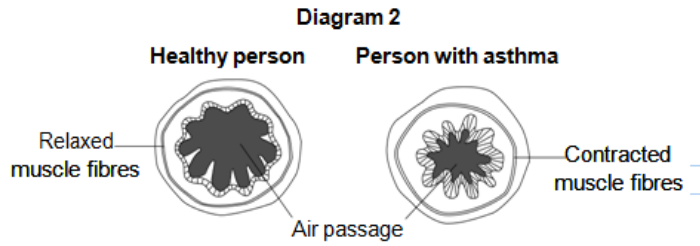
Diagram 1 shows part of a human lung. Bronchioles are tubes that carry air to the alveoli.



(a) Which letter, A, B or C, shows where oxygen enters the blood?

(1 mark)

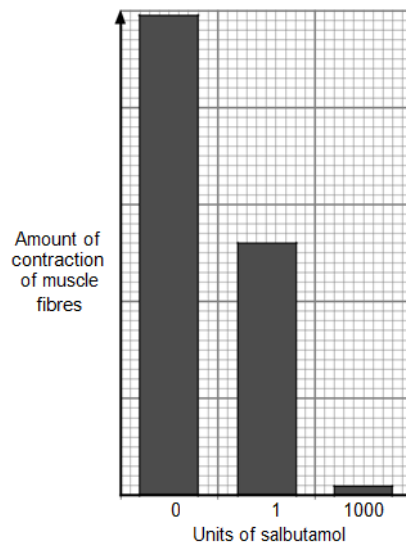
(b) Diagram 2 shows a section through a bronchiole of a healthy person and of a person suffering from asthma.



The person with asthma may find it difficult to breathe. Use information from Diagram 2 to give the reason for this.

(1 mark)

(c) A person has asthma. The bar graph shows the effect of the drug salbutamol on the contraction of the muscle fibres in the wall of this person's bronchioles.



(c) (i) Describe the effect of salbutamol on the person's muscle fibres.

(1 mark)

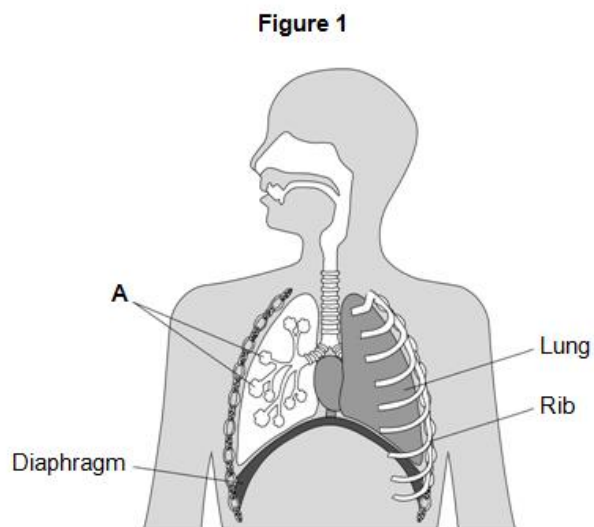
(c) (ii) How does salbutamol help this person?

(1 mark)

Q:4 Our lungs help us to breathe.

Figure 1 shows the human breathing system.

Figure 1



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

[1 mark]

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

[1 mark]

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

active transport	diffusion	osmosis
------------------	-----------	---------

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

[1 mark]

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

Arteries	capillaries	veins
----------	-------------	-------

Oxygen moves from the lungs into the blood through the walls of the _____

[1 mark]

(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.

1. _____

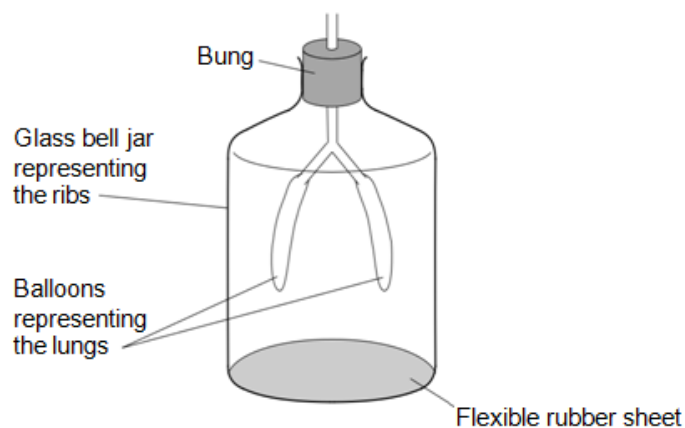
2. _____

[2 marks]

Q:5 Figure 5 shows a model representing the human breathing system.

The different parts of the model represent different parts of the human breathing system.

Figure 5



(a) (i) Which part of the human breathing system does the flexible rubber sheet represent?

[1 mark]

(a) (ii) Explain why the balloons inflate when the flexible rubber sheet is pulled down.

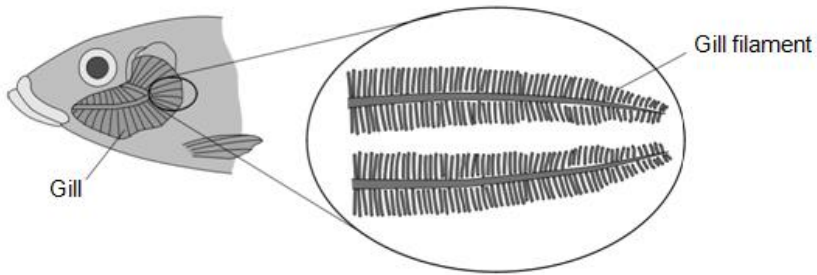
[3 marks]

(b) (i) During breathing, oxygen moves into the blood. Explain how oxygen moves into the blood.

[2 marks]

(b) (ii) Figure 6 shows a fish head and gill.

Figure 6

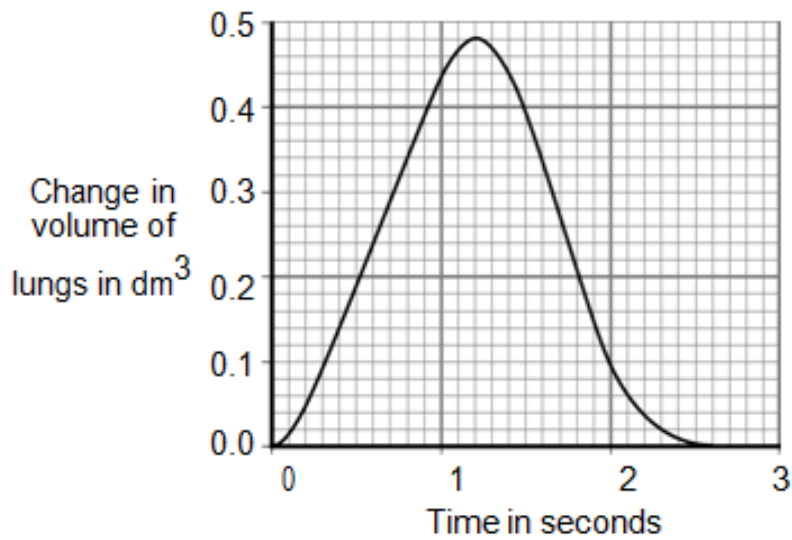


Fish absorb oxygen from the water. Oxygen is absorbed through the gills of the fish.

Explain one way in which the gills are adapted for rapid absorption of oxygen.

[2 marks]

Q:6 The diaphragm and ribcage move air into the lungs and out of the lungs. The graph shows changes in the volume of the lungs in one breathing cycle.



(a) (i) Describe the changes in the volume of the lungs in one breathing cycle.

(3 marks)

(a) (ii) Explain how the diaphragm and ribcage cause the changes in lung volume shown in the graph.

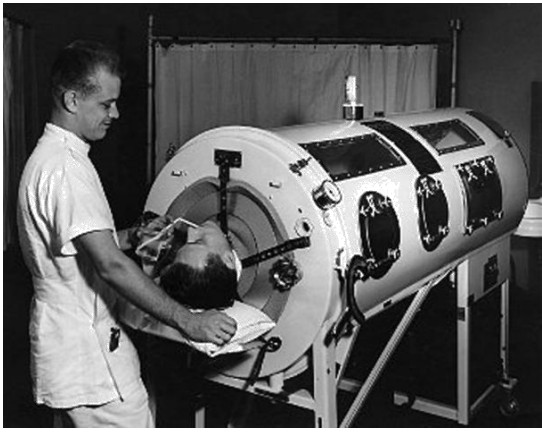
(3 marks)

(b) Sometimes patients are unable to breathe for themselves.

Mechanical ventilators are used to make these patients breathe.

Photograph 1 shows a patient in an iron lung ventilator.

Photograph 1



Air is pumped out of the iron lung, creating a very low pressure.

This low pressure causes the thorax to expand, causing air to flow into the lungs. When air is pumped back into the iron lung the pressure inside the tank increases, causing air to move out of the lungs.

Photograph 2 shows a modern ventilator.



Modern ventilators increase the pressure in the patient's airways using a tube put into the trachea.

The increased pressure in the patient's airways causes air to flow into the patient's lungs. Then, the ventilator causes the pressure in the patient's airways to drop to zero, and the patient breathes out.

(b) (i) The ventilators shown in Photographs 1 and 2 make the patient inhale in a very different way.

Describe this difference.

(2 marks)

(b) (ii) The iron lung ventilator was used mainly in the 1900s.

Most patients are now treated with the type of ventilator shown in Photograph 2.

Give one advantage and one disadvantage of using the modern ventilator rather than the iron lung ventilator.

(2 marks)

TOTAL MARKS=37