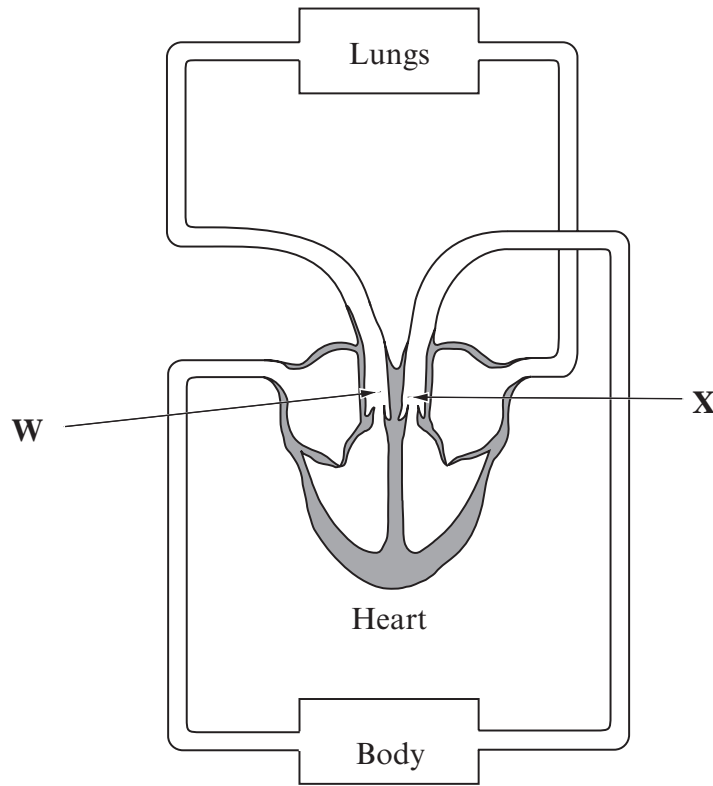


Biology 1.4 - Circulatory System in Humans - Higher Tier

Question 1.

The diagram shows the human circulatory system.



Examiner only

(a) (i) Name the blood vessels labelled: [1]

W

X

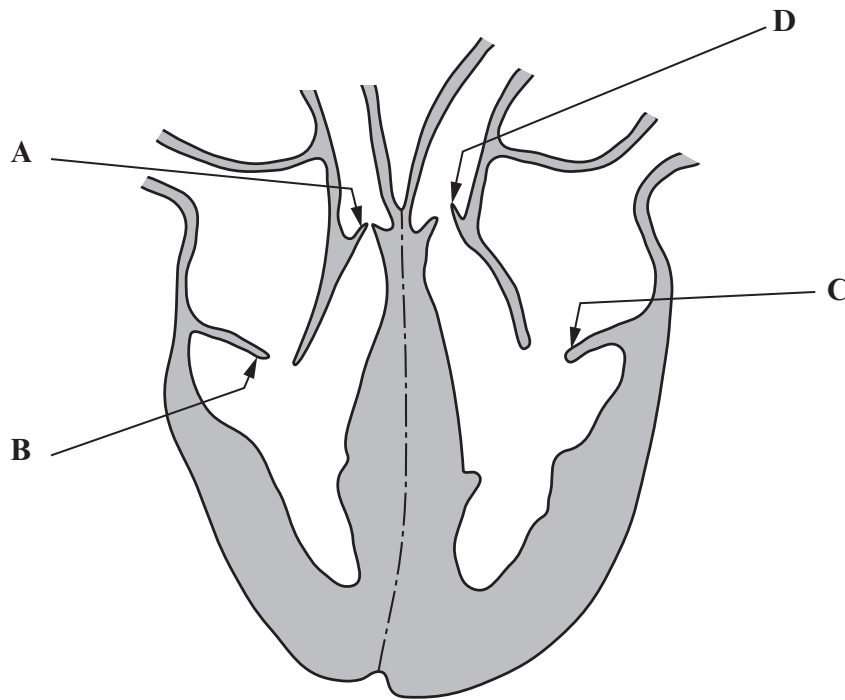
(ii) State **two** differences between the blood in vessels **W** and **X**. [2]

	Blood in vessel W	Blood in vessel X
1
2

Question 2.

Examiner
only

The diagram below shows a section through the heart with its valves labelled **A**, **B**, **C** and **D**.



(a) On the diagram label:

(i) the pulmonary vein;

[1]

(ii) the vena cava.

[1]

(b) On the diagram, draw arrows to show the direction of blood flow in the pulmonary artery and the aorta. [2]

(c) Underline the correct statement in (i) and (ii) below.

(i) When the pressure in the ventricles is highest the valves: [1]

- I. **A** and **D** are open and **B** and **C** are closed;
- II. **A** and **B** are open and **D** and **C** are closed;
- III. **B** and **C** are open and **A** and **D** are closed;
- IV. **C** and **D** are open and **A** and **B** are closed.

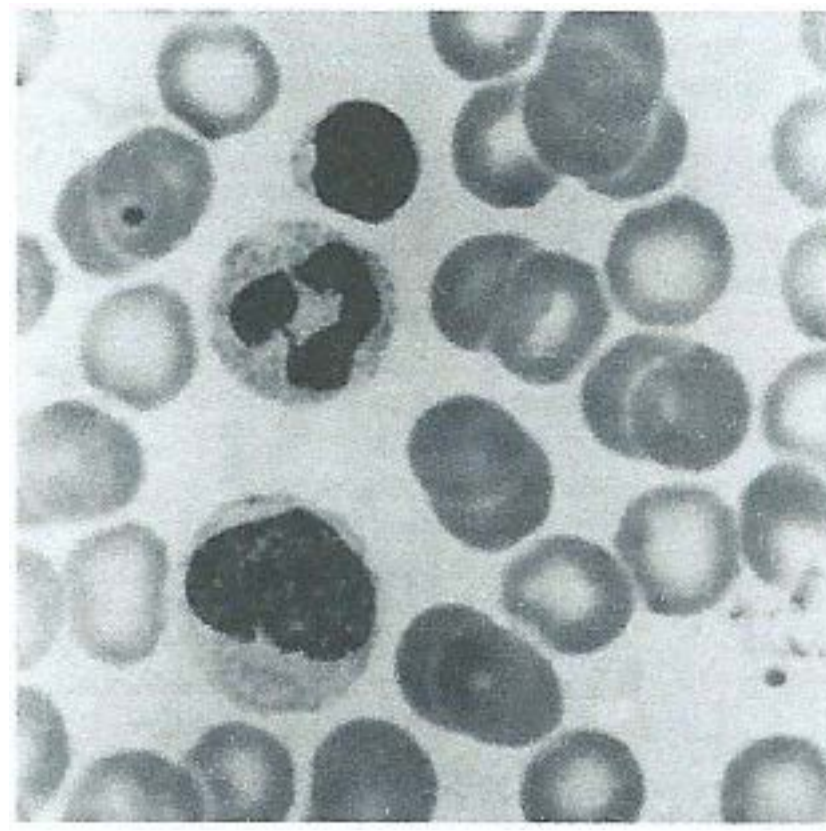
(ii) When the pressure in the ventricles is lowest the valves: [1]

- I. **A** and **B** are closed and **D** and **C** are open;
- II. **B** and **C** are closed and **A** and **D** are open;
- III. **A** and **D** are closed and **B** and **C** are open;
- IV. **C** and **D** are closed and **A** and **B** are open.

Question 3.

The photograph shows some blood cells.

Examiner
only



(a) Red blood cells are adapted to carry oxygen.

One way they are adapted is their small size.

This allows them to pass through very small capillaries.

(i) Explain **one other** reason why their small size is an adaptation to carry oxygen.

.....
..... [1]

(ii) Describe **one other** way red blood cells are adapted to carry oxygen.

.....
..... [1]

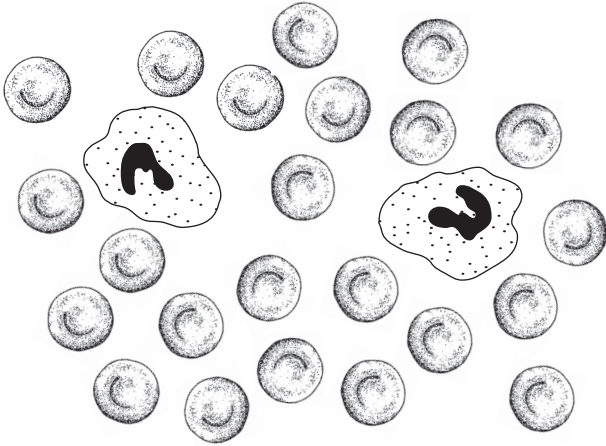
(b) Some people have heart disease because the blood flow in the coronary arteries supplying blood to the heart muscle becomes restricted.

Explain how the blood flow becomes restricted.

.....
..... [1]

Question 4.

The diagram shows a blood smear as seen through a light microscope.



(a) Complete the table below about the different parts of the blood.

[4]

name of part	function
red cell
.....	produce antibodies
phagocyte
platelets

(b) Explain why the centre of a red blood cell appears paler than the surrounding cytoplasm when seen through a light microscope. [2]

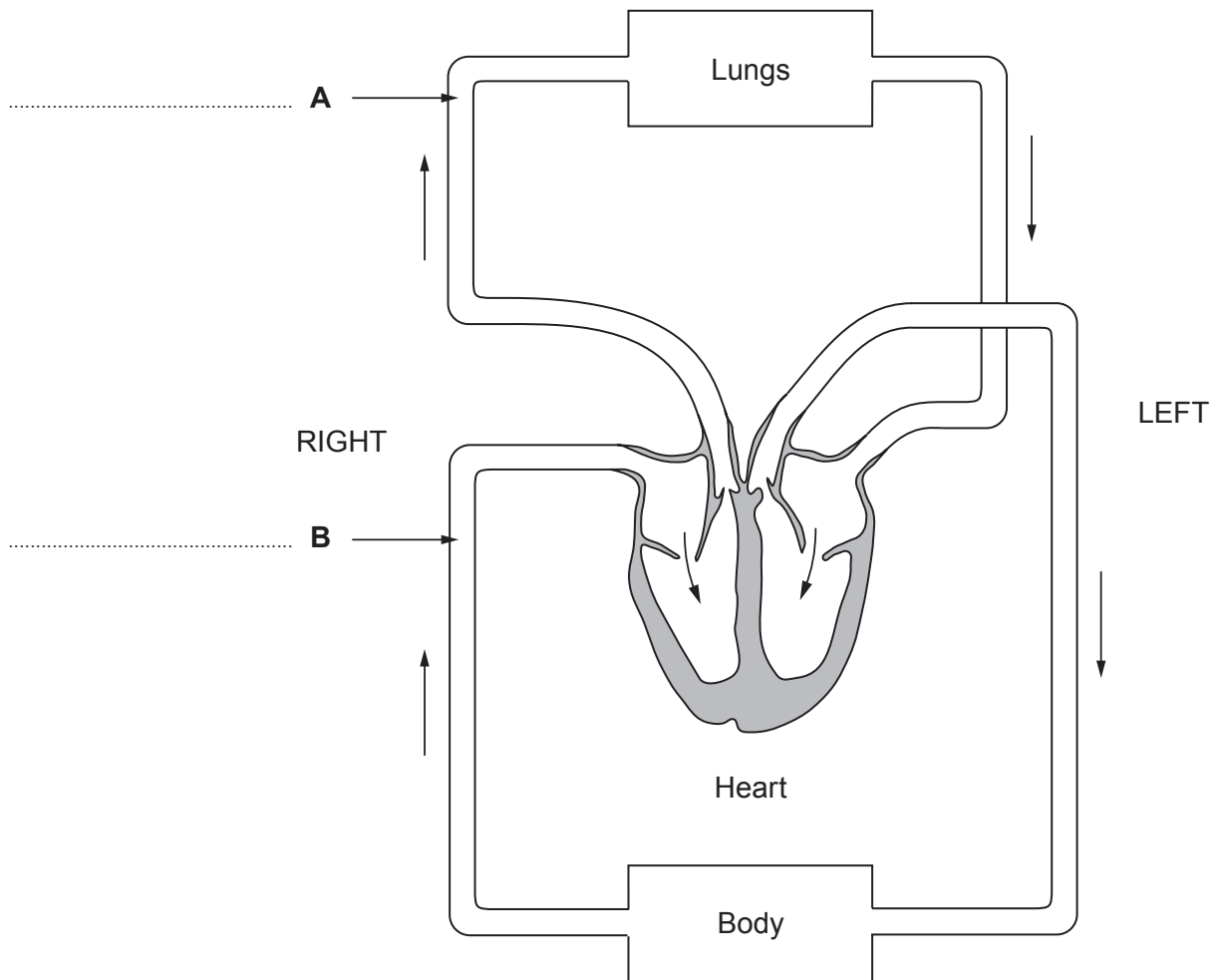
.....

.....

Question 5.

The diagram below shows the double circulation of blood found in humans.

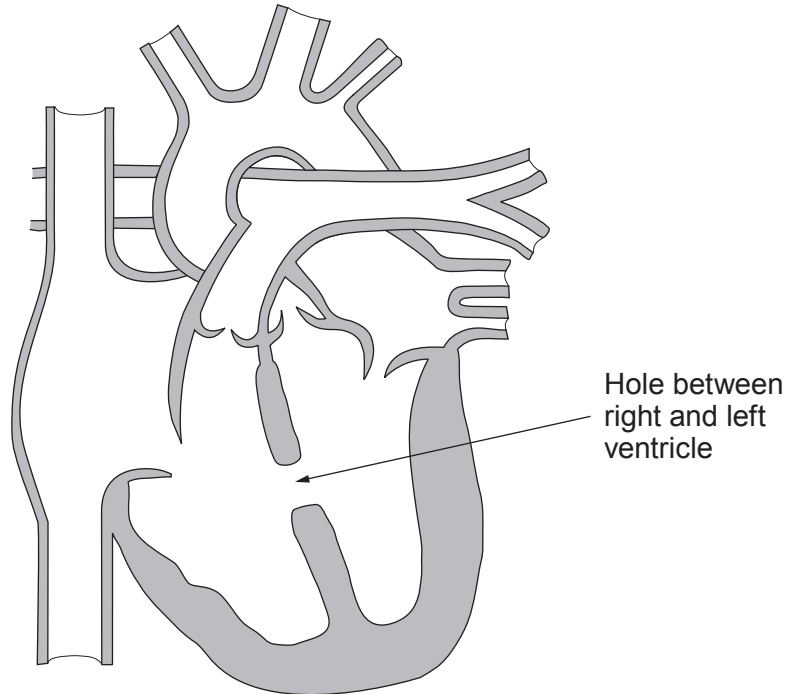
Examiner
only



(a) Label blood vessels **A** and **B** on the diagram above.

[2]

- (b) Occasionally a baby is born with a hole in the wall that separates the left and right sides of the heart. In the diagram below this hole is shown in the wall separating the right and left ventricles.



Using the diagram of the double circulation of blood shown opposite and your knowledge of blood circulation, explain the consequences to a person suffering from a hole between the right and left ventricles of the heart. [4]

.....

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.....

.....

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