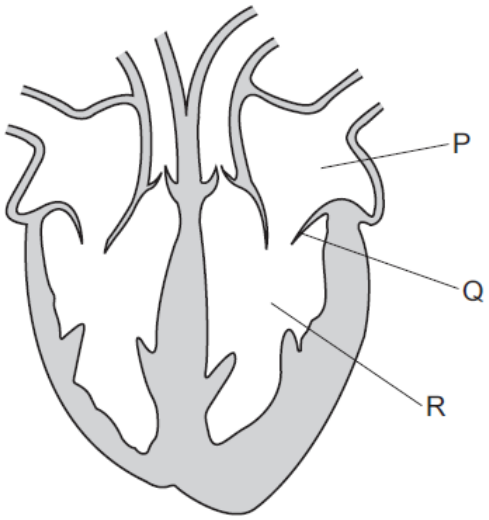
Transport in animals – 2022 June IGCSE 0610

1. June/2022/Paper_ 11/No.19

The diagram shows a cross-section through the heart of a mammal.



Which row correctly identifies P, Q and R?

	P	Q	R
A	valve	right atrium	right ventricle
B	left atrium	valve	left ventricle
C	left ventricle	left atrium	valve
D	right atrium	valve	right ventricle

2. June/2022/Paper_ 11/No.20

Which process is slower than normal in a person with very few platelets?

A antibody formation

B blood clotting

C oxygen transport

D phagocytosis

3. June/2022/Paper_ 12/No.5

The table shows some structures found in the human body.

Which row shows the correct level of organisation, from the simplest structure to the most complex?

	simple →			complex
A	red blood cell	heart	heart muscle	circulatory system
B	heart muscle	circulatory system	red blood cell	heart
C	red blood cell	heart muscle	heart	circulatory system
D	heart muscle	red blood cell	circulatory system	heart

4. June/2022/Paper_ 12/No.19

Which row correctly links the blood vessels with their functions?

	carries blood to the right atrium from the body	carries blood from the right ventricle to the lungs	carries blood from the lungs to the left atrium	carries blood from the left ventricle to the body
A	vena cava	pulmonary artery	pulmonary vein	aorta
B	aorta	pulmonary vein	pulmonary artery	vena cava
C	aorta	pulmonary artery	pulmonary vein	vena cava
D	vena cava	pulmonary vein	pulmonary artery	aorta

5. June/2022/Paper_ 12/No.20

Which process is slower than normal in a person with very few platelets?

A antibody formation

B blood clotting

C oxygen transport

D phagocytosis

6. June/2022/Paper_ 13/No.20

Which process is slower than normal in a person with very few platelets?

A antibody formation

B blood clotting

C oxygen transport

D phagocytosis

7. June/2022/Paper_ 21/No.18

What is a function of the lymphatic system?

A absorption of glucose

B blood clotting

C circulation of body fluids

D temperature regulation

8. June/2022/Paper_ 23/No.17

In a double circulation, what is the role of the right side of the heart?

A to receive oxygenated blood from the body and to pump oxygenated blood to the lungs

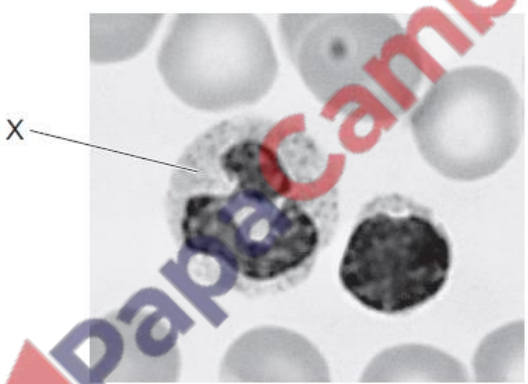
B to receive oxygenated blood from the body and to pump deoxygenated blood to the lungs

C to receive deoxygenated blood from the body and to pump oxygenated blood to the lungs

D to receive deoxygenated blood from the body and to pump deoxygenated blood to the lungs

9. June/2022/Paper_ 23/No.18

The photomicrograph shows some human blood cells.



What is the name of cell X and what is its function?

	name	function
A	lymphocyte	produces antibodies
B	lymphocyte	engulfs pathogens
C	phagocyte	produces antibodies
D	phagocyte	engulfs pathogens

10. June/2022/Paper_ 32/No.1(a_ c)

(a) Blood group is inherited. There are four human blood groups: A, B, AB and O.

Surveys were carried out in two different countries to find out the percentage of the population in each blood group.

The results are shown in Fig. 5.1.

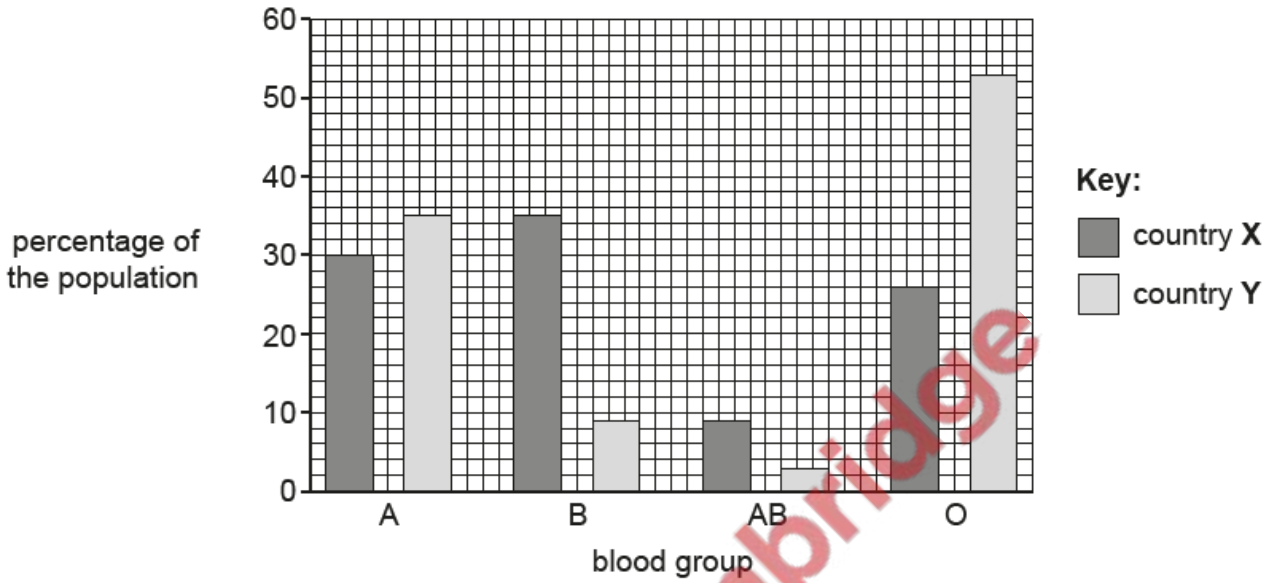


Fig. 5.1

(i) Complete the sentences that describe the data shown in Fig. 5.1.

The rarest blood group in both countries is ..... .

In country **X** blood group ..... is the most common but in country **Y** it is blood group ..... .

The percentage of the population of country **X** that has blood group **A** is .....%.

[4]

(ii) Suggest the type of variation shown in Fig. 5.1 and give a reason for your choice.

type of variation .....

reason .....

.....

.....

[2]

11. June/2022/Paper_ 33/No.1(a_ b)

The human circulatory system contains blood vessels.

(a) Fig. 1.1 shows some names of blood vessels and organs.

The boxes on the left show the names of some blood vessels that deliver blood to organs.

The boxes on the right show the names of some organs that receive blood.

Draw straight lines from each blood vessel to the organ that it delivers blood to.

Draw **four** straight lines.

blood vessel that delivers blood	**organ receiving blood**
pulmonary artery	heart
pulmonary vein	kidney
renal artery	lungs
vena cava	

Fig. 1.1

[4]

(b) Table 1.1 shows three types of blood vessel, the thickness of their walls and whether they contain valves.

Complete the descriptions of the blood vessels in Table 1.1.

Table 1.1

type of blood vessel	thickness of wall	presence of valves
artery	thick	no
capillary		
vein		

[4]

12. June/2022/Paper_ 41/No.2(a_ b)

Mammals have a double circulation.

Fig. 2.1 is a diagram of a section through the heart of a mammal. The arrows show the direction of blood flow through the heart and blood vessels.

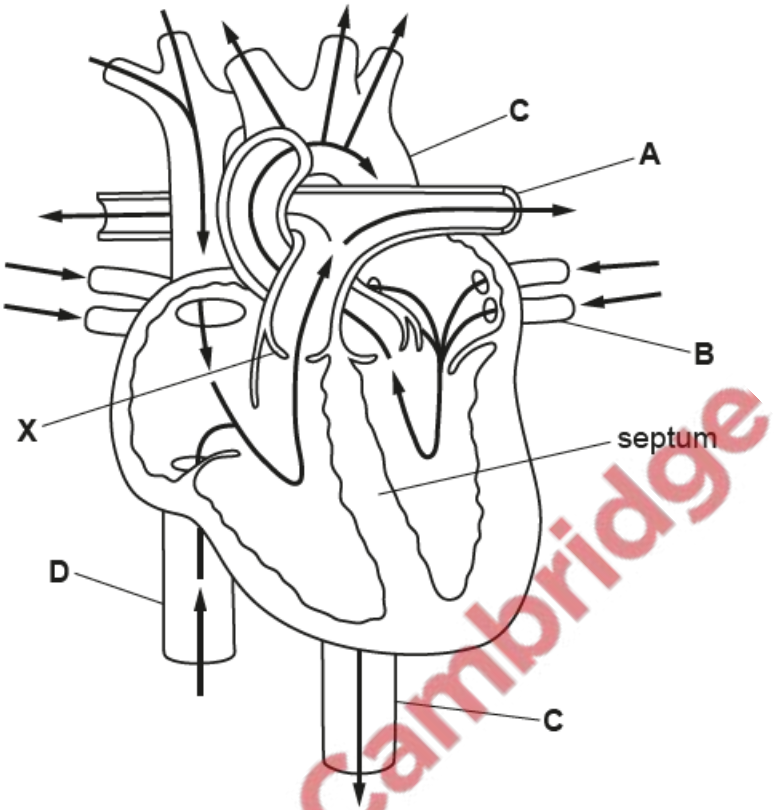


Fig. 2.1

(a) (i) State the name of the chamber of the heart with the thickest wall.

..... [1]

(ii) **D** is a vein. State the name of this vein and describe its structure.

name .....

description of structure .....

.....

.....

.....

.....

.....

[3]

(iii) Identify the structure labelled **X** in Fig. 2.1 **and** state its role in the heart.

.....

.....

.....

.....

..... [2]

(b) Fig. 2.2 is a diagram that shows the double circulation of a mammal. The arrows indicate the movement of oxygen and carbon dioxide in and out of the blood.

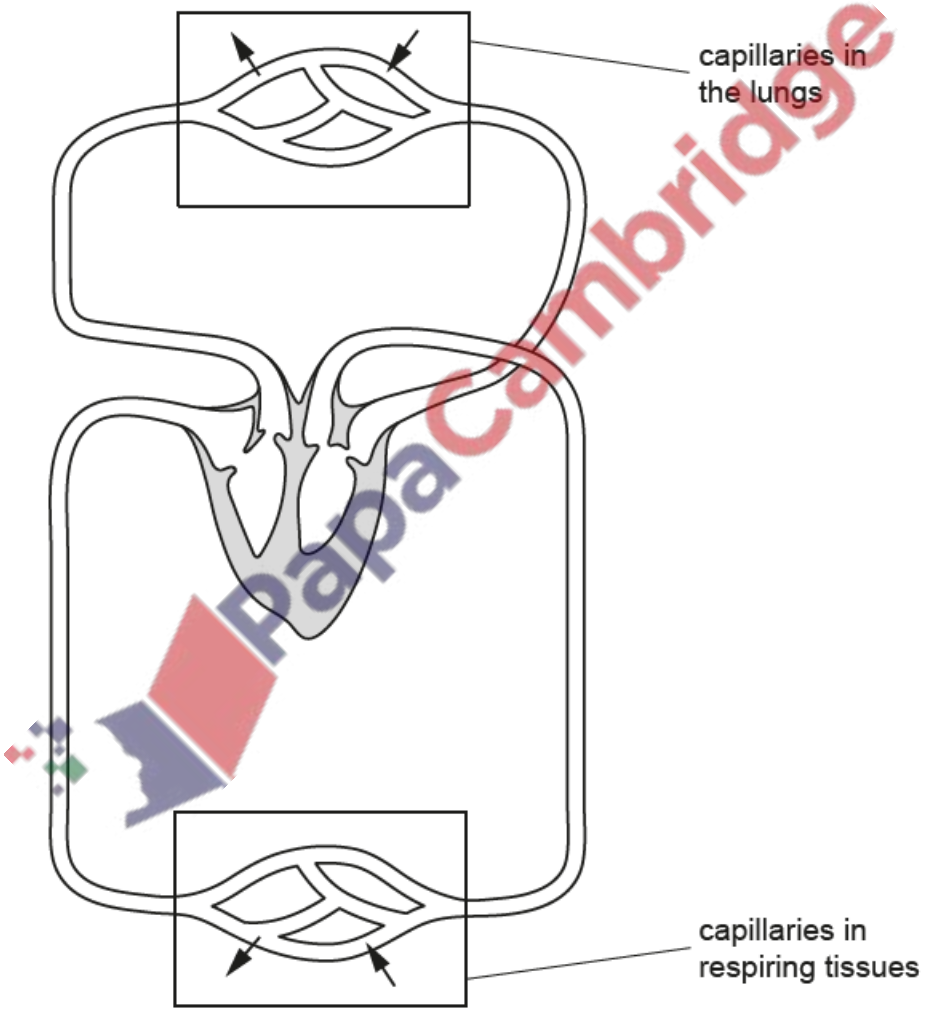


Fig. 2.2

(i) Shade the blood vessel in Fig. 2.2 that transports blood with the highest oxygen concentration. [1]

(ii) Describe the evidence shown in Fig. 2.2 that the mammal has a double circulatory system.

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..... [2]

(iii) Explain the advantages of a double circulation.

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..... [4]

13. June/2022/Paper_ 42/No.1(c_ e)

(c) Carbon dioxide is a raw material for photosynthesis.

(i) State the process by which carbon dioxide travels into the leaf from the air.

..... [1]

(ii) Describe the pathway taken by a molecule of carbon dioxide, from the air outside a leaf to a spongy mesophyll cell.

.....

.....

.....

.....

..... [2]

(d) Low concentrations of carbon dioxide in the air may restrict the rate of photosynthesis in plants.

(i) State the term given to something present in the environment in such short supply that it restricts life processes.

..... [1]

(ii) State **one** other feature of the environment that may also restrict the rate of photosynthesis.

..... [1]

(e) Researchers have devised a process of artificial photosynthesis. They use gold nanoparticles as a catalyst to utilise green light to convert carbon dioxide to fuels, such as propane.

Suggest the advantages to the environment of using artificial photosynthesis on a large scale.

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..... [2]

14. June/2022/Paper_ 43/No.2(a_ b)

Red blood cells contain the protein haemoglobin.

(a) **(i)** State the names of the **four** chemical elements that are found in all proteins.

.....

..... [2]

(ii) State the role of haemoglobin.

.....

.....

..... [1]

(b) Fig. 2.1 shows a photomicrograph of some red blood cells from a person with sickle cell anaemia.

Abnormal red blood cells occur because of a mutation in the gene for haemoglobin.

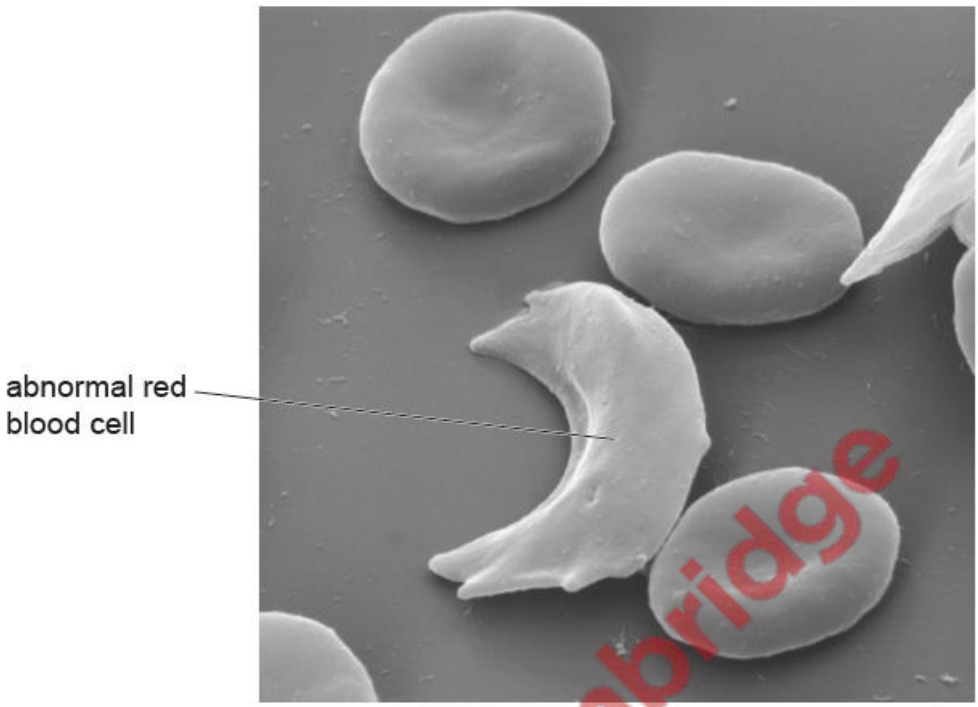

Fig. 2.1

Suggest how the shape of the abnormal red blood cell shown in Fig. 2.1 will affect blood flow.

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..... [2]