Transport in animals – 2023 June IGCSE Biology 0610

1. June/2023/Paper_0610/11/No.19

Which statements describe how the structures in the circulatory system function?

1 a muscular pump to push blood into vessels

2 valves to ensure one-way blood flow

3 veins to take blood away from the heart

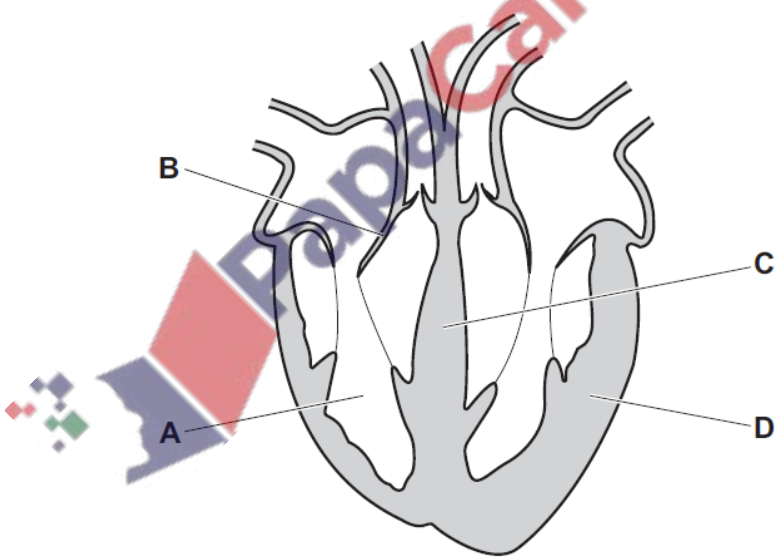
4 vessels to return blood to the heart

A 1, 2 and 3 **B** 1, 2 and 4 **C** 1, 3 and 4 **D** 2, 3 and 4

2. June/2023/Paper_0610/11,22/No.20,18

The diagram shows a section through the heart.

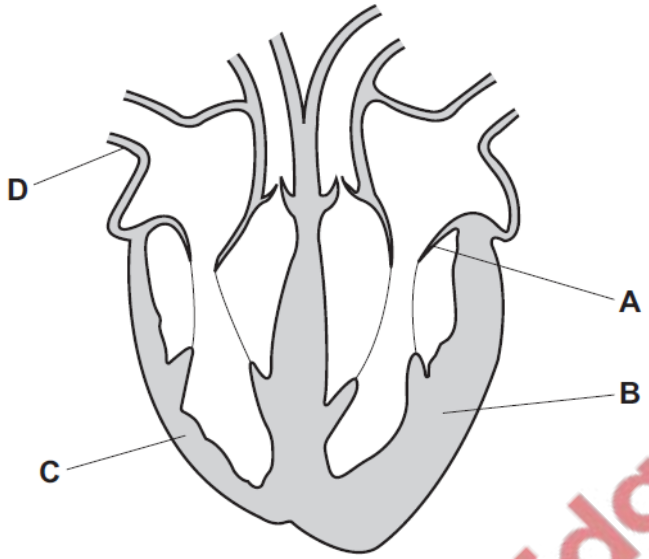
Which part is the septum?



3. June/2023/Paper_0610/12,22/No.19,17

The diagram shows the human heart.

Which label shows the left ventricle?



4. June/2023/Paper_0610/12/No.20

Which row shows the features of an artery or a vein?

	blood vessel	diameter of lumen	thickness of wall
A	artery	large	thick
B	artery	small	thin
C	vein	large	thin
D	vein	small	thick

5. June/2023/Paper_0610/13/No.19

The cholera bacterium toxin causes dehydration and loss of salts from the blood in humans.

Which statement explains the reason for this?

A Chloride ions are secreted into the small intestine where they increase the water potential.

B Chloride ions are secreted into the small intestine which causes water to move into the intestine by osmosis.

C Chloride ions are secreted into the small intestine which causes water to move out of the intestine by osmosis.

D Chloride ions are secreted into the small intestine which causes the water potential of the blood to decrease.

6. June/2023/Paper_0610/13/No.20

During inspiration, the processes listed take place.

P volume of the thorax increases

Q air rushes into the lungs

R pressure in the thorax decreases

S external intercostal muscles contract

T diaphragm moves down, ribs move upwards and outwards

What is the correct sequence for these processes?

A Q → P → S → R → T

B S → T → P → R → Q

C Q → P → S → T → R

D S → Q → R → P → T

7. June/2023/Paper_0610/21/No.17

Which statements describe how the structures in the circulatory system function?

1 a muscular pump to push blood into vessels

2 valves to ensure one-way blood flow

3 veins to take blood away from the heart

4 vessels to return blood to the heart

A 1, 2 and 3 **B** 1, 2 and 4 **C** 1, 3 and 4 **D** 2, 3 and 4

8. June/2023/Paper_0610/22/No.18

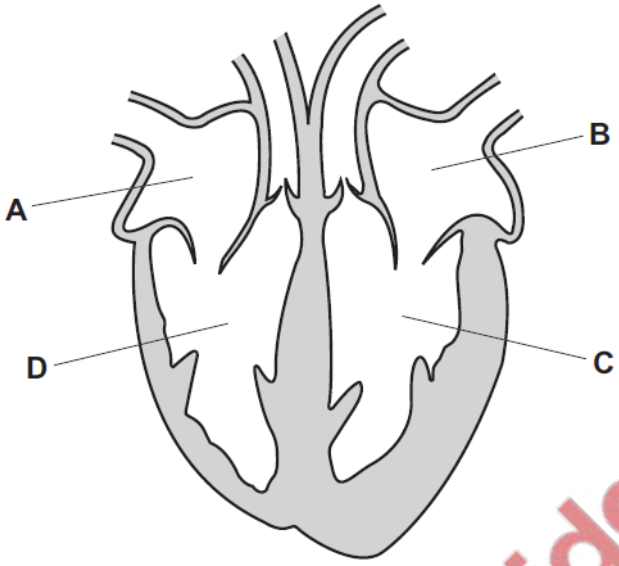
Which row shows the features of an artery or a vein?

	blood vessel	diameter of lumen	thickness of wall
A	artery	large	thick
B	artery	small	thin
C	vein	large	thin
D	vein	small	thick

9. June/2023/Paper_0610/23/No.17

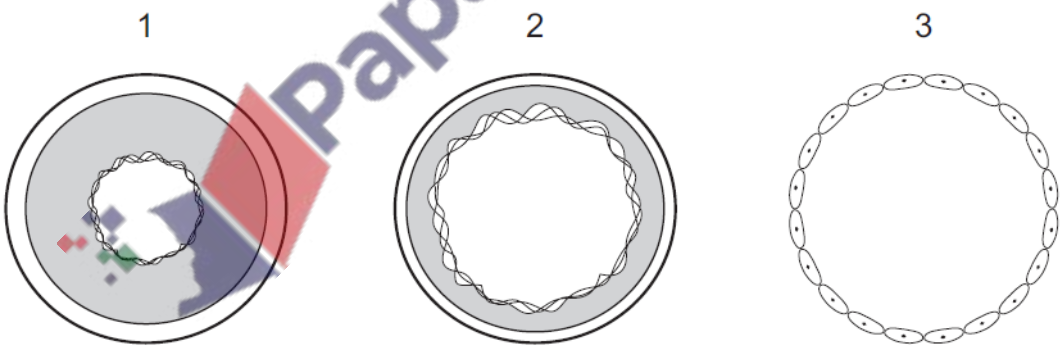
The diagram shows a section of the human heart.

Which label identifies the right ventricle?



10. June/2023/Paper_0610/23/No.18

The diagrams show sections through three types of blood vessel. They are **not** drawn to the same scale.



In which order will red blood cells flow through these vessels in the human body when travelling from the aorta to the right atrium of the heart?

A $1 \rightarrow 2 \rightarrow 3$ **B** $1 \rightarrow 3 \rightarrow 2$ **C** $2 \rightarrow 3 \rightarrow 1$ **D** $3 \rightarrow 1 \rightarrow 2$

11. June/2023/Paper_0610/31/No.3

Fig. 3.1 is a photomicrograph of a sample of human blood.

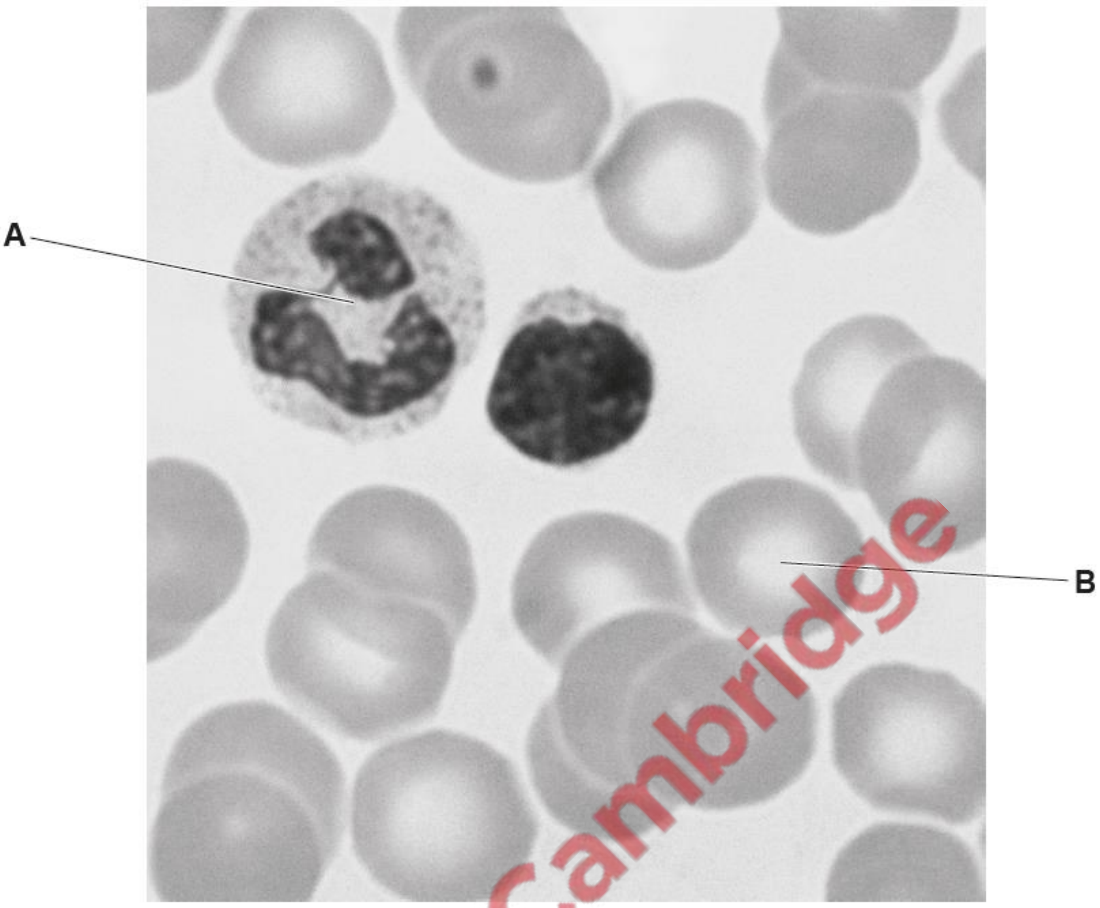


Fig. 3.1

(a) Identify and describe the functions of the cells labelled **A and B** in Fig. 3.1.

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..... [4]

(b) Describe how platelets in the blood prevent disease.

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..... [2]

(c) Blood plasma transports many substances including excretory products and hormones.

(i) Circle the names of **two** excretory products in humans.

amino acids **cellulose** **carbon dioxide** **glucose**

lipase **oxygen** **urea**

[2]

(ii) State the names of **two** hormones that are produced by the reproductive organs.

1 .....

2 .....

[2]

[Total: 10]

(a) Complete the sentences about the circulatory system.

The heart ..... blood around the body.

Blood is carried away from the heart in blood vessels called ..... .

Blood is carried to the heart in blood vessels called ..... .

Nutrients are delivered to cells by blood vessels called ..... .

One-way flow of blood is ensured by the presence of ..... .

[5]

(b) Fig. 4.1 shows ECG traces of the activity of a student's heart.

An ECG trace was produced while the student was at rest and while the student was exercising.

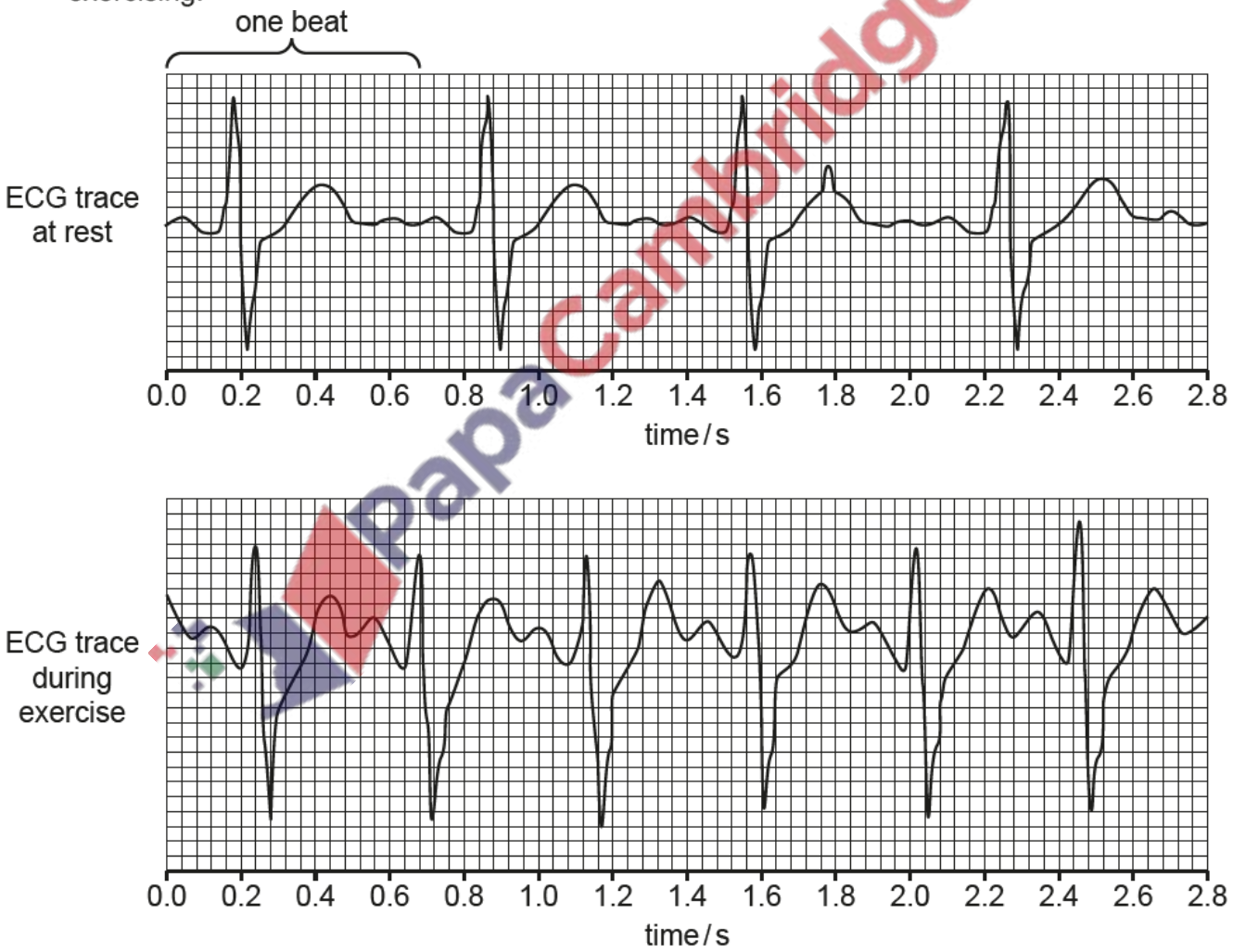

Fig. 4.1

The ECG trace shows the number of heart beats in 2.8 seconds.

There were four heart beats in 2.8 seconds at rest.

(i) State the number of heart beats in 2.8 seconds during exercise.

..... [1]

(ii) Calculate the percentage **increase** in heart beats between at rest and during exercise.

Space for working.

.....% [1]

(c) Regular exercise reduces the risk of developing coronary heart disease (CHD).

Describe other ways of reducing a person's risk of developing coronary heart disease.

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..... [3]

(d) Fig. 4.2 shows a stethoscope which is used to listen to the heart.

Fig. 4.2

State the cause of the heart sounds detected by the stethoscope.

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..... [1]

[Total: 11]

13. June/2023/Paper_0610/43/No.3

Fig. 3.1 is a diagram of a section through a human heart.

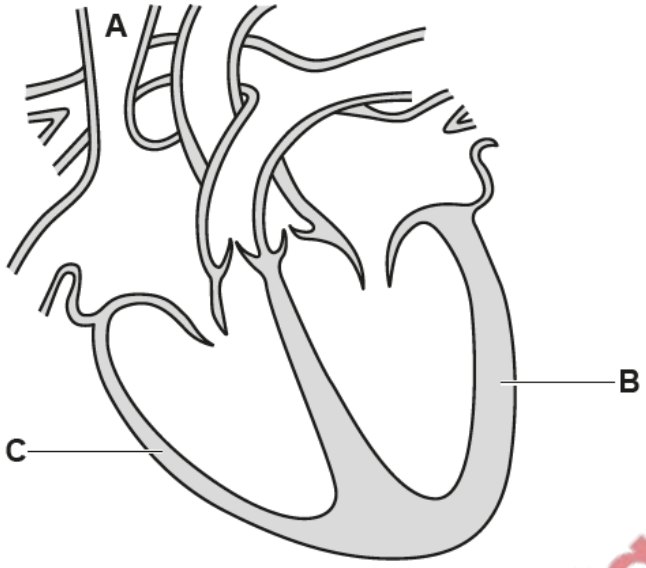

Fig. 3.1

(a) Draw an **X** on the septum in Fig. 3.1. [1]

(b) Explain the reason for the difference between the thickness of the walls at **B** and at **C** in Fig. 3.1.

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..... [2]

(c) A red blood cell enters the vena cava at **A** in Fig. 3.1.

Explain how the red blood cell is moved from the vena cava to the aorta.

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..... [6]

(d) An athlete measured her heart rate during a running race. She recorded it before the race, during the race and during her recovery.

Her results are shown in Fig. 3.2.

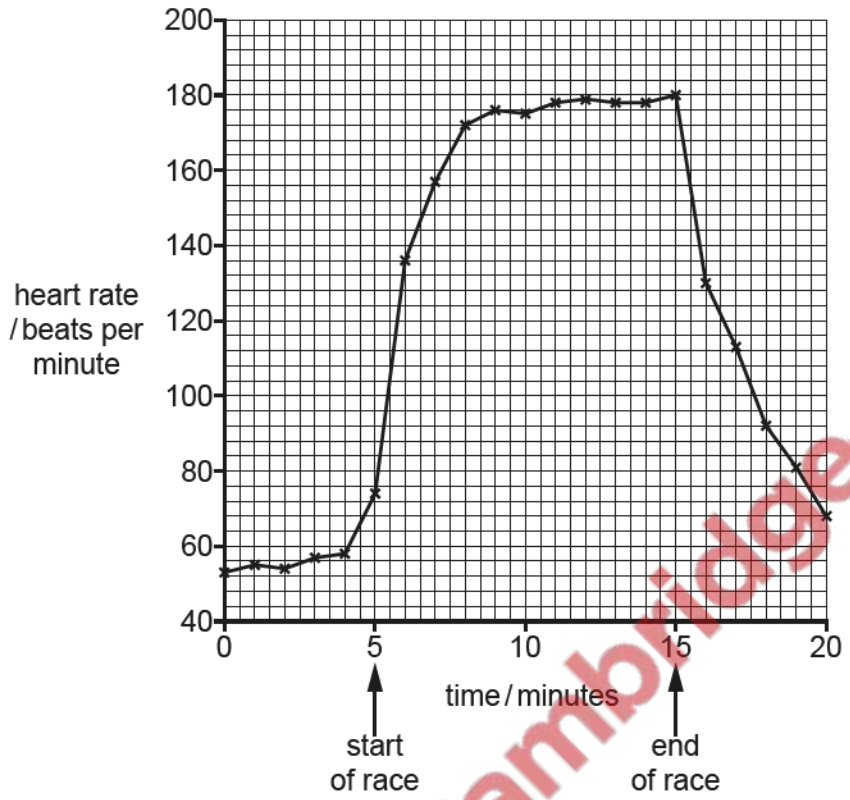

Fig. 3.2

(i) Suggest how the athlete could monitor the activity of her heart.

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..... [1]

(ii) Calculate the percentage change in heart rate from the maximum heart rate reached during the race until the heart rate recorded at 18 minutes.

Give your answer to **three** significant figures.

Space for working.

..... %
[3]

(iii) Explain why heart rate must increase during exercise.

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..... [3]

[Total: 16]

14. March/2023/Paper_ 0610/12/No.19

Which row about the circulatory system is correct?

	part that pumps blood	part with valves
A	heart	heart and veins
B	heart and blood vessels	all blood vessels
C	capillaries	heart
D	heart	capillaries and arteries

15. March/2023/Paper_ 0610/12/No.20

Which structures may become blocked in coronary heart disease?

A arteries

B atria

C veins

D ventricles

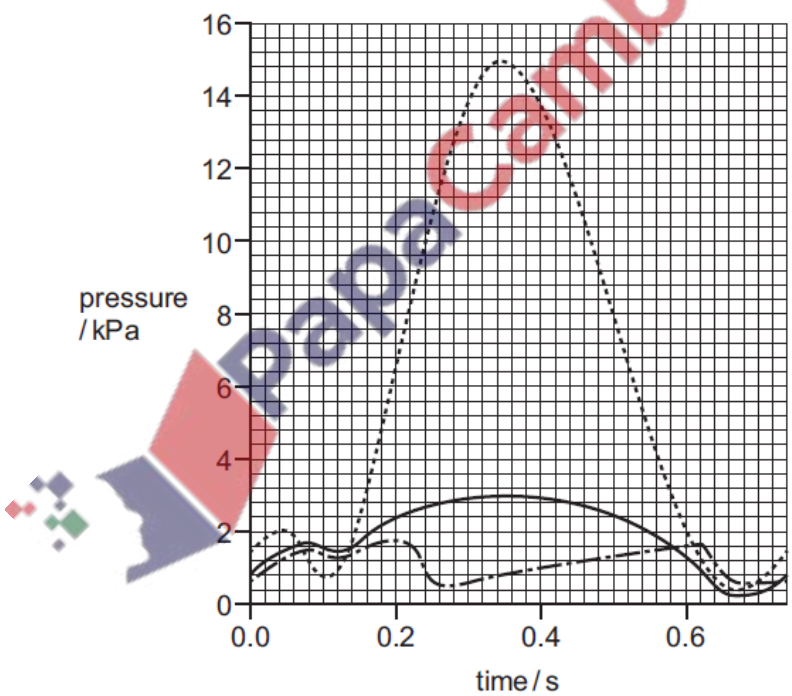
16. March/2023/Paper_ 0610/22/No.17

Which row about the circulatory system is correct?

	part that pumps blood	part with valves
A	heart	heart and veins
B	heart and blood vessels	all blood vessels
C	capillaries	heart
D	heart	capillaries and arteries

17. March/2023/Paper_ 0610/22/No.18

The graph shows pressure changes that take place in the right atrium, right ventricle and left ventricle of a human heart when the muscle walls contract and relax.



What is the pressure in the right ventricle when the left ventricle is at its maximum pressure?

A 0.4 kPa **B** 2.0 kPa **C** 3.0 kPa **D** 15.0 kPa

18. March/2023/Paper_ 0610/42/No.1

(a) Fig. 1.1 is a simplified diagram of the circulatory system in humans.

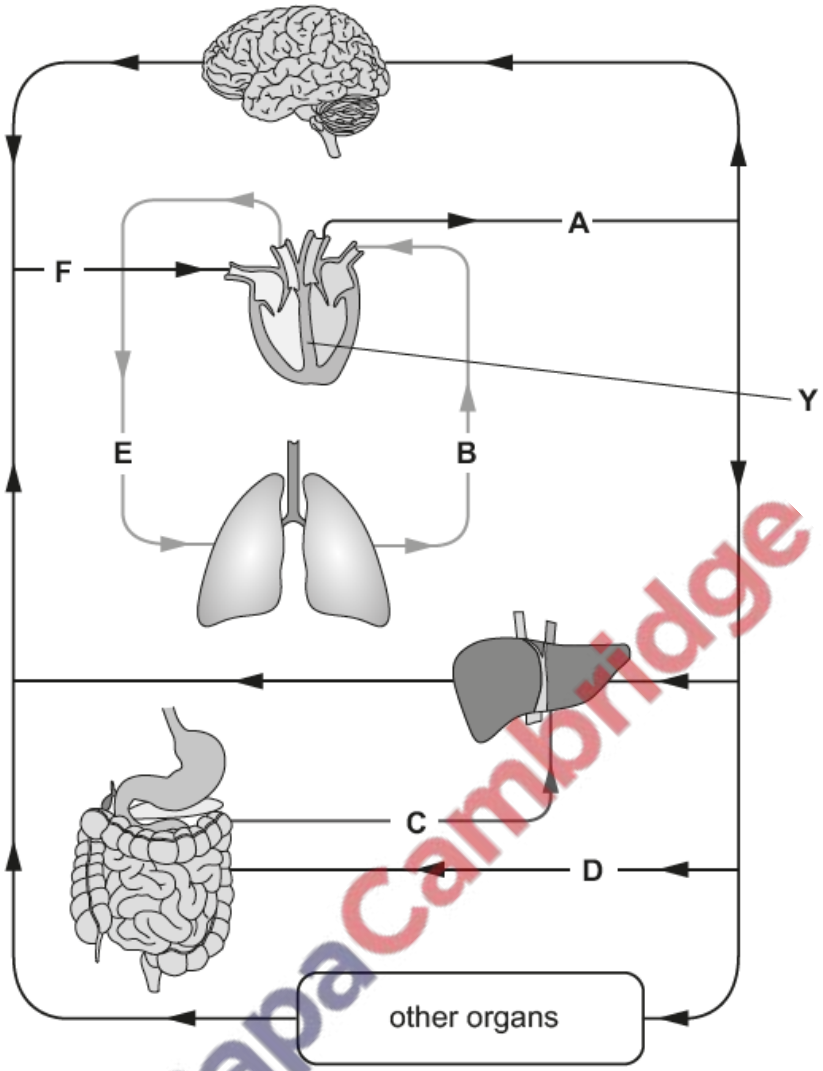


Fig. 1.1

(i) State the letter from Fig. 1.1 that represents the blood vessel that contains blood with the highest concentration of oxygen.

..... [1]

(ii) State the letter from Fig. 1.1 that represents the hepatic portal vein.

..... [1]

(iii) State all the letters from Fig. 1.1 that represent arteries.

..... [1]

(iv) Explain the importance of the part labelled **Y** in Fig. 1.1.

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..... [2]

(v) State the evidence from Fig. 1.1 that the diagram shows a double circulation system.

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..... [2]

(b) Fig. 1.2 shows the pressure of blood flowing through different blood vessels as it travels around the body. (Venules are narrow vessels that connect capillaries to veins.)

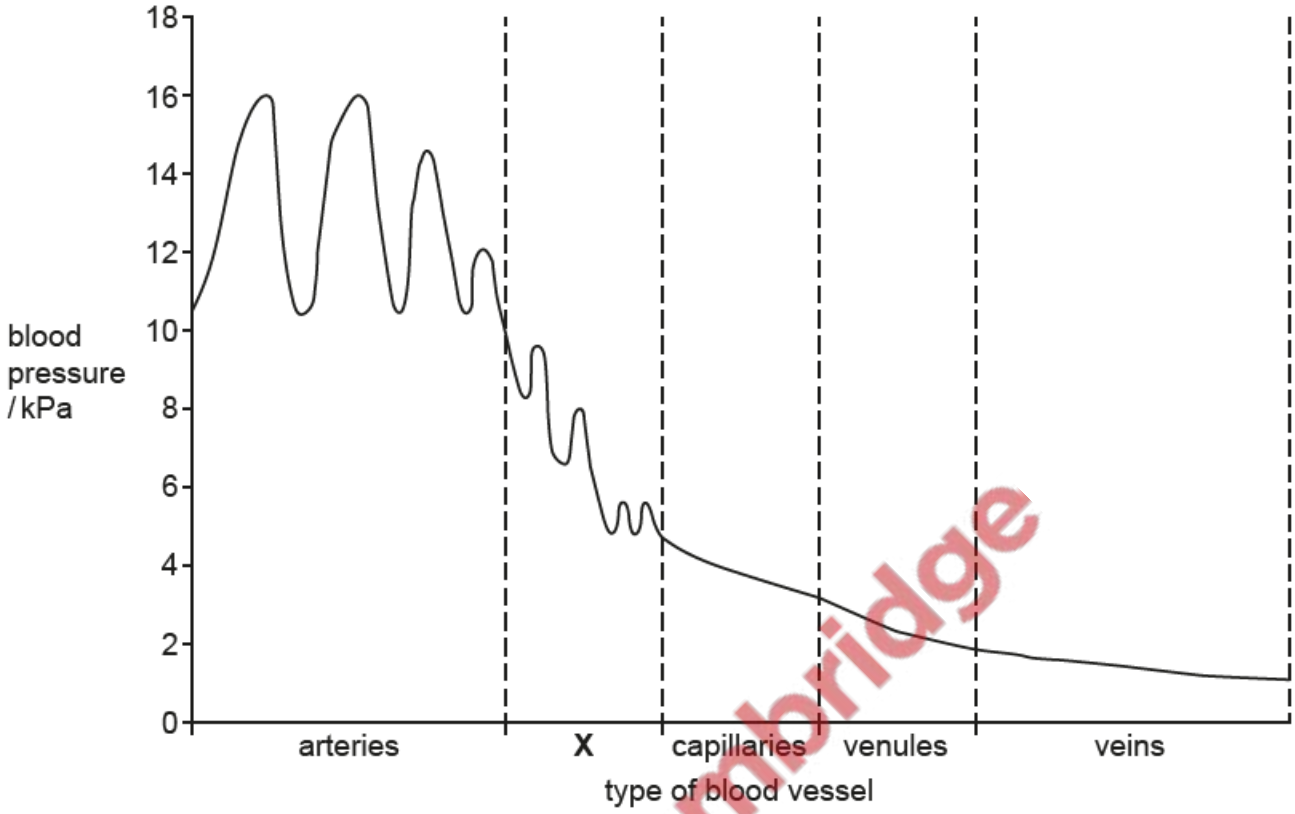

Fig. 1.2

(i) Blood vessels **X** in Fig. 1.2 supply blood to skin-surface capillaries and have a role in maintaining a constant internal temperature.

State the name of the blood vessels that are represented by the letter **X** in Fig. 1.2.

..... [1]

(ii) Explain reasons for the changes in pressure seen in the **arteries** in Fig. 1.2.

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..... [2]

(iii) Using the information in Fig. 1.2, explain the structural adaptations of arteries **and** veins.

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..... [4]

[Total: 14]