9. Transport in animals

9.3 Blood vessels

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates unless indicated in the question

1 **(a)** Fig. 1.1 is a photomicrograph showing a cross-section of an artery.

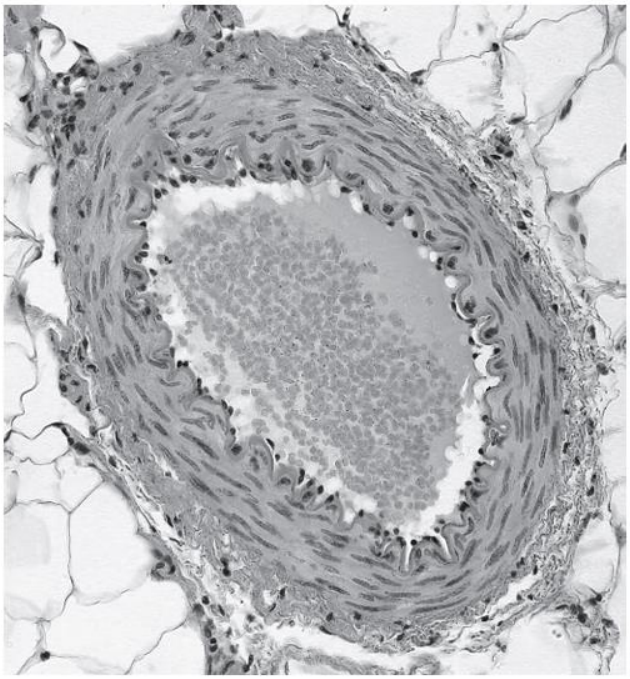

Fig. 1.1

On Fig. 1.1, identify and label the:

- artery wall
- lumen.

[2]

(b) Complete the table by circling the correct words to show the differences between arteries and veins.

type of blood vessel	relative thickness of the wall	relative diameter of the lumen
artery	**thick / thin**	**wide / narrow**
vein	**thick / thin**	**wide / narrow**

[2]

(c) State the name of the structures in veins that ensure one-way flow of blood.

..... [1]

(e) State the name of the blood vessels that transfer substances to and from cells.

..... [1]

(f) Circle the names of **two waste** substances that are transferred from cells to blood.

amino acids	**carbon dioxide**	**fatty acids**
glucose	**oxygen**	**urea**

[2]

2 **(a)** **(i)** State the names of **three** structures that are found in a mammalian heart.

1 .....

2 .....

3 .....

[3]

(ii) Describe how the structure of a vein differs from the structure of an artery.

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..... [3]

(iii) State the function of arteries in the human circulatory system.

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..... [1]

3 **(a)** Fig. 3.1 shows a cross-section of a vein and Fig. 3.2 shows a longitudinal section of the vein.

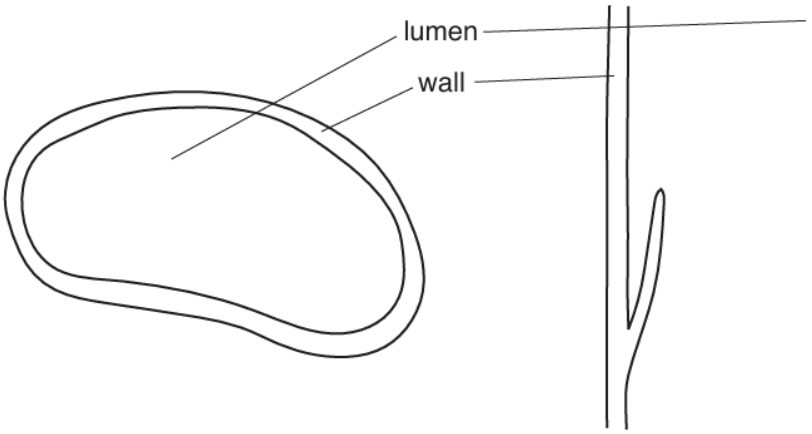

Fig. 3.1

Fig. 3.2

(i) Describe **two** features, visible in Fig. 3.1 and Fig. 3.2, which show that this blood vessel is a vein.

1 .....

.....

2 .....

.....

[2]

(ii) Draw an arrow on Fig. 3.2 to show the direction of blood flow in this vein. [1]

4 Blood circulates round the body in arteries, veins and capillaries.

(a) Place ticks (✓) in the correct boxes in Table 7.1 to show the features of arteries. **(extended only)**

Table 7.1

structure and function	arteries
carries blood at high pressure	
carries blood towards the heart	
has a thick wall	
has a narrow lumen	
has valves present throughout the vessel	

[3]

5 **(d)** Fig. 8.2 is a diagram of the circulatory system. The blood vessels are labelled with letters.

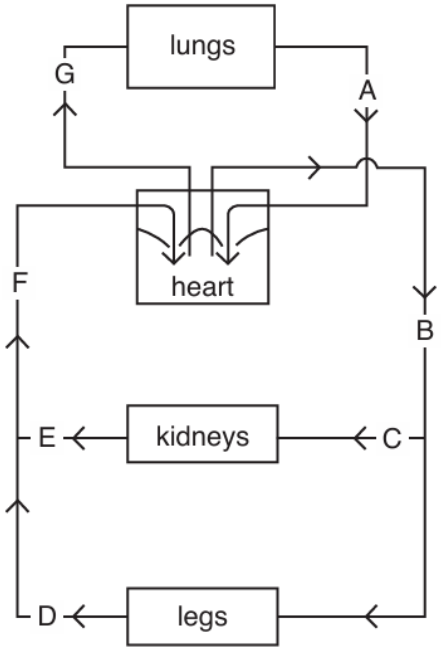

Fig 8.2

Complete Table 8.1 by identifying the letter of the named blood vessels in Fig. 8.2.

Table 8.1

name of blood vessel	letter
aorta	
pulmonary artery	
renal vein	
vena cava	

[4]

Paper 4

Questions are applicable for both core and extended candidates unless indicated in the question

6 **(e)** Explain how the structure of arteries and veins relates to the difference in the pressure of the blood transported by these vessels. **(extended only)**

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..... [4]

(f) Table 1.1 shows the names of some organs and the name of the main artery that brings blood to the organ.

Complete Table 1.1. **(extended only)**

Table 1.1

name of the organ	name of the artery that brings blood to the organ
lung	
	renal artery
liver	

[3]

7 **(c)** Fig. 5.1 shows part of the circulatory system of a mammal.

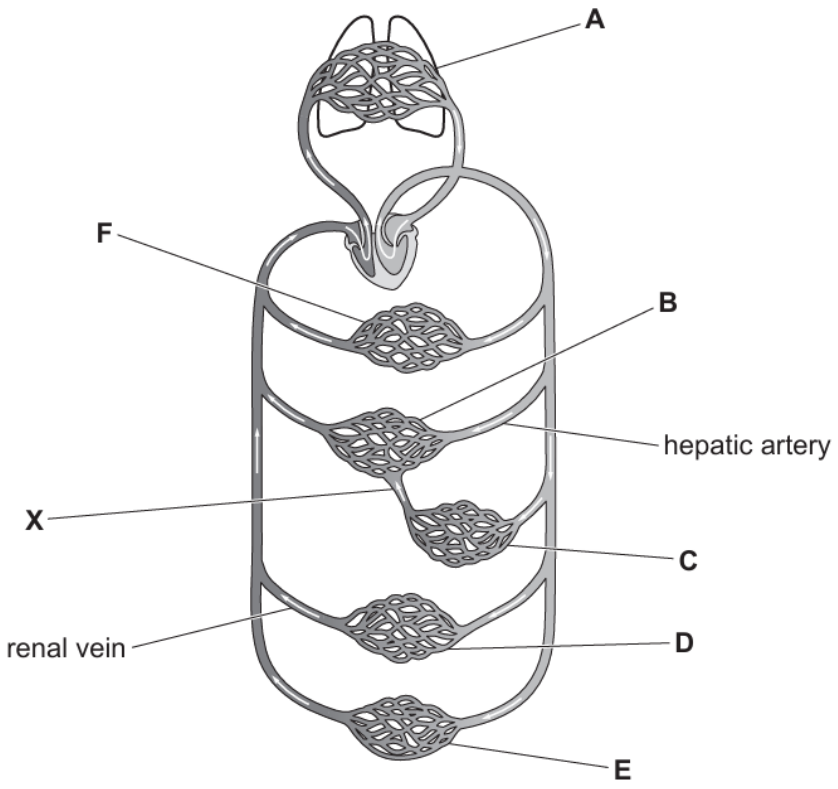

Fig. 5.1

(i) State the letter from Fig. 5.1 that identifies where these processes occur: **(extended only)**

absorption of the products of digestion into the blood .....

excretion of carbon dioxide from the body .....

formation of urine .....

production of bile. .....

[4]

(ii) Identify the name of the blood vessel labelled **X** in Fig. 5.1. **(extended only)**

..... [1]

8 **(b)** Fig. 5.1 shows a diagram of some blood vessels associated with the skin. **(extended only)**

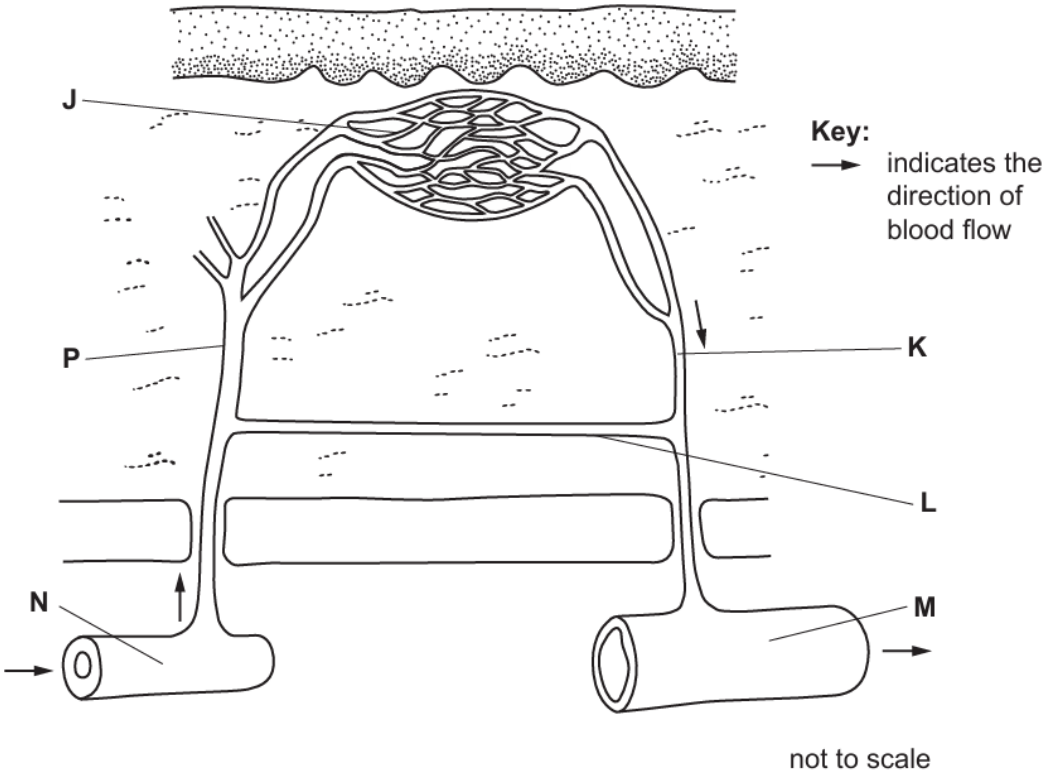

Fig. 5.1

Table 5.1 shows the functions of some blood vessels.

Complete Table 5.1 by:

- naming the type of blood vessel
- stating the letter of the type of blood vessel from Fig. 5.1.

Table 5.1

function	type of blood vessel	letter on Fig. 5.1
regulates blood flow by constricting and dilating		
collects blood from a network of the narrowest blood vessels		
withstands the highest blood pressure		
allows the transfer of substances to and from tissue fluid		
transports blood towards the heart		
redirects blood flow deeper under the surface of the skin		

[6]

(c) State the name of the blood vessels that deliver blood to the:

kidneys .....

heart muscle .....

[2]

(d) Describe how blockages in the vessels that deliver blood to the heart muscle can be treated.

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..... [4]