

9. Transport in animals

9.1 Circulatory systems

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

- 1 (d) Fig. 1.2 is a simplified diagram of the circulatory system in humans.

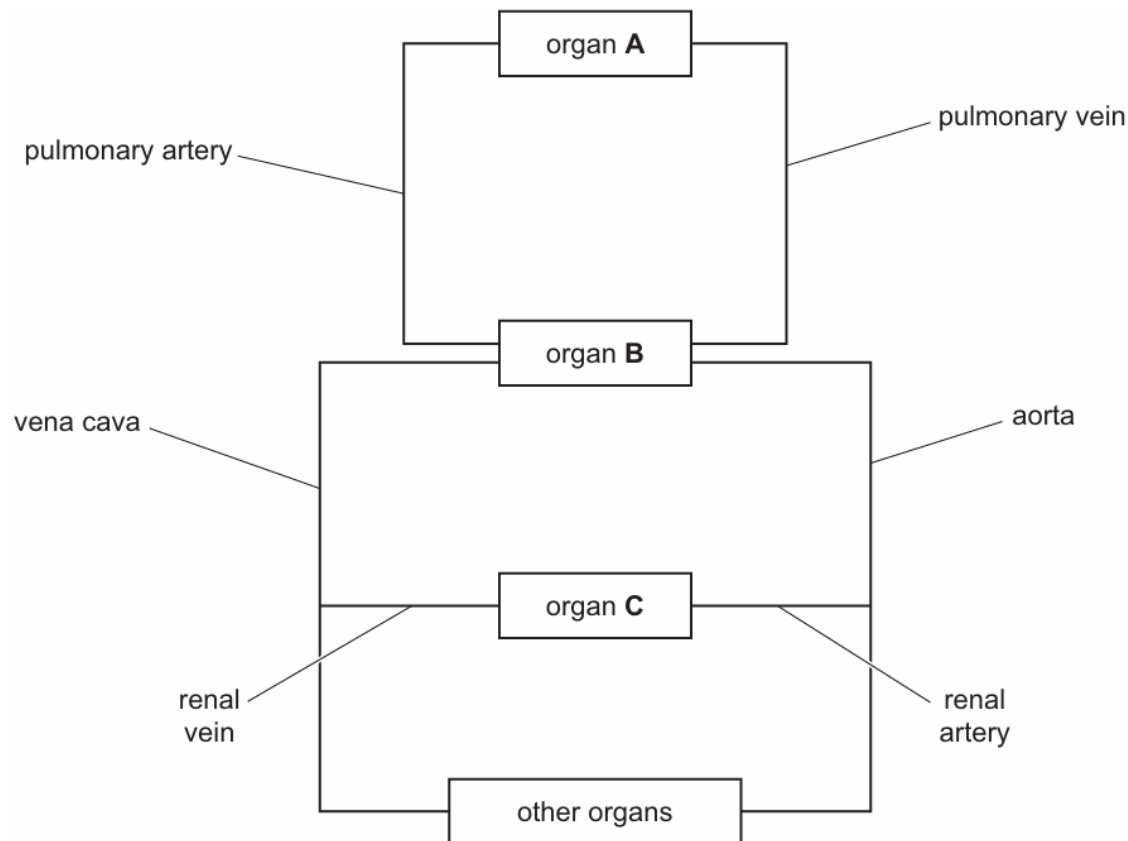


Fig. 1.2

- (i) State the names of the organs represented by the letters **A**, **B** and **C** in Fig. 1.2.

A

B

C

[3]

- 2 (e) Describe how the structures of the circulatory system maintain a one-way flow of blood.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

Paper 4

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

Fig. 1.4 shows the circulatory system of an amphibian.

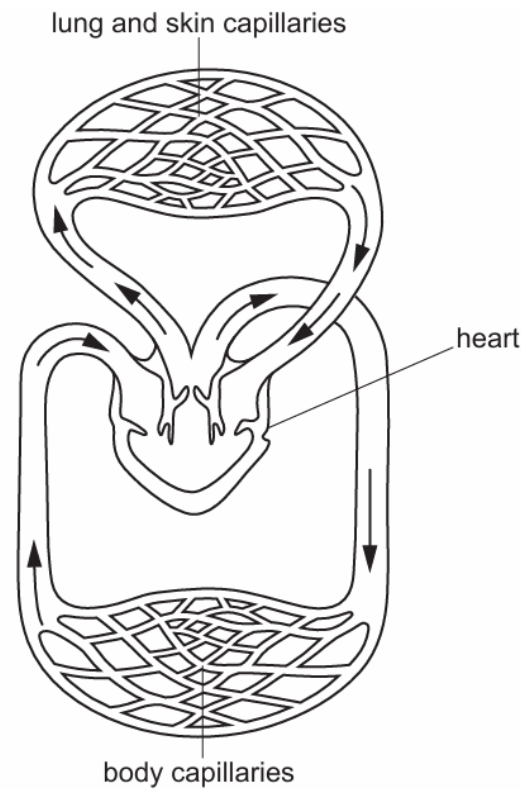


Fig. 1.4

Describe the similarities **and** the differences between the circulatory systems of the fish and the amphibian in Fig. 1.3 and Fig. 1.4. **(extended only)**

[4]

- (d) Explain the advantages of the type of circulatory system in **mammals** compared with the type of circulatory system in fish. **(extended only)**

.....

.....

.....

.....

.....

.....

..... [3]

- 4 (a) Describe **two** ways in which the circulatory system of a fish is different from the circulatory system of a mammal. **(extended only)**

1

.....

2

.....

[2]

- (b) Explain the advantages of a double circulatory system. **(extended only)**

.....

.....

.....

.....

.....

.....

.....

..... [3]

- 5 (a) Fig. 6.1 shows diagrams of the circulatory systems of a fish and a mammal.

The arrows show the direction of blood flow through the circulatory systems. (extended only)

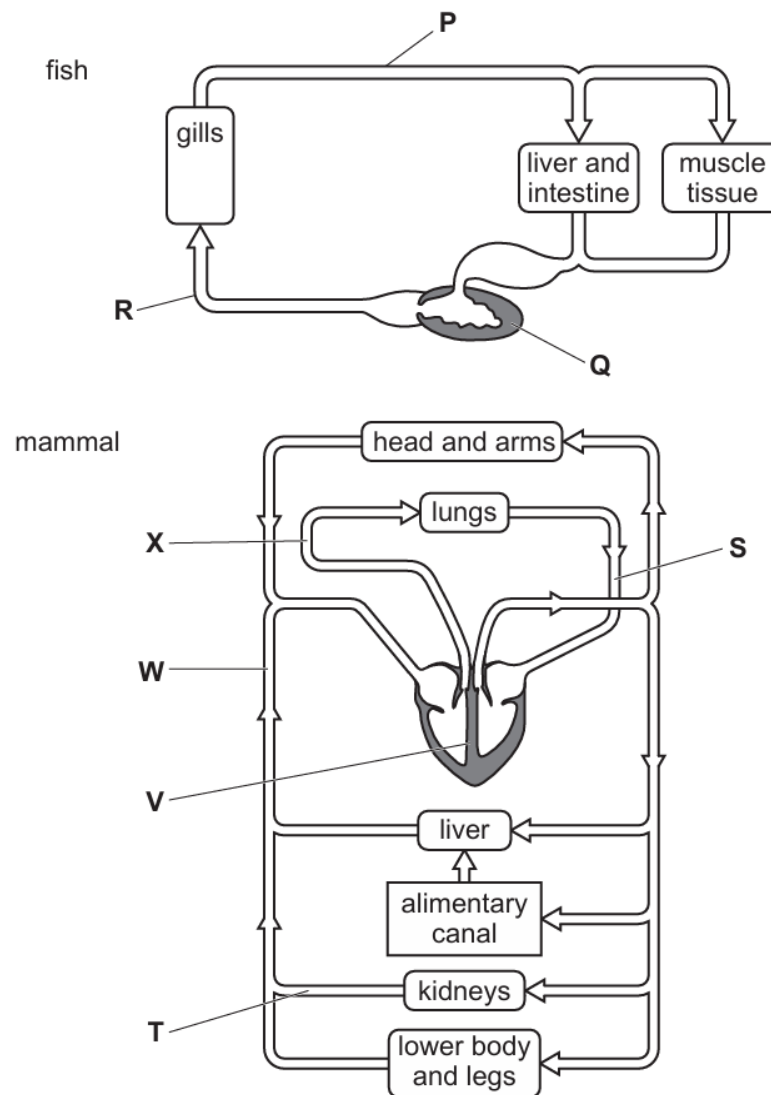


Fig. 6.1

- (i) State the names of the structures labelled **Q**, **T**, **W** and **X**.

Q

T

W

X

- (ii) State the name of structure **V** on Fig. 6.1 **and** describe its function. (extended only)

.....

.....

.....

.....

..... [2]

- (iii) Fig. 6.1 shows that fish and mammals have different types of circulation.

State why the fish circulation is called a single circulation. (extended only)

.....

.....

..... [1]

- (iv) Explain the advantages of the double circulation of the mammal. (extended only)

.....

.....

.....

.....

.....

.....

..... [3]

(c) Substances move between blood and tissues at various sites in the circulatory system of mammals.

(i) Oxygen is absorbed into the blood as it passes through the lungs.

State the structures in the lungs where oxygen passes into the blood from the air.

..... [1]

(ii) State the site of filtration of blood in the kidneys.

..... [1]

(iii) State the name of the process in which products of digestion move into cells and are used to become part of the cells.

..... [1]

(iv) State the name of the process in which excess amino acids are broken down in liver cells to produce ammonia. **(extended only)**

..... [1]

(v) State the name of the organ that releases oestrogen into the blood. **(extended only)**

..... [1]

- 6 (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.

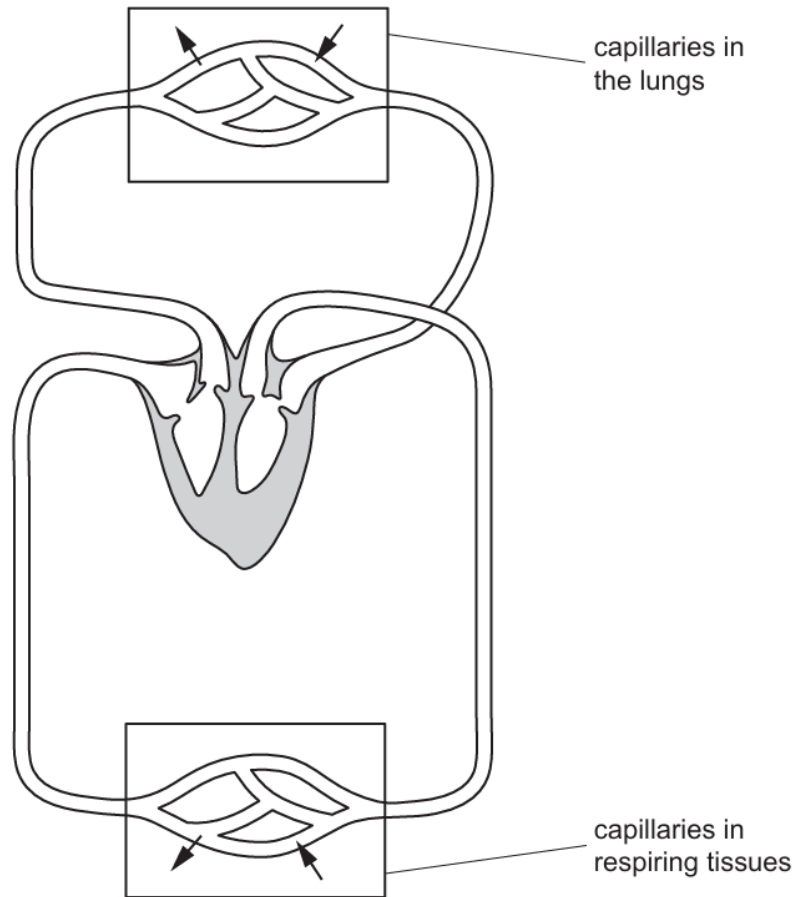


Fig. 2.2

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

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

.....

.....

.....

.....

..... [2]

- (iii) Explain the advantages of a double circulation. **(extended only)**

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]