Transport in animals – 2021/20 GCE AS Biology A

1. Nov/2021/Paper_H020/2/No.2

(a) The immortal jellyfish, *Turritopsis dohrnii*, and the sea bass, *Dicentrarchus labrax*, are both found in the Mediterranean Sea.

(i) The table below shows some data on these two organisms.

Organism	Surface area (cm^2)	Volume (cm^3)
Immortal jellyfish	10.5	1.5
Sea bass	270.0	810.0

A student made the following statement:

'The immortal jellyfish does not need a transport system to transport oxygen as it has a very large surface area. The sea bass does need a transport system as it is a larger organism.'

Use the data in the table to evaluate the statement made by the student.

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..... **[3]**

(ii) **Fig. 2.1** shows the circulatory system of the sea bass.

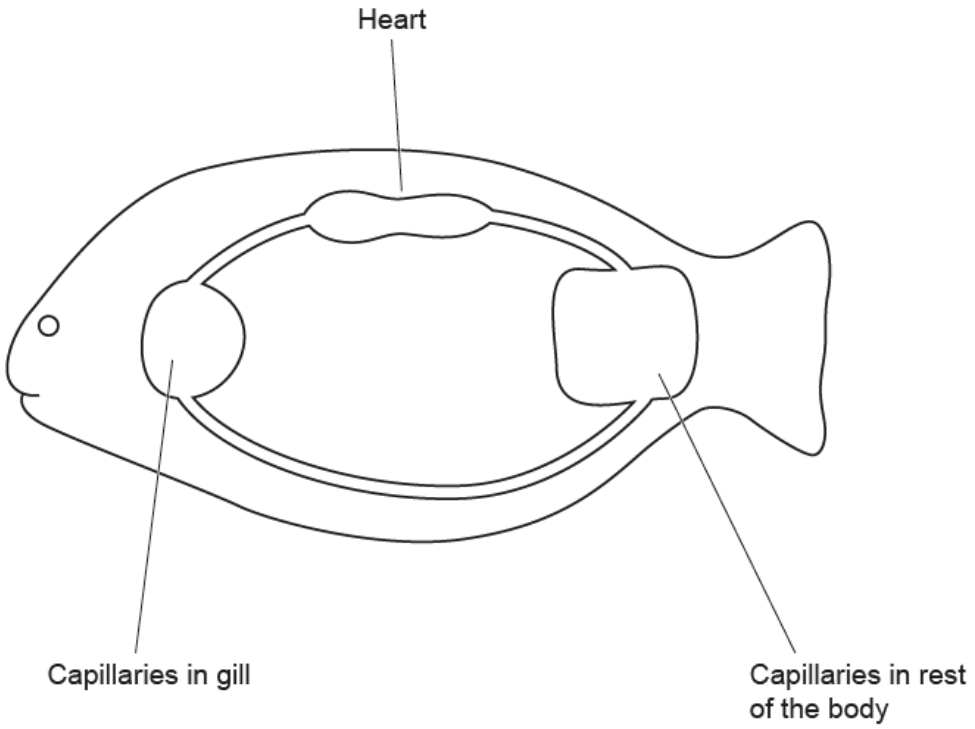

Fig. 2.1

Name the type of circulatory system shown in **Fig. 2.1**.

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

(iii) The circulatory systems of the sea bass and mammals are described as closed circulatory systems.

Define the term **closed circulatory system**.

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

(iv) State **two** differences between the closed circulatory system of the sea bass and the closed circulatory system of a mammal.

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2 .....

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[2]

(b) A group of students were examining a mammalian heart prior to dissection. The atria and ventricles were clearly visible.

(i) Name **two** arteries that could be seen by the students.

1 .....

2 .....

[2]

(ii) The students then carried out a dissection of the heart. **Fig. 2.2** is an example of a drawing from one of the students.

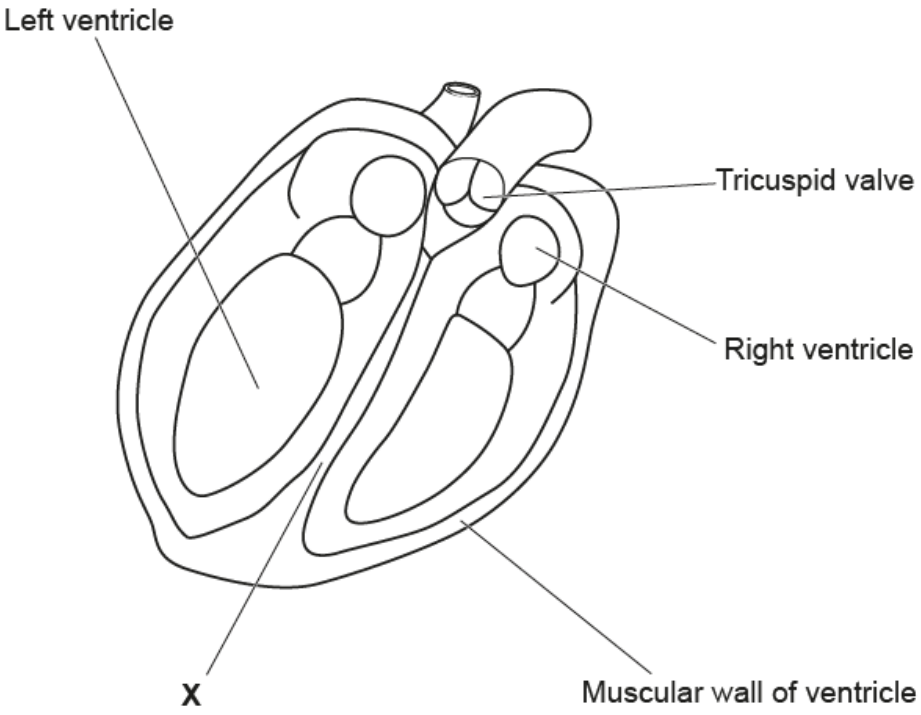

Fig. 2.2

Name the structure labelled **X** on **Fig. 2.2**.

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

(iii) Another student pointed out that there were structural and labelling errors in the drawing in **Fig. 2.2**.

In the space below, list **three** of these errors **and** the correction you would make.

Biological drawing errors are not required.

Error and correction 1

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Error and correction 2

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Error and correction 3

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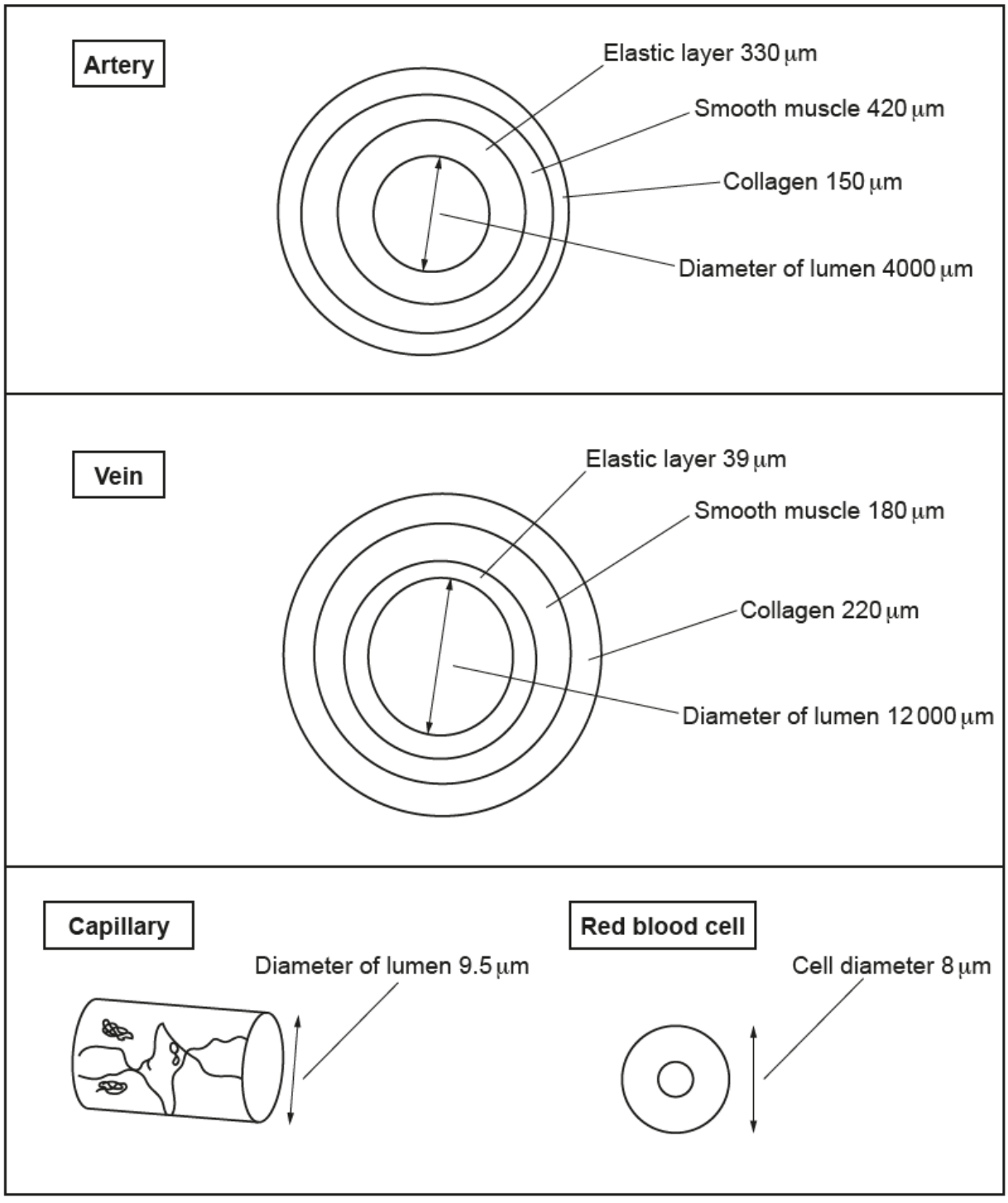
[3]

(c)* Three types of blood vessels found in mammals are arteries, veins and capillaries.

Fig. 2.3 shows data on these blood vessels.



Not to scale

Fig. 2.3

With reference to **Fig. 2.3** describe how the structure of each type of blood vessel is adapted to its function.

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..... **[6]**