

6.2 The Blood System

Question Paper

Course	DP IB Biology
Section	6. Human Physiology
Topic	6.2 The Blood System
Difficulty	Hard

Time allowed: 10
Score: /5
Percentage: /100

Question 1

Which was a feature of Galen's theory of blood flow prior to his theory being superseded by that of William Harvey?

- A. Blood flows in a closed loop
- B. Blood is constantly re-used throughout a day
- C. The heart is a pump
- D. Blood flow is bidirectional

[1 mark]

Question 2

A student studied the structure of a blood vessel and found:

1. An innermost layer of endothelial cells
2. A thick middle layer of smooth muscle and elastic tissue
3. An outer layer of collagen fibres

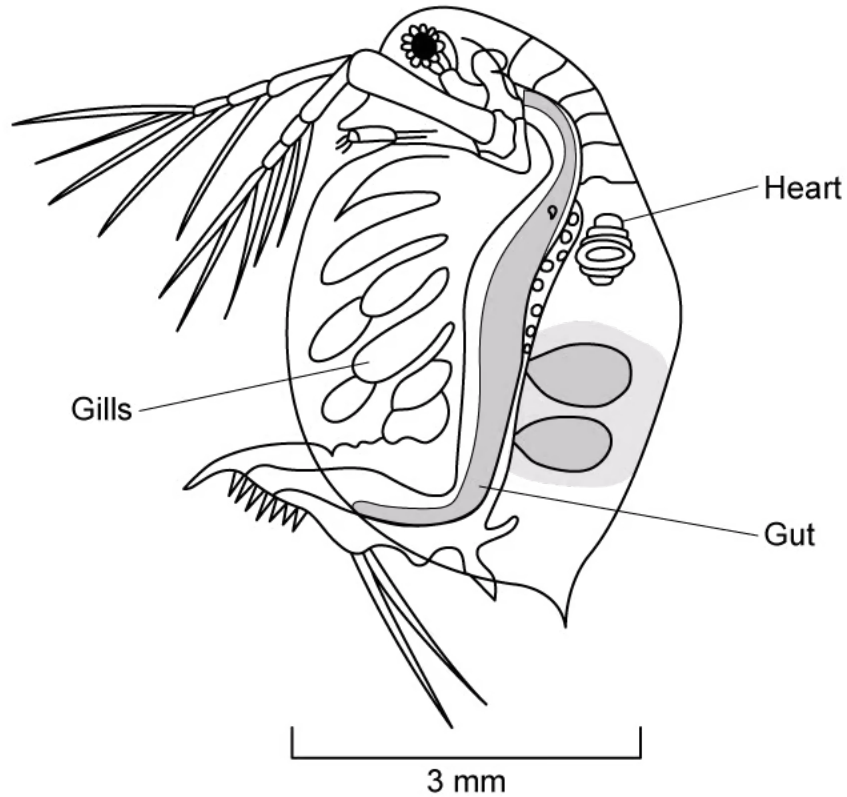
Which vessel was the student studying?

- A. Vein
- B. Capillary
- C. Venule
- D. Artery

[1 mark]

Question 3

The aquatic crustacean the water flea (*Daphnia magna*, pictured below) has a heart that pumps blood-like liquid called hemolymph around its body cavity.



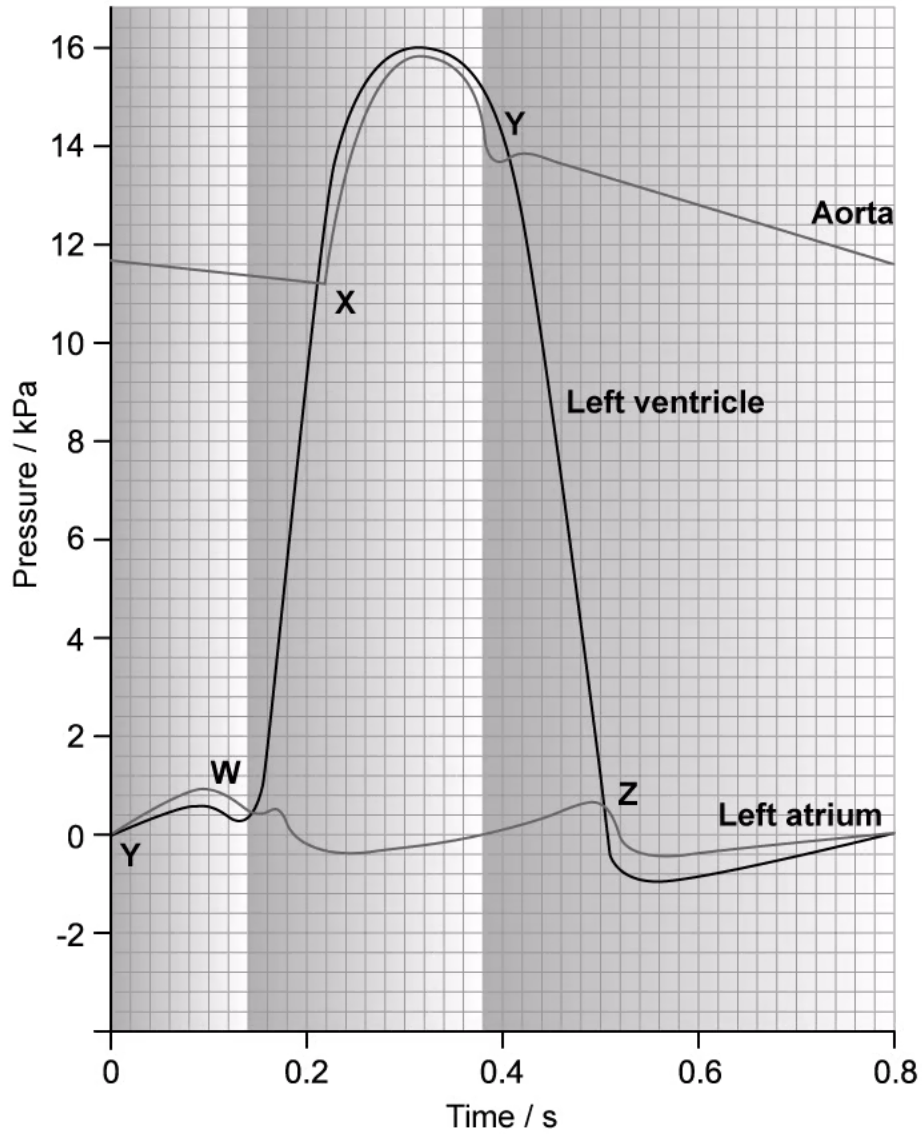
Which statement about *Daphnia magna*'s circulatory system is correct?

- A. single closed
- B. single open
- C. double closed
- D. double open

[1 mark]

Question 4

The graph shows changes in pressure at various stages of the cardiac cycle.



Which statement describes the events at point Y of the graph?

A.

Ventricular systole

The ventricle contracts



Pressure in the left ventricle goes higher than in the aorta



Aortic valve opens and blood is forced into the aorta

B.

Early diastole

Left ventricle is empty



Muscles in the walls of the left ventricle relax and pressure drops below the pressure in the aorta



Aortic valve closes

C.

Diastole

The relaxed left atrium fills with blood, causing the pressure in the atrium to exceed that in the empty ventricle



The AV valve opens

D.

Late diastole

There is a short period of time during which the left ventricle expands due to relaxing muscles



This increases the internal volume of the left ventricle and decreases the ventricular pressure



At the same time, blood is flowing slowly through the newly opened AV valve into the left ventricle, causing a brief decrease in pressure in the left atrium



The pressure in both the atrium and ventricle then increases slowly as they continue to fill with blood

[1 mark]

Question 5

Which is **not** a feature of the sinoatrial node (SAN)?

- A. It acts as a natural pacemaker
- B. It is formed from a group of highly specialised muscle cells
- C. It occupies the area between the right atrium and the right ventricle
- D. It sends out a wave of electrical activity, causing contraction, across both atria and both ventricles

[1 mark]