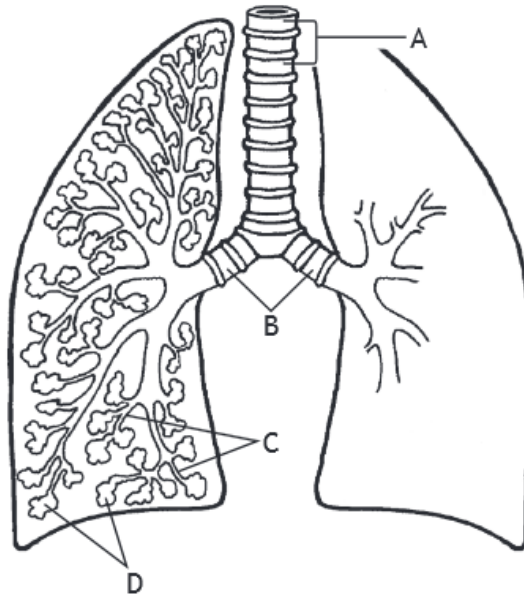


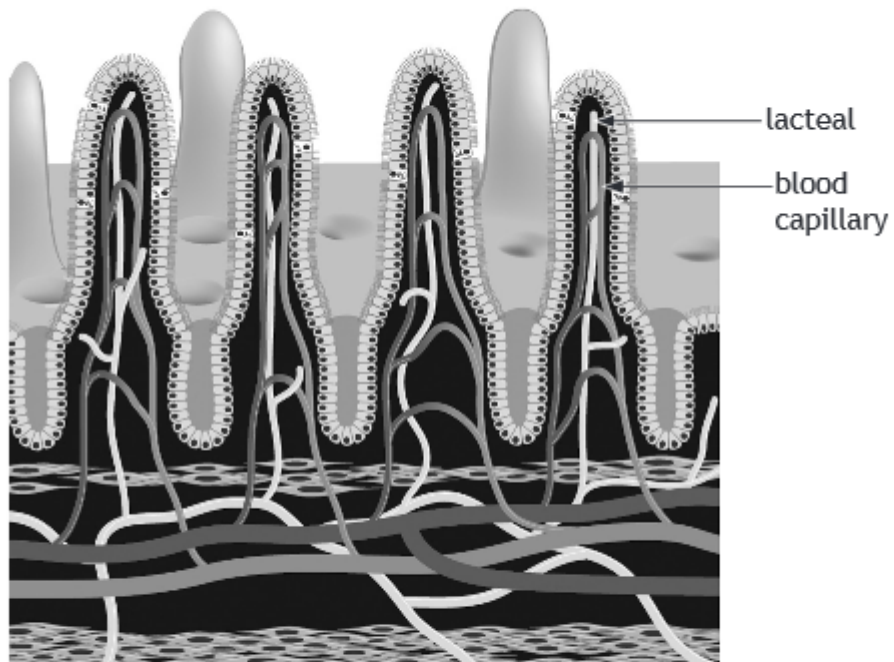
Transport Systems in Animals

13. The diagram below shows part of the human respiratory system.



Which letter identifies the alveoli?

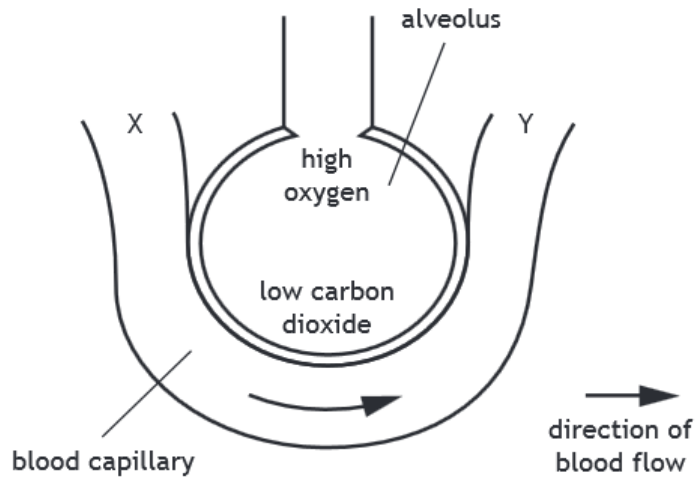
4. The following diagram shows a cross-section of some villi in the small intestine.



Explain why the **structure and number** of villi make absorption an efficient process in the small intestine.

3

9. The diagram below shows an alveolus and an associated blood capillary.



As blood flows from X to Y gases are exchanged with the alveolus.

Which line in the table below identifies the concentrations of gases at X and Y?

	<i>Concentration at X</i>	<i>Concentration at Y</i>
A	high oxygen	high carbon dioxide
B	low oxygen	high carbon dioxide
C	low oxygen	low carbon dioxide
D	high oxygen	low carbon dioxide

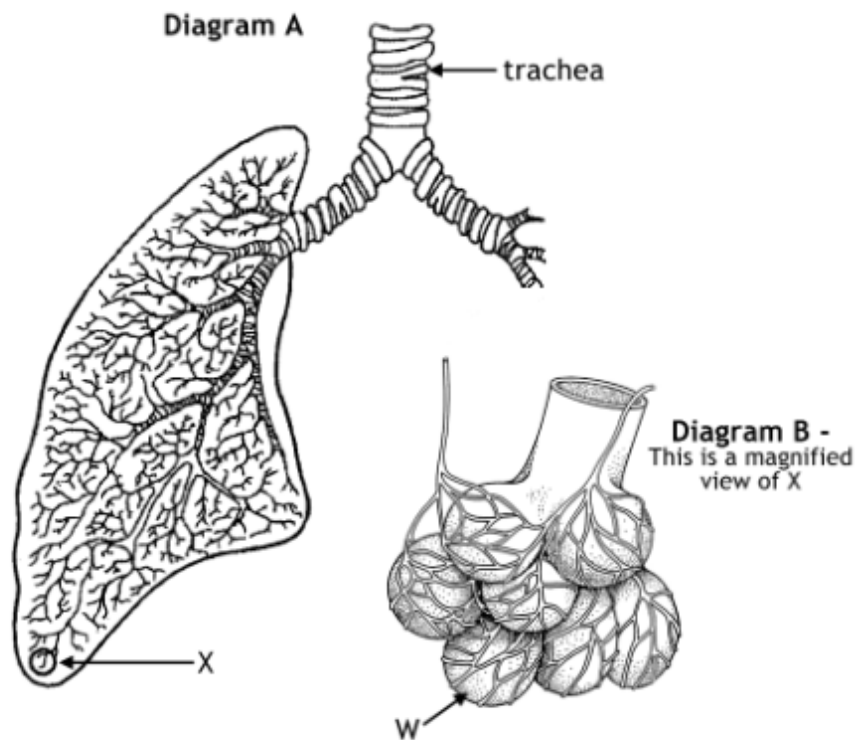
10. The following sequence shows part of the blood flow through the body.



Which line in the table below identifies X, Y and Z?

	X	Y	Z
A	right ventricle	pulmonary vein	pulmonary artery
B	right ventricle	pulmonary artery	pulmonary vein
C	pulmonary vein	pulmonary artery	right ventricle
D	pulmonary artery	right ventricle	pulmonary vein

9. The diagrams below represent part of the human breathing system.



(a) (i) Name the structure labelled W. 1

(ii) Describe **two** features of these structures which improve the efficiency of gas exchange. 2

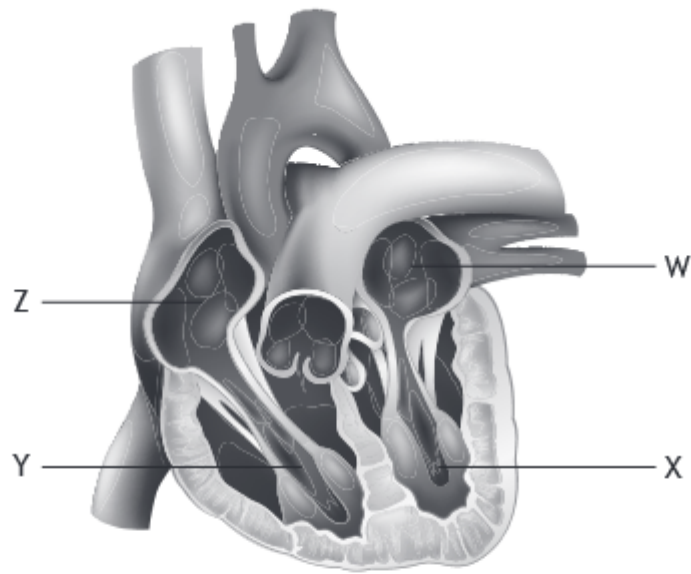
1 _____

2 _____

(b) Mucus and cilia are found in the trachea.

Describe how the mucus and cilia work together to help prevent bacteria getting into the lungs. 2

14. The diagram below shows the heart and associated blood vessels.



Which of the following statements is correct?

- A W is the left atrium which receives blood from the body.
- B X is the left ventricle which pumps blood to the body.
- C Y is the right atrium which receives blood from the lungs.
- D Z is the right ventricle which pumps blood to the lungs.

5. The table below gives information about features of three different types of blood vessel.

(a) (i) Complete the table by writing the name of the missing types of blood vessels in the empty boxes. 2

<i>Type of blood vessel</i>	<i>Diameter of central channel (mm)</i>	<i>Thickness of vessel wall (mm)</i>
	30.0	1.5
Capillary	0.006	0.001
	25.0	2.0

(ii) Of all the blood vessels, capillaries are best adapted for gas exchange.

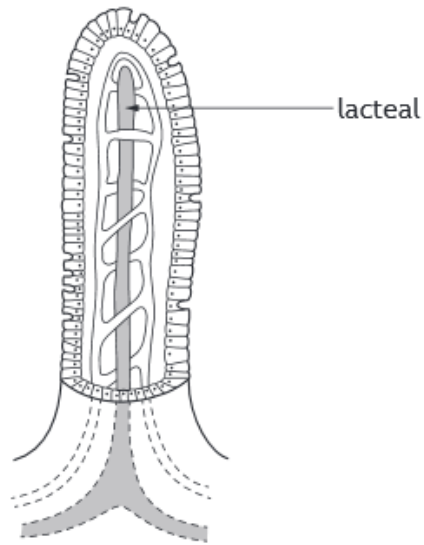
Using the information in the table, give a reason for this. 1

(b) The heart is a muscle which pumps blood around the body and requires its own blood supply.



Name the blood vessel which supplies the heart muscle with blood. 1

11. The diagram shows a villus from the small intestine.



Which of the following products of digestion are both absorbed into the lacteal?

- A Glycerol and fatty acids
 - B Glucose and fatty acids
 - C Glycerol and amino acids
 - D Glucose and amino acids
12. The process which moves food along the digestive system is called
- A diffusion
 - B absorption
 - C peristalsis
 - D osmosis.

- (c) Chronic obstructive pulmonary disease is a condition which affects the lungs. It can destroy the alveolar walls, leading to fewer alveoli. The diagrams represent lung tissues which have undamaged and damaged alveoli.

undamaged



damaged



Identify a feature of the alveoli which will be affected by this reduction in their number.

1

14. Which of the following statements about blood cells is false?

- A White blood cells are part of the immune system.
- B Phagocytes are a type of white blood cell.
- C Red blood cells contain haemoglobin.
- D Phagocytes transport nutrients around the body.

15. Which row in the table identifies how lymphocytes destroy pathogens?

	<i>Antibody production</i>	<i>Phagocytosis</i>
A	Yes	No
B	No	No
C	No	Yes
D	Yes	Yes

17. Which of the following statements is true of villi?
- A Blood capillaries absorb glycerol and amino acids.
 - B Blood capillaries absorb glucose and fatty acids.
 - C Lacteals absorb glycerol and fatty acids.
 - D Lacteals absorb glucose and amino acids.

10. The following statements are about blood vessels.

1. Contain valves.
2. Have a narrow central channel.
3. Carry blood under low pressure.
4. Form networks at organs and tissues.
5. Carry blood from the heart to organs.

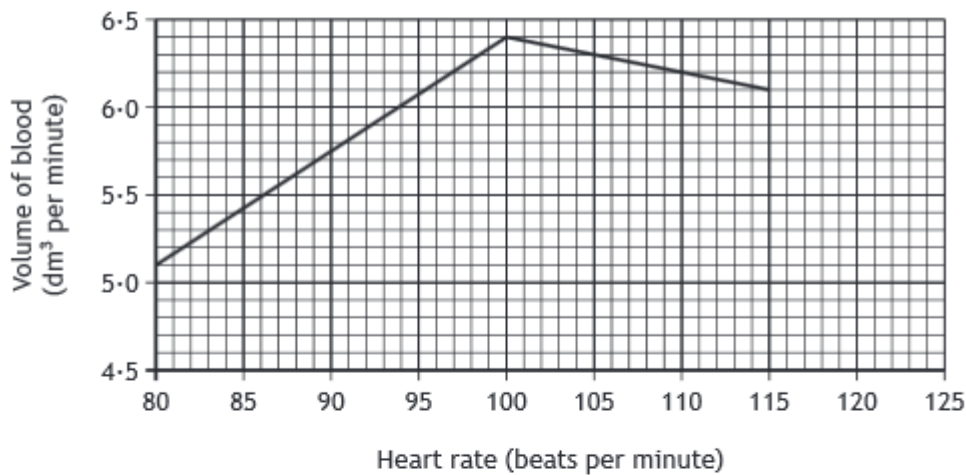
(a) Choose either arteries or veins and select two statements from the list above which describe that type of blood vessel.

2

Blood vessel _____

Statements _____ and _____

(b) The graph shows the effect of changes in heart rate on the volume of blood pumped by the left ventricle.



(i) Describe the relationship between heart rate and volume of blood pumped by the left ventricle.

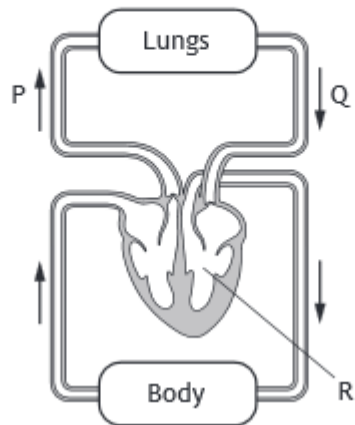
2

(ii) Predict the volume of blood pumped by the left ventricle at 120 beats per minute.

1

_____ dm³ per minute

(c) The diagram represents part of the circulatory system in humans.



(i) Describe the difference in oxygen concentration in the blood travelling through blood vessels P and Q. 1

(ii) Name the heart chamber labelled R. 1
