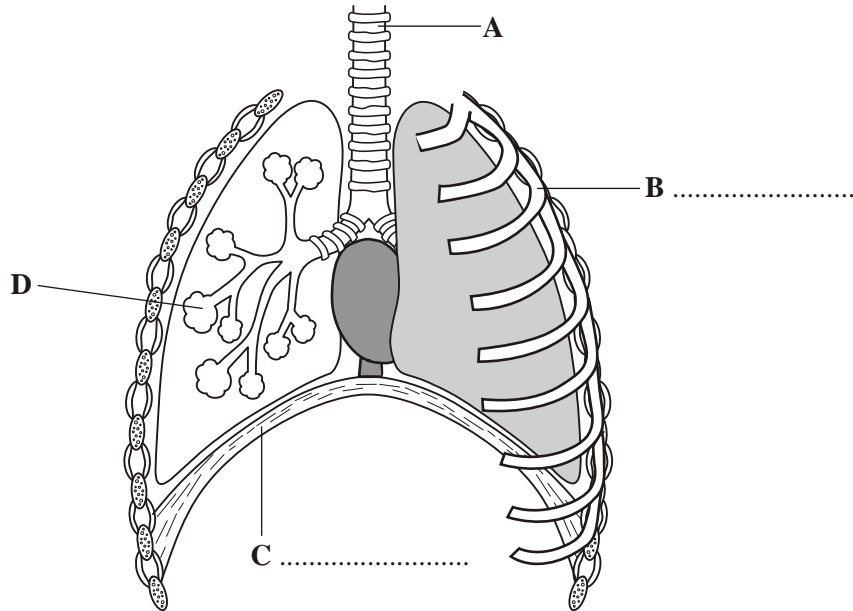## Gaseous exchange

1. The diagram shows the human breathing system.

(a) On the diagram, label structures **B** and **C**.

Choose your answers from the list in the box.

alveoli	**diaphragm**	**rib**	**trachea**

(2)

(b) (i) Which letter, **A**, **B**, **C** or **D**, shows the site of gas exchange? ....

(1)

(ii) Which **one** of the following gases has a higher concentration in exhaled air than in inhaled air?
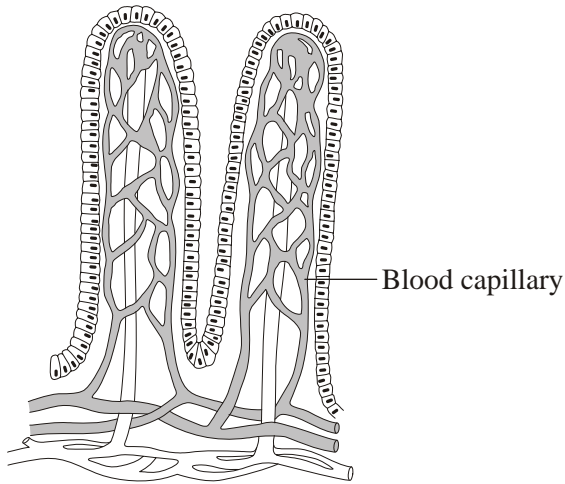
Draw a circle around **one** answer.

carbon dioxide   nitrogen   oxygen

(1)
(Total 4 marks)

2. **Diagram 1** shows two villi in the small intestine of a healthy person.
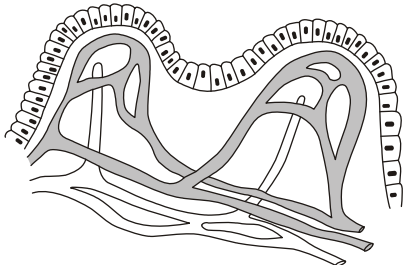
Diagram 1

Blood capillary

(a)   Describe **two** features of the villi which help the small intestine to function.

1 ....

....

2 ....

....

(2)

(b)   **Diagram 2** shows two villi in the small intestine of a person with coeliac disease.

Diagram 2

(i)   How do the villi of the person with coeliac disease differ from those of a healthy person?

....

....

(1)

(ii)   Suggest how this difference might affect how well the small intestine functions.

....

....
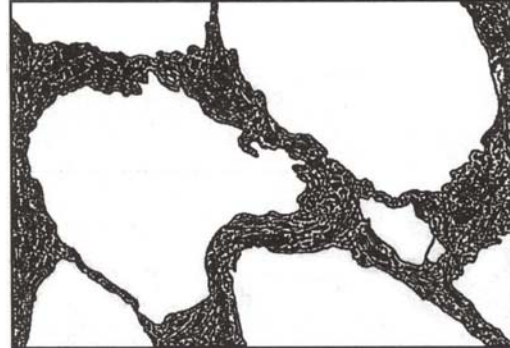
(1)
(Total 4 marks)

3. Emphysema is a lung disease.

(a) The drawings show sections through the lung of a healthy person and through the lung of a person with emphysema. The drawings are drawn to the same scale.
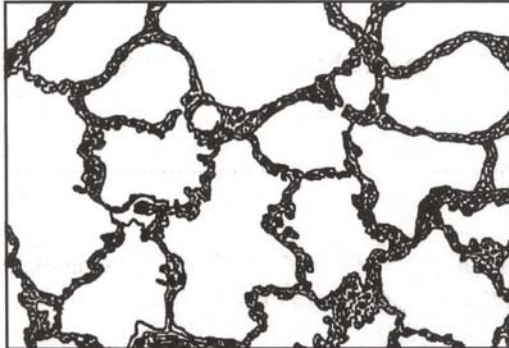
Section through the lung of a
healthy person

Section through the lung of a
person with emphysema

Use information from the drawings to answer the questions.

What effect does emphysema have on:

(i) the thickness of the surface used for gas exchange

....

(1)

(ii) the total area available for gas exchange?

....

(1)

(b) Two men did the same amount of exercise.
One man was in good health. The other man had emphysema.

The results are shown in the table.

	Man with good health	Man with emphysema
Oxygen entering blood in dm^3 per minute	2.1	1.1
Air flow into lungs in dm^3 per minute	90.7	46.0

The man in good health was able to take more oxygen into his blood than the man with emphysema.

Calculate how much more oxygen was taken into the blood per minute by the man in good health. Show your working.

....

....

Answer = ... dm^3 per minute

(2)
(Total 4 marks)