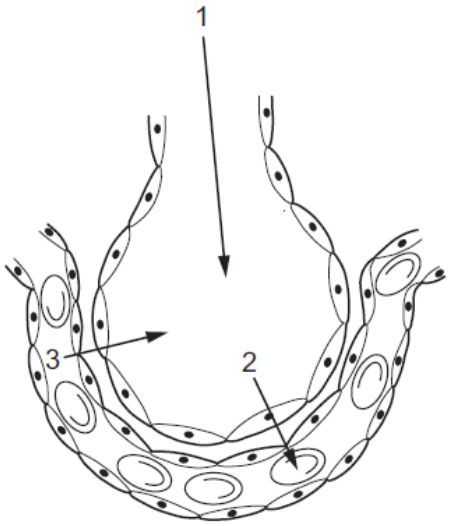
Gas exchange in humans – 2020 IGCSE 0610

1. March/2020/Paper_12/No.22

The diagram shows an alveolus. The arrows represent the movement of gases.



Which row is correct?

	1	2	3
A	oxygen	carbon dioxide	air
B	air	carbon dioxide	oxygen
C	air	oxygen	carbon dioxide
D	carbon dioxide	oxygen	air

2. March/2020/Paper_22/No.22

During physical activity, what stimulates the brain to increase the breathing rate?

A decreased oxygen concentration in the blood

B decreased oxygen concentration in the lungs

C increased carbon dioxide concentration in the blood

D increased carbon dioxide concentration in the lungs

3. March/2020/Paper_22/No.23

The table shows some of the changes that occur during breathing.

	from contracted to relaxed	from relaxed to contracted
diaphragm	P	X
external intercostal muscles	Q	Y
internal intercostal muscles	R	Z

Which changes occur to cause inspiration?

A P, Q and Z **B** X, Q and R **C** X, Y and R **D** X, Y and Z

4. March/2020/Paper_32/No.2

(a) A class of students measured their breathing rates during different activities.

Average breathing rates for the class were calculated.

Student **A** compared her own breathing rates to the average breathing rates of the class.

Fig. 2.1 shows the results.

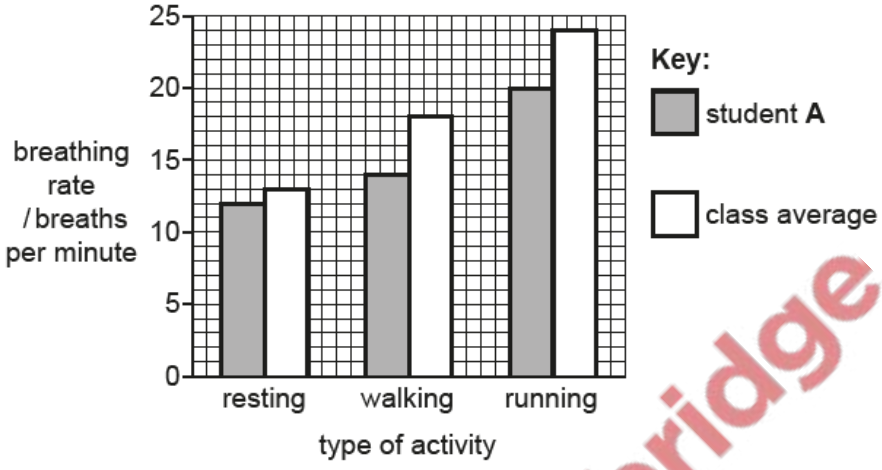


Fig. 2.1

(i) Compare student **A**'s results with the class averages.

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..... [2]

(ii) Calculate the percentage increase in breathing rate between resting and running for student **A**.

Give your answer to the nearest whole number.

.....%
[2]

(b) State **two** ways in which the composition of inspired air differs from expired air.

1 .....

2 .....

[2]

(c) Fig. 2.2 is a diagram of the human gas exchange system.

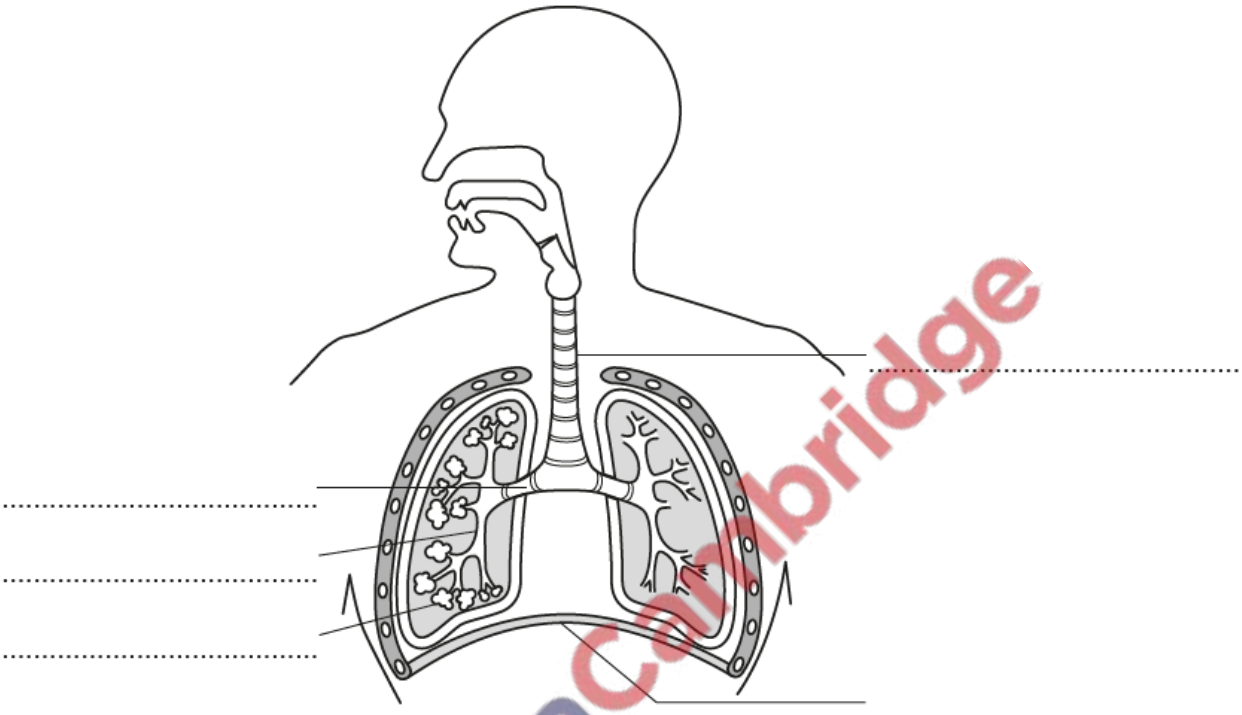

Fig. 2.2

Complete Fig. 2.2 by labelling these structures in the spaces provided:

- alveoli
- bronchus
- bronchiole
- diaphragm
- trachea.

[3]

(d) A large surface area is a feature of gas exchange surfaces.

State **two other** features of gas exchange surfaces.

1 .....

2 .....

[2]

[Total: 11]

5. March/2020/Paper_42/No.1

(a) Fig. 1.1 is a diagram of the human gas exchange system.

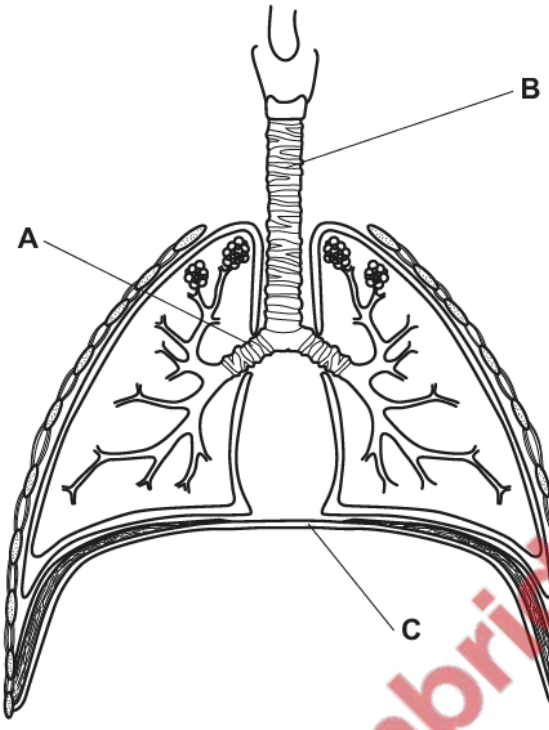

Fig. 1.1

(i) Identify the structures labelled **A**, **B** and **C** in Fig. 1.1.

A .....

B .....

C .....

[3]

(ii) Explain how the structures in the gas exchange system cause inspiration.

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..... [4]

(b) A person who does not smoke can be exposed to tobacco smoke from other people smoking.

Researchers studied the effect of exposure to tobacco smoke on the development of lung cancer in three groups of women who did not smoke:

- group 1 – no exposure to tobacco smoke
- group 2 – low level exposure to tobacco smoke
- group 3 – high level exposure to tobacco smoke.

Their results are shown in Table 1.1.

Table 1.1

group	number of women studied	number of women who died from lung cancer	percentage of women who died from lung cancer
1	21 895	32	0.15
2	44 184	86	
3	25 461	56	0.22

(i) Calculate the percentage of women in group 2 who died from lung cancer.

Write your answer, to **two** significant figures, in Table 1.1.

[2]

(ii) Many countries have laws that ban smoking in public buildings.

Discuss the evidence from Table 1.1 that supports these laws.

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.....

..... [3]

(iii) Smoking has been found to increase the risk of developing diseases other than cancer.

State **two** other diseases that can be caused by smoking.

1 .....

2 .....

[2]

[Total: 14]

6. June/2020/Paper_11/No.18

What is the approximate percentage of oxygen contained in the air breathed out of the lungs?

A 0% **B** 4% **C** 16% **D** 20%

7. June/2020/Paper_12/No.18

What is the site of gas exchange in humans?

A nose

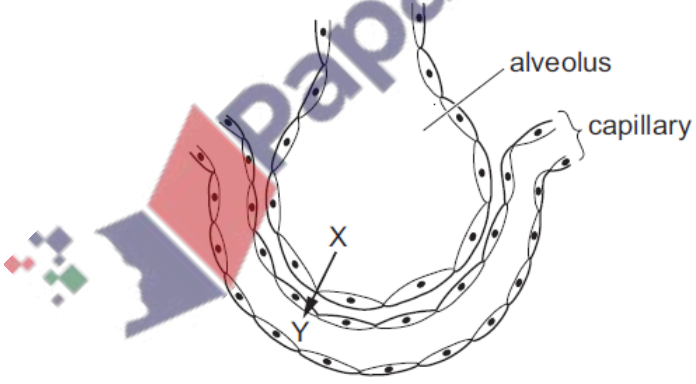
B alveoli

C bronchus

D trachea

8. June/2020/Paper_13/No.18

The diagram shows an alveolus and capillary in a human lung.



Which row shows the correct gas and concentrations for diffusion from X to Y in normal conditions?

	at point X	at point Y
A	high concentration of carbon dioxide	low concentration of carbon dioxide
B	high concentration of oxygen	low concentration of oxygen
C	low concentration of carbon dioxide	high concentration of carbon dioxide
D	low concentration of oxygen	high concentration of oxygen

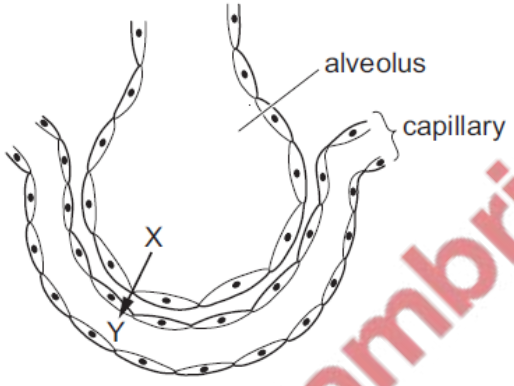
9. June/2020/Paper_21/No.20

What is the approximate percentage of oxygen contained in the air breathed out of the lungs?

A 0% **B** 4% **C** 16% **D** 20%

10. June/2020/Paper_23/No.20

The diagram shows an alveolus and capillary in a human lung.



Which row shows the correct gas and concentrations for diffusion from X to Y in normal conditions?

	at point X	at point Y
A	high concentration of carbon dioxide	low concentration of carbon dioxide
B	high concentration of oxygen	low concentration of oxygen
C	low concentration of carbon dioxide	high concentration of carbon dioxide
D	low concentration of oxygen	high concentration of oxygen

11. June/2020/Paper_41/No.1

The gas exchange system is one of the organ systems of the human body.

Fig. 1.1 shows parts of the gas exchange system during breathing in and breathing out.

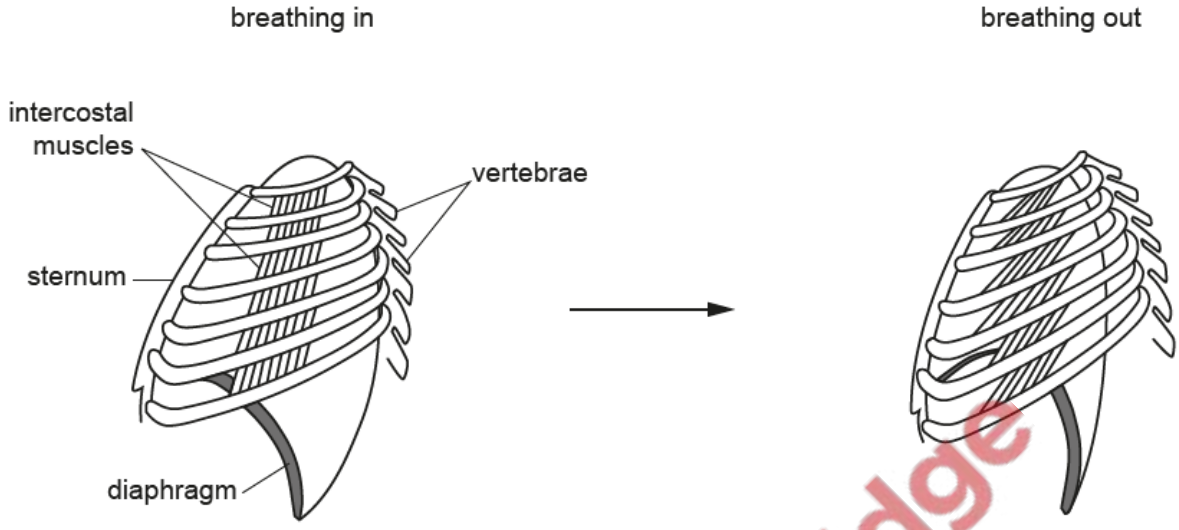


Fig. 1.1

(a) Complete Table 1.1 to show:

- the functions of the diaphragm and the intercostal muscles during breathing in and breathing out
- the pressure changes in the thorax.

Use these words:

contract
relax
increases
decreases.

Table 1.1

	diaphragm	intercostal muscles		pressure change in the thorax
		internal	external	
breathing in				
breathing out				

[4]

Fig. 1.2 shows part of the gas exchange surface of a human.

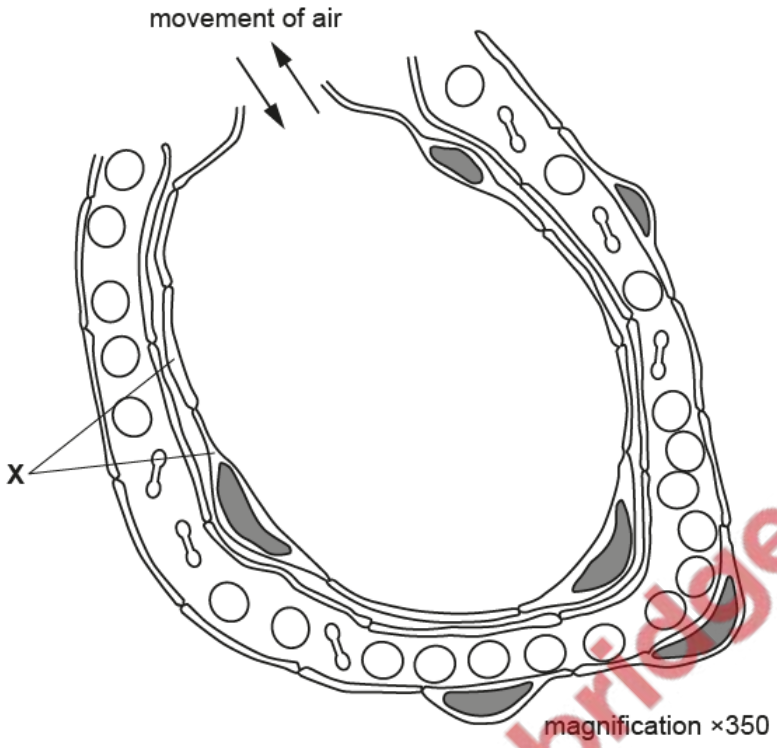


Fig. 1.2

(b) State **two** features of the gas exchange surface that are **visible** in Fig. 1.2.

1 .....

2 .....

[2]

(c) The cells labelled **X** on Fig. 1.2 form a tissue.

(i) Define the term *tissue*.

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.....

.....

..... [2]

(ii) Cartilage is another tissue found in the gas exchange system.

State the functions of cartilage in the gas exchange system.

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..... [2]

[Total: 10]