Gas exchange in humans – 2022 June IGCSE 0610

1. June/2022/Paper_ 11/No.22

A person lives in a climate where the air is very dry.

Which row correctly compares inspired air with expired air for this person?

	inspired air	expired air
A	higher carbon dioxide concentration	higher oxygen concentration
B	lower water vapour concentration	higher carbon dioxide concentration
C	lower oxygen concentration	higher water vapour concentration
D	lower carbon dioxide concentration	lower water vapour concentration

2. June/2022/Paper_ 11/No.23

Substances involved in aerobic respiration are listed.

1 carbon dioxide

2 glucose

3 oxygen

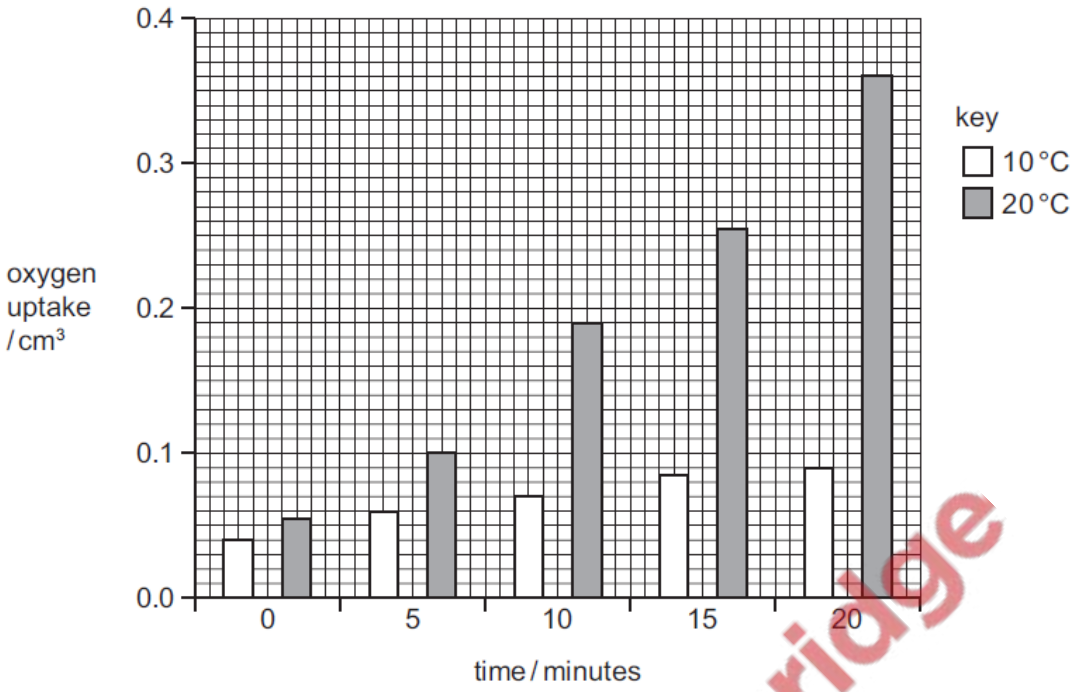
4 water

Which substances are used during aerobic respiration?

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

3. June/2022/Paper_ 11/No.24

The diagram shows the oxygen uptake by germinating seeds at two different temperatures.



At which time is the oxygen uptake at 20 °C four times greater than at 10 °C?

A 5 minutes

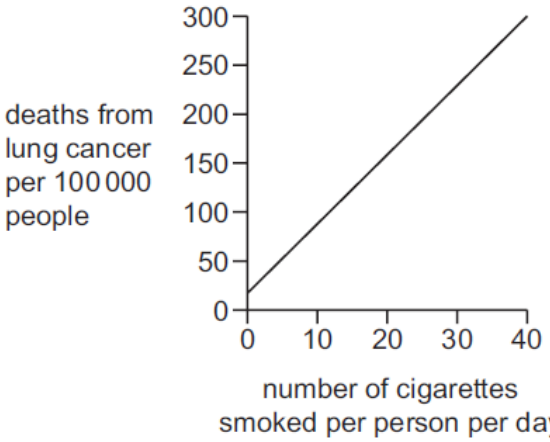
B 10 minutes

C 15 minutes

D 20 minutes

4. June/2022/Paper_ 12/No.29

The graph shows the relationship between deaths from lung cancer and the number of cigarettes smoked per day. Cigarettes contain tobacco.



Which statement is a possible conclusion for the data shown in the graph?

A A person will die of lung cancer only if they smoke.

B A person's health is only affected if they smoke more than 10 cigarettes per day.

C A person will have less chance of dying of lung cancer if they smoke fewer cigarettes.

D If a person smokes more than 40 cigarettes per day, their risk of dying from lung cancer is the same as a person who smokes 40 cigarettes per day.

5. June/2022/Paper_ 13/No.19

A student runs 400 metres.

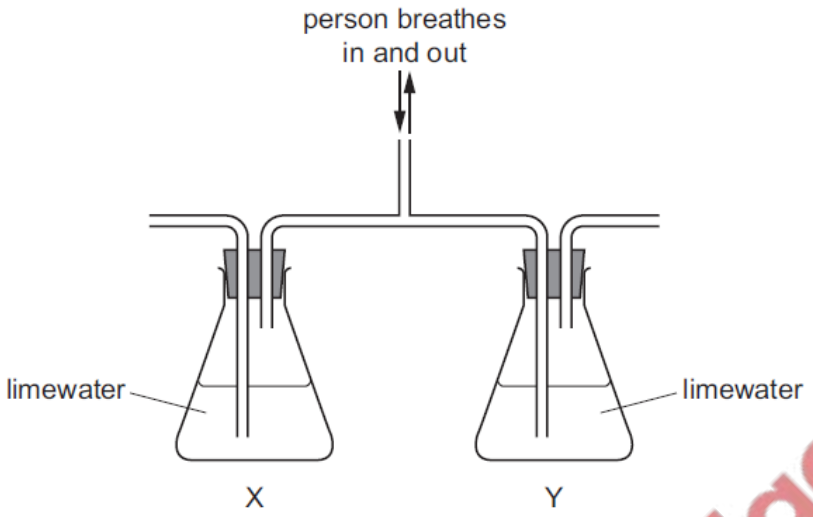
Which effects will this have?

	depth of breathing	rate of breathing	pulse rate
A	decreases	increases	decreases
B	increases	decreases	increases
C	decreases	decreases	decreases
D	increases	increases	increases

6. June/2022/Paper_ 13/No.22

The diagram shows the apparatus used in an investigation of gas exchange in humans.

The person breathes through the central tube five times.



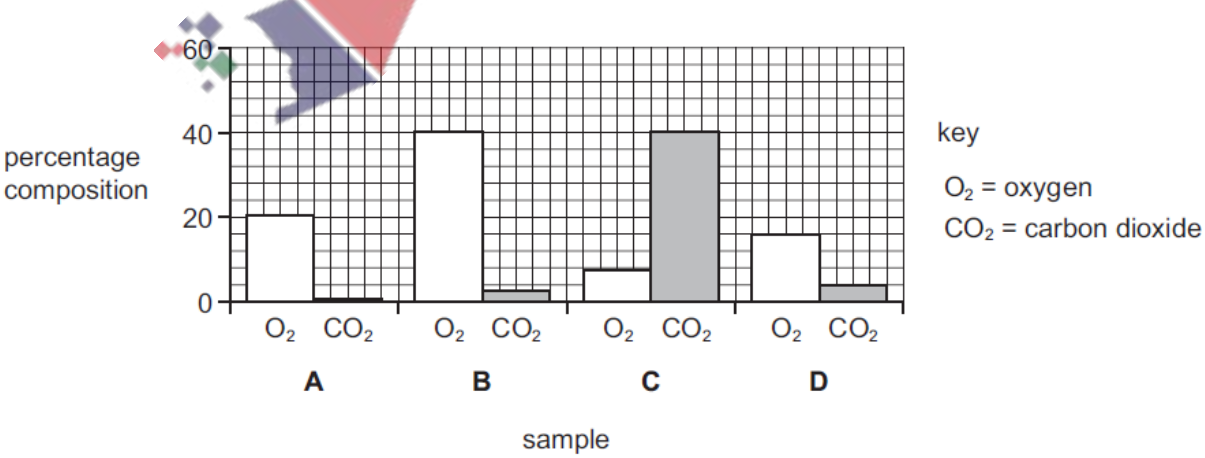
What are the expected results in flasks X and Y?

	X	Y
A	clear	clear
B	clear	cloudy
C	cloudy	clear
D	cloudy	cloudy

7. June/2022/Paper_ 13/No.24

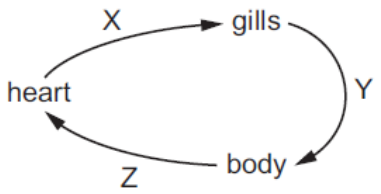
The bar chart shows the percentage composition of two gases in four samples of air.

Which sample is expired air?



8. June/2022/Paper_ 21/No.17

The diagram shows the circulatory system of a fish.



Where in the circulatory system is the oxygen concentration lowest?

A X only **B** X and Y **C** Y only **D** Y and Z

9. June/2022/Paper_ 21/No.21

Which row shows a change that occurs during ventilation?

	process	thorax pressure	thorax volume	air movement
A	expiration	decreases	increases	in
B	expiration	increases	decreases	out
C	inspiration	decreases	increases	out
D	inspiration	increases	decreases	in

10. June/2022/Paper_ 23/No.22

Which statements describe how an oxygen debt is removed after vigorous exercise?

1 Lactic acid is transported to the liver.

2 Lactic acid is respired aerobically.

3 Heart rate stays high to remove lactic acid from the muscles.

A 1 and 2 only **B** 1 and 3 only **C** 1, 2 and 3 **D** 2 and 3 only

11. June/2022/Paper_ 32/No.5(a_ b)

(a) Blood group is inherited. There are four human blood groups: A, B, AB and O.

Surveys were carried out in two different countries to find out the percentage of the population in each blood group.

The results are shown in Fig. 5.1.

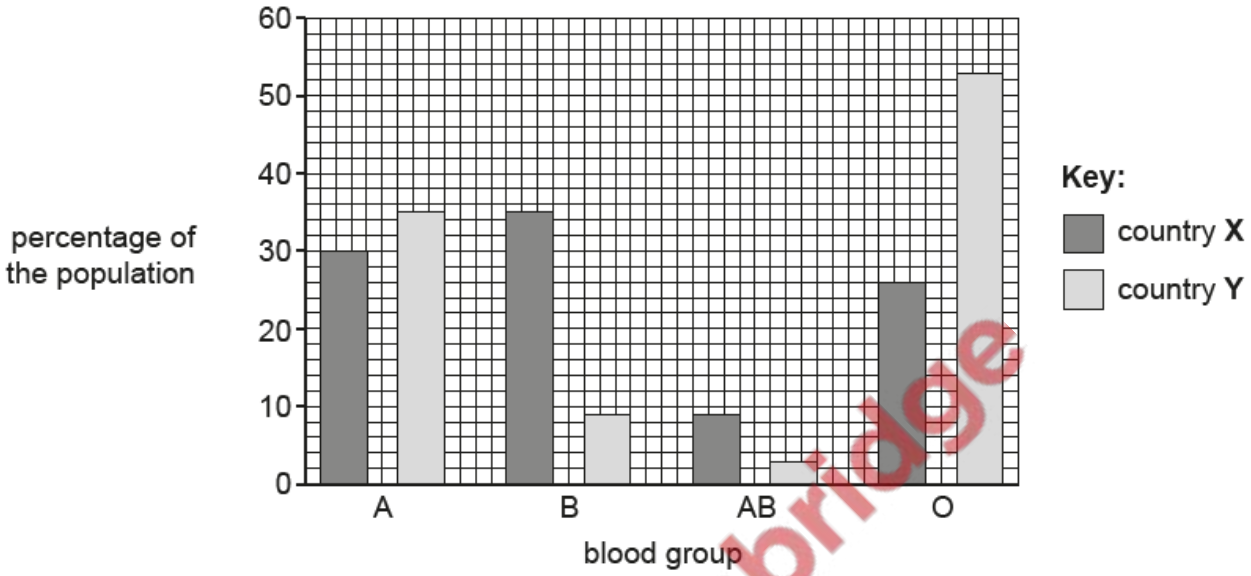


Fig. 5.1

(i) Complete the sentences that describe the data shown in Fig. 5.1.

The rarest blood group in both countries is ..... .

In country **X** blood group ..... is the most common but in country **Y** it is blood group ..... .

The percentage of the population of country **X** that has blood group **A** is .....%.

[4]

(ii) Suggest the type of variation shown in Fig. 5.1 and give a reason for your choice.

type of variation .....

reason .....

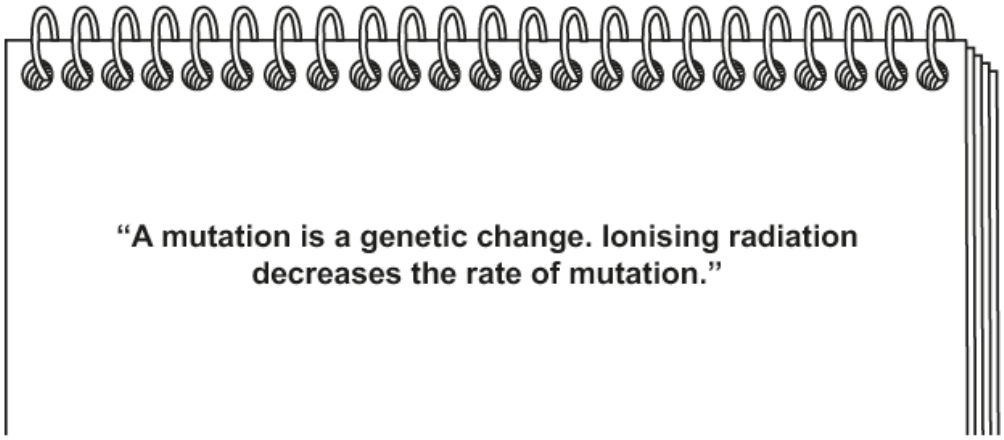
.....

.....

[2]

(b) Mutations can create variation.

A student made some statements about mutations in their notebook.



Identify **one** incorrect word in the sentences.

..... [1]

12. June/2022/Paper_ 33/No.5(a_ b)

(a) Complete the sentences about the features of the human gas exchange system.

Gas exchange surfaces have a ..... surface area.

The distance across the gas exchange surfaces is very ..... .

The gas exchange system has a ..... blood supply and good

..... with air.

[4]

(b) Fig. 5.1 shows part of the gas exchange system in the lungs of a human.

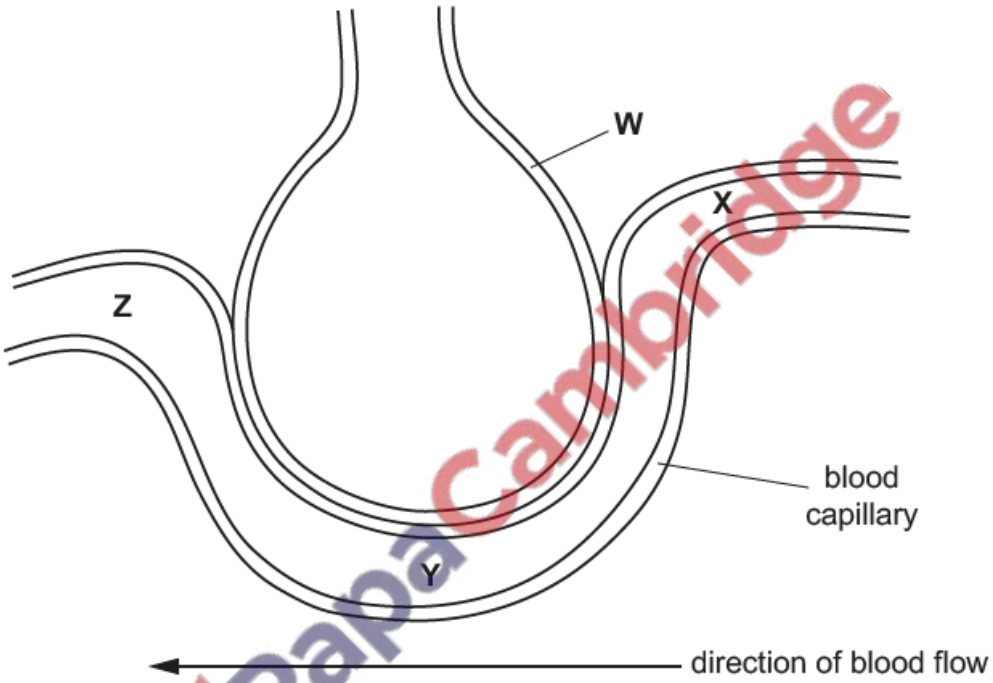


Fig. 5.1

(i) State the name of structure **W** in Fig. 5.1.

..... [1]

(ii) State the letter in Fig. 5.1 that shows where the concentration of:

- carbon dioxide in the blood is highest .....
- oxygen in the blood is highest .....

[2]

(iii) State the name of the process where molecules move down a concentration gradient.

..... [1]

13. June/2022/Paper_ 33/No.6(a_ b)

(a) Scientists surveyed a group of adults. Some of the adults had chronic bronchitis, which is a lung disease. The adults were asked their age and whether they smoked tobacco.

The results of the study are shown in Fig. 6.1.

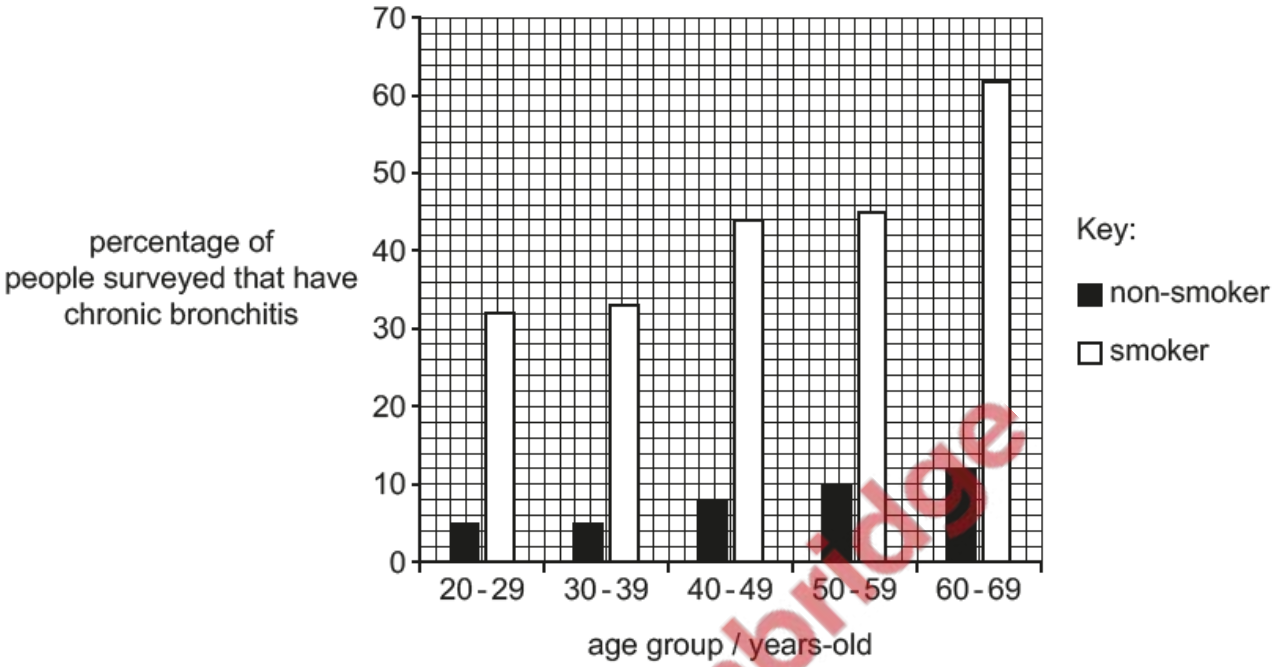


Fig. 6.1

Describe the data shown in Fig. 6.1.

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.....

.....

..... [3]

(b) **(i)** State **two** diseases other than chronic bronchitis that tobacco smoking can cause.

1 .....

2 .....

[2]

(ii) List **three** major toxic components of tobacco smoke.

1 .....

2 .....

3 .....

[3]

14. June/2022/Paper_ 42/No.5(a_ c)

Fig. 5.1 is a diagram of the human gas exchange system.

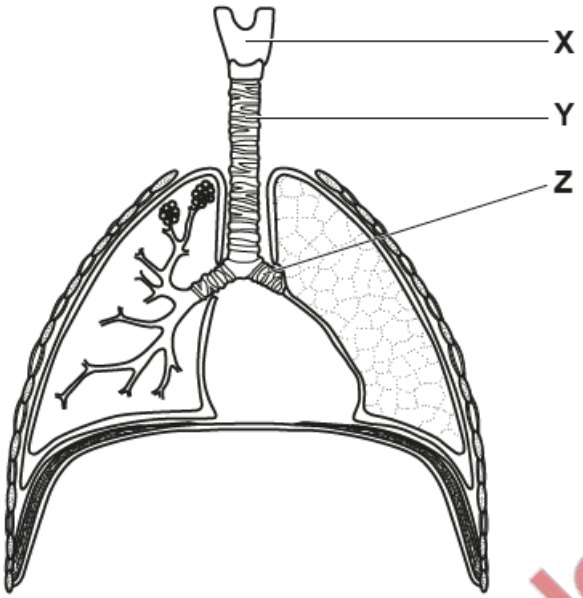

Fig. 5.1

(a) (i) Identify the parts of the gas exchange system labelled **X**, **Y** and **Z** in Fig. 5.1.

X .....

Y .....

Z .....

[3]

(ii) State the name of the tissue that prevents the collapse of **Y** and **Z** during breathing.

..... [1]

(b) Breathing involves the movement of the ribs and the diaphragm.

Describe the process of **inspiration**.

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..... [4]

(c) State the name of the gas exchange surface in the lungs.

..... [1]