Gas exchange in humans – 2023 June IGCSE Biology 0610

1. June/2023/Paper_0610/11/No.22

What is the pathway of expired air as it travels out of the body?

A alveoli → trachea → bronchiole → bronchi

B alveoli → bronchiole → bronchi → trachea

C trachea → alveoli → bronchiole → bronchi

D trachea → bronchi → bronchiole → alveoli

2. June/2023/Paper_0610/12/No.21

What are features of gas exchange surfaces in animals?

A thick-walled and large surface area

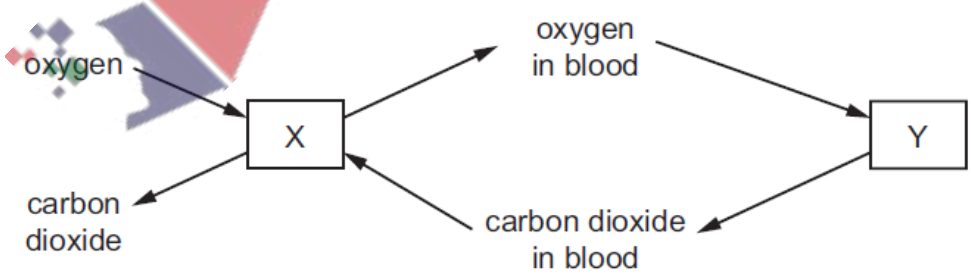
B thick-walled and small surface area

C thin-walled and small surface area

D thin-walled and large surface area

3. June/2023/Paper_0610/12/No.23

The diagram represents the exchange of gases during breathing and during respiration in the body.



What is represented by X?

A heart

B kidneys

C liver

D lungs

4. June/2023/Paper_0610/13/No.21

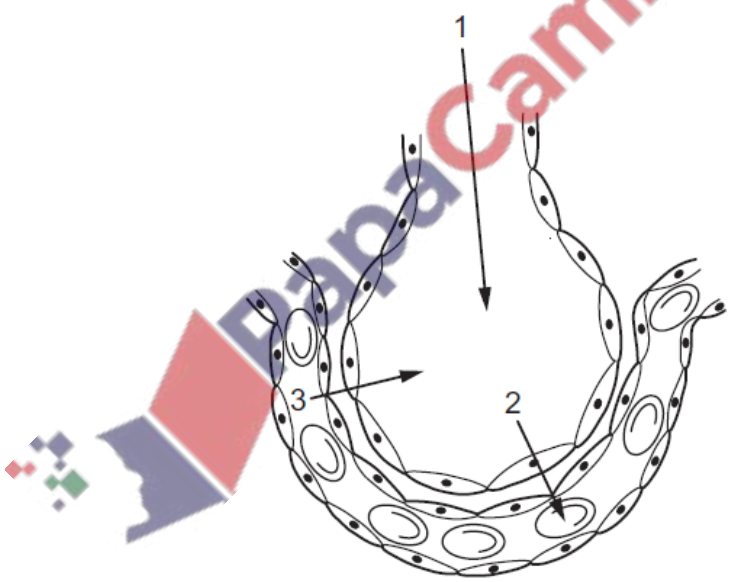
In some animals, gas exchange occurs through the skin.

What are the most likely characteristics of the skin in these animals?

	surface area	skin	blood supply
A	large	thick	poor
B	large	thin	good
C	small	thick	poor
D	small	thin	good

5. June/2023/Paper_0610/13/No.22

The diagram shows an alveolus and part of a blood vessel. The arrows show the direction of movement of gases.



Which arrows represent oxygen only and carbon dioxide only?

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

6. June/2023/Paper_0610/21/No.20

During inspiration, the processes listed take place.

P volume of the thorax increases

Q air rushes into the lungs

R pressure in the thorax decreases

S external intercostal muscles contract

T diaphragm moves down, ribs move upwards and outwards

What is the correct sequence for these processes?

A Q → P → S → R → T

B S → T → P → R → Q

C Q → P → S → T → R

D S → Q → R → P → T

7. June/2023/Paper_0610/22/No.20

Different stages in the process of expiration are listed.

1 Rib cage moves downwards and inwards.

2 Volume of thorax decreases and pressure in lungs increases.

3 Air is pushed out of lungs.

4 Diaphragm and external intercostal muscles relax.

What is the correct order of these stages?

A 1 → 2 → 3 → 4

B 1 → 4 → 2 → 3

C 4 → 3 → 2 → 1

D 4 → 1 → 2 → 3

8. June/2023/Paper_0610/23/No.20

What happens when a person breathes in?

A The external intercostal muscles and the internal intercostal muscles contract.

B The external intercostal muscles and the internal intercostal muscles relax.

C The external intercostal muscles relax and the internal intercostal muscles contract.

D The external intercostal muscles contract and the internal intercostal muscles relax.

9. June/2023/Paper_0610/41/No.3

(a) Fig. 3.1 is a photomicrograph of some cells lining the trachea.

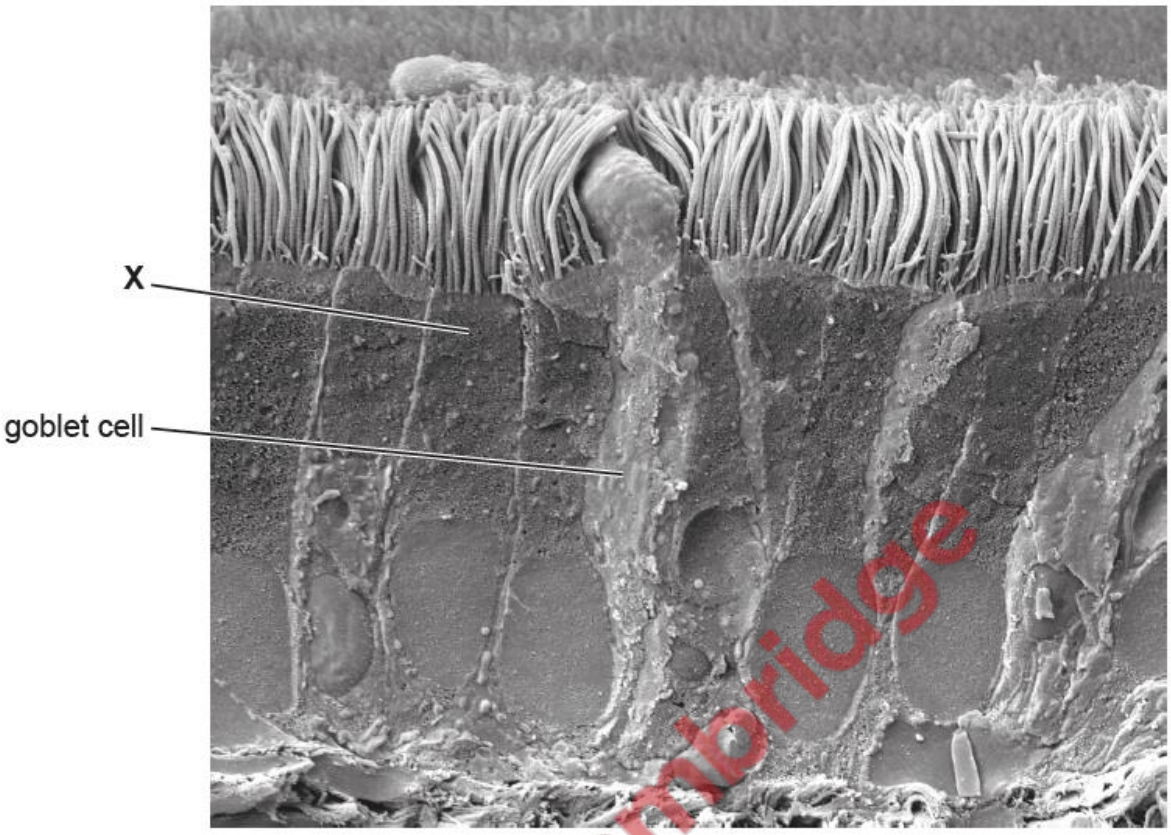


Fig. 3.1

(i) Describe the role of goblet cells.

.....

.....

.....

.....

..... [2]

(ii) Explain how the cell labelled **X** in Fig. 3.1 is adapted for its function.

.....

.....

.....

.....

..... [2]

(iii) State the name of **one other** part of the body where the type of cell labelled **X** in Fig. 3.1 is found.

..... [1]

(b) Table 3.1 contains some features of the breathing system.

Complete Table 3.1 to show the actions of each feature of the breathing system that occur to cause inspiration.

Table 3.1

feature of the breathing system	action that causes inspiration
diaphragm	.....
external intercostal muscles	.....
pressure in the thorax	.....
ribs	.....
volume of the thorax	.....

[5]

(c) State the name of the gas that is excreted by the breathing system.

..... [1]

(d) Good ventilation is one feature of gas exchange surfaces.

State **two other** features.

1 .....

2 .....

[2]

(e) State the name of the gas exchange surface in humans.

..... [1]

[Total: 14]

10. March/2023/Paper_ 0610/22/No.20

Which molecule crosses a partially permeable membrane during osmosis?

A carbon dioxide

B oxygen

C urea

D water

11. March/2023/Paper_ 0610/32/No.5

Fig. 5.1 is a diagram of the breathing system in humans.

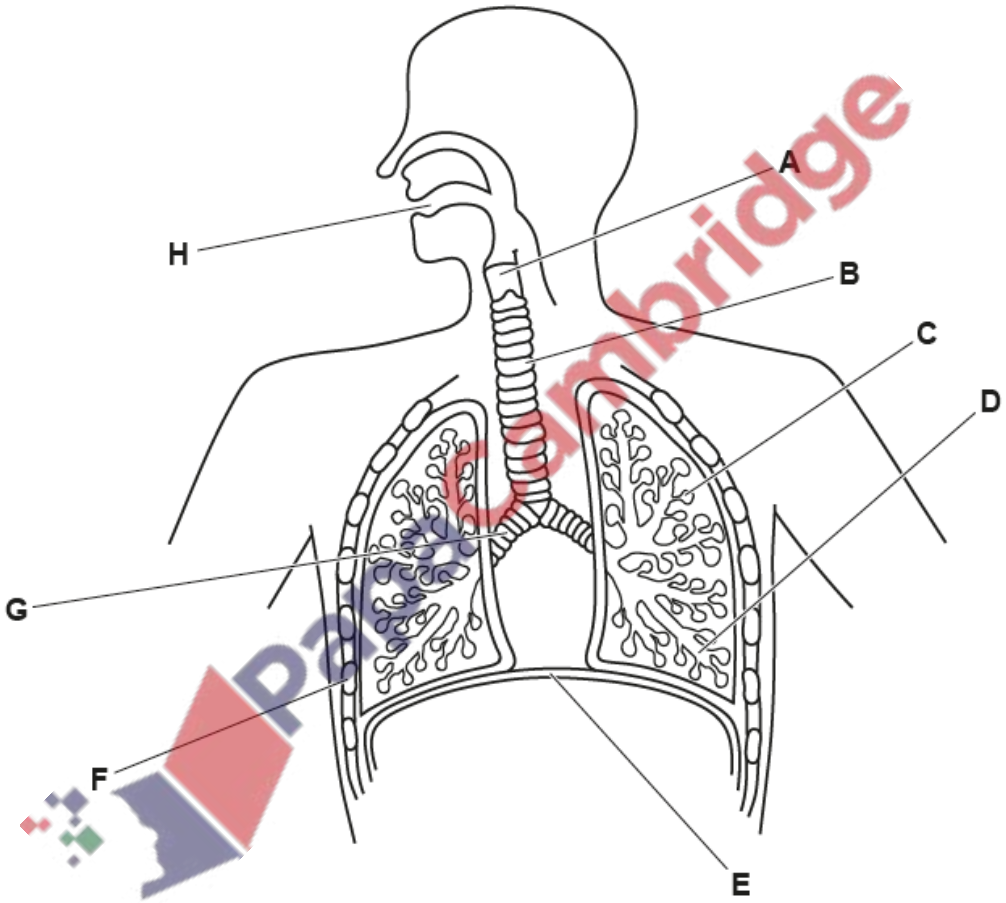


Fig. 5.1

(a) State the names of the parts labelled **A**, **D** and **E** in Fig. 5.1.

A .....

D .....

E .....

[3]

(b) Part **B** in Fig. 5.1 contains specialised cells that move mucus.

State the name of these specialised cells.

..... [1]

(c) State the letter of a part shown in Fig. 5.1 that also has a role in digestion and name **one** type of digestion that occurs here.

letter .....

type of digestion .....
[2]

(d) The alveoli are the gas exchange surface.

Scientists estimated the total alveolar surface area in seven different species.

The results are shown in Fig. 5.2.

Species **A** to **G** are placed in order of body size from smallest (**A**) to largest (**G**).

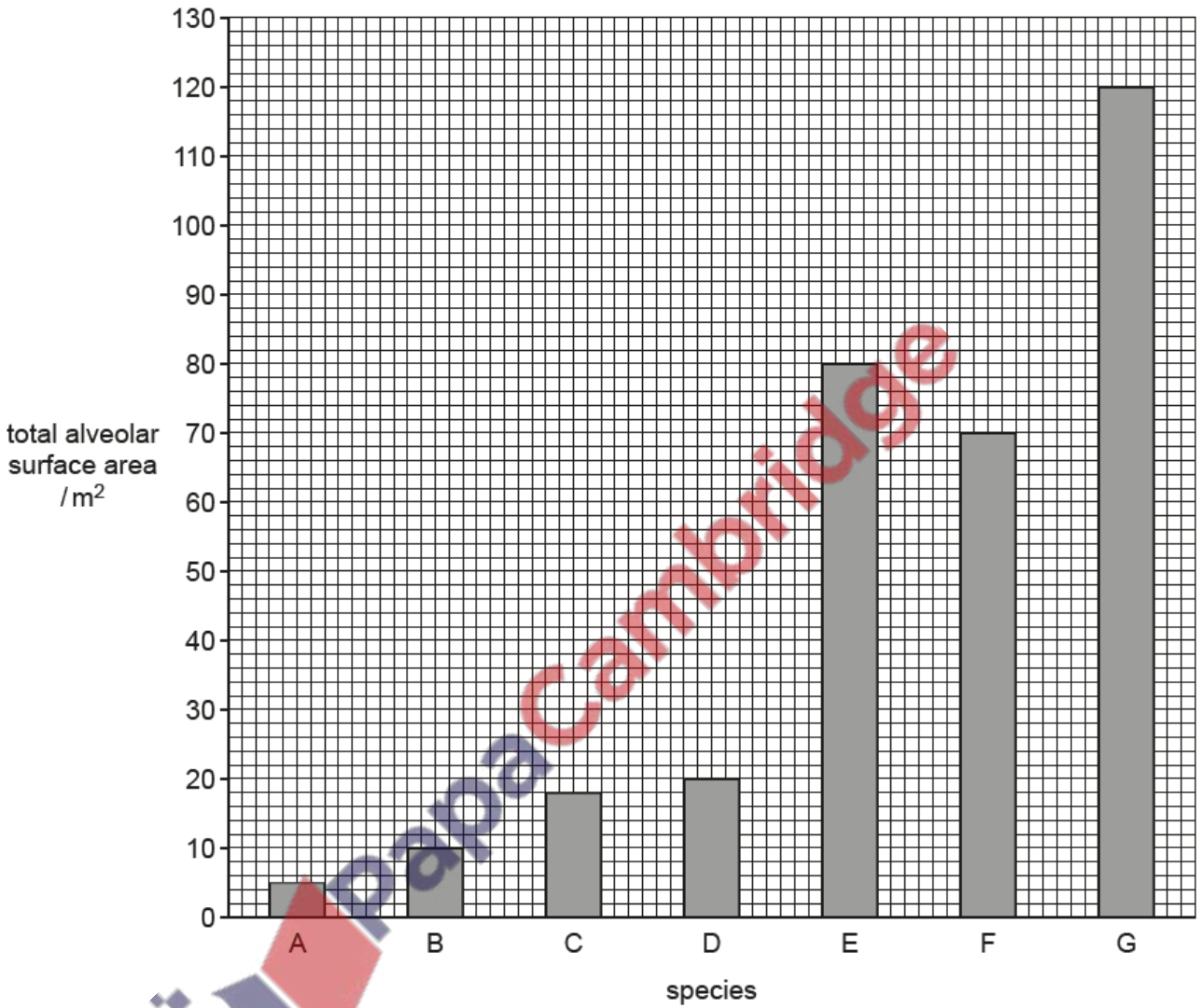


Fig. 5.2

A student made this statement:

'The larger the species, the larger the total alveolar surface area.'

(i) State **one** piece of evidence from Fig. 5.2 that supports this statement **and one** piece of evidence that does **not** support this statement.

supports .....

.....

does **not** support .....

.....

[2]

(ii) Calculate the difference in total alveolar surface area between species **D** and **G** shown in Fig. 5.2.

..... m^2 [1]

(e) A large surface area is one feature of gas exchange surfaces in humans.

State **two** other features.

1 .....

2 .....

[2]

[Total: 11]