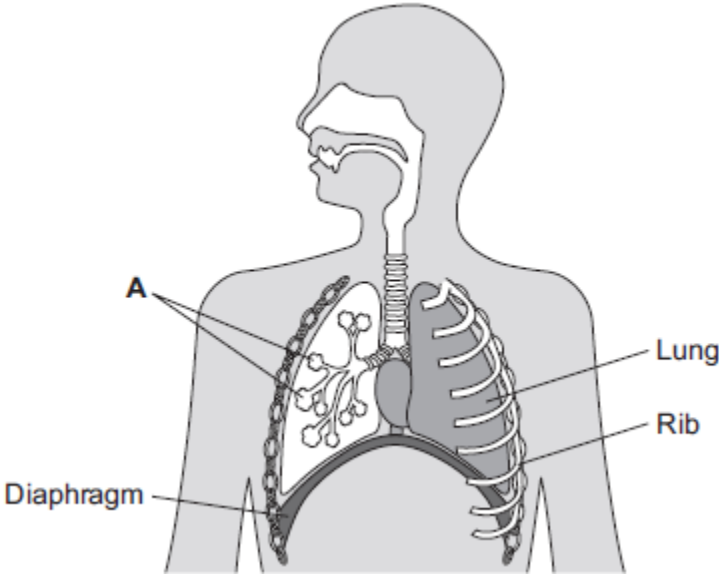


1

Our lungs help us to breathe.

The image below shows the human breathing system.



(a) (i) Name part **A**.

.....

(1)

(ii) Give **one** function of the ribs.

.....

(1)

(b) (i) Use the correct answer from the box to complete the sentence.

active transport	diffusion	osmosis
-------------------------	------------------	----------------

Oxygen moves from the air inside the lungs into the blood by the process of

(1)

(ii) Use the correct answer from the box to complete the sentence.

arteries	capillaries	veins
-----------------	--------------------	--------------

Oxygen moves from the lungs into the blood through the walls of the

(1)

(iii) Inside the lungs, oxygen is absorbed from the air into the blood.

Give **two** adaptations of the lungs that help the rapid absorption of oxygen into the blood.

1

.....

2

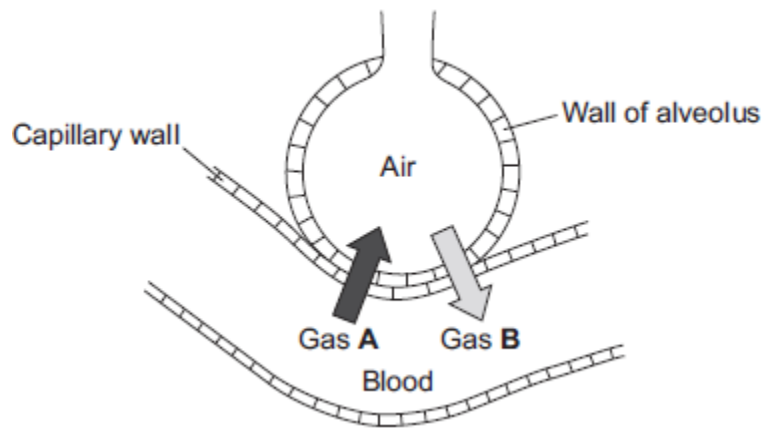
.....

(2)
(Total 6 marks)

2 Gas exchange takes place in the lungs.

The diagram shows an alveolus next to a blood capillary in a lung.

The arrows show the movement of two gases, **A** and **B**.



(a) (i) Draw a ring around the correct answer to complete the sentence.

Gases **A** and **B** move by

diffusion.
osmosis.
respiration.

(1)

(ii) Gas **A** moves from the blood to the air in the lungs.

Gas **A** is then breathed out.

Name Gas **A**.

.....

(1)

(iii) Which cells in the blood carry Gas **B**?

Draw a ring around the correct answer.

platelets

red blood cells

white blood cells

(1)

(b) The average number of alveoli in each human lung is 280 million.

The average surface area of 1 million alveoli is 0.25 m^2 .

Calculate the total surface area of a human lung.

.....

Answer m^2

(2)

(c) An athlete trains to run a marathon. The surface area of each of the athlete's lungs has increased to 80 m^2 .

Give **one** way in which this increase will help the athlete.

.....

.....

(1)

(Total 6 marks)

Mark schemes

1	(a) (i)	alveoli / alveolus <i>allow air sacs</i> <i>allow phonetic spelling</i>	1
	(ii)	any one from: <ul style="list-style-type: none">• protection (of lungs / heart)• help you breathe / inflate lungs.	1
	(b) (i)	diffusion	1
	(ii)	capillaries	1
	(iii)	any two from: <ul style="list-style-type: none">• (have many) alveoli <i>allow air sacs</i>• large surface / area• thin (exchange) surface or short diffusion pathway <i>accept only one / two cell(s) thick</i>• good blood supply / many capillaries <i>allow (kept) ventilated or maintained concentration gradient.</i>	2
			[6]
2	(a) (i)	diffusion	1
	(ii)	carbon dioxide <i>accept CO₂ / CO2</i> <i>do not accept CO²</i>	1
	(iii)	red blood cells	1
(b)	70 <i>if no / incorrect answer then</i> <i>70 000 000</i> or <i>280 x 0.25 gains 1 mark</i> <i>ignore doubling the answer</i>	2	

- (c) allows more gas / oxygen / CO₂
(exchange)

*do **not** accept air*

1 [6]