Exchange Surfaces

Question Paper 2

Level	A Level
Subject	Biology
Exam Board	OCR
Module	Exchange and transport
Торіс	Exchange Surfaces
Booklet	Question Paper 2

Time allowed:	42 minutes
Score:	/31
Percentage:	/100
Grade Boundaries:	

A*	А	В	С	D	E
>69%	56%	50%	42%	34%	26%

Question 1

- (a) (i) Name the two types of epithelial tissue found in the lungs and airways.
 - (ii) The epithelial cells in the lungs are arranged into structures called alveoli.

Explain how the alveoli create a surface for efficient gaseous exchange.

In your answer you should use appropriate technical terms, spelled correctly.



- (b) To improve gaseous exchange, the air in the alveoli is refreshed by ventilation. The air movement created by ventilation can be recorded using suitable apparatus.
 - (i) Name the apparatus used to record these air movements.

[1]

[2]

[6]

Fig. 3.1 shows a trace recorded from this apparatus.



Fig. 3.1

(ii) Calculate the rate of breathing over the first minute from the trace.

[1]

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(iii) Using the trace, calculate the rate of oxygen consumption over the first minute. Show your working.

[2]

[Total: 11]

Question 2

Many teachers use models to demonstrate and explain breathing and lung function in mammals.

Fig. 2.1 is a model of the mammalian chest.





(a) When the rubber sheet is pulled down the balloons expand.

Explain why the balloons expand.

[3]

- (b) A teacher used the model in Fig. 2.1 to demonstrate the difference between tidal volume and vital capacity.
 - (i) Explain the meaning of the term *tidal volume*.

(ii) Suggest how the teacher may have used the model to demonstrate tidal volume. [2]

(iii) Explain the meaning of the term vital capacity.

[2]

[2]

(iv) Suggest how the teacher may have used the model to demonstrate vital capacity. [1]

[Total: 10]

Question 3



Fig. 5.1 shows the changes in the volume of air in the lungs of a student at rest during one breath.



- (a) (i) Name the measurement represented by the line X. [1]
 - (ii) What is happening to the elastic fibres in the walls of the alveoli at point A? [1]
- (b) Explain what causes the change in the volume of air between points **B** and **C** on Fig. 5.1.

In your answer you should use appropriate technical terms, spelt correctly.

[4]

(d) About 1 dm³ of air cannot be expelled from the lungs. This is known as the residual volume.
Suggest why it is **not** possible to expel all the air from the lungs. [2]

[Total: 10]

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