

Human gas exchange – 2022 June O Level 5090**1. June/2022/Paper_11/No.19**

Which row shows actions that occur when humans breathe in?

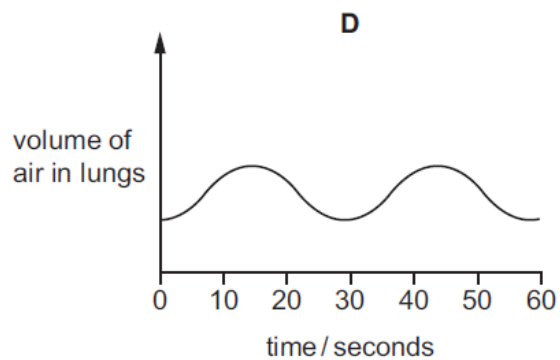
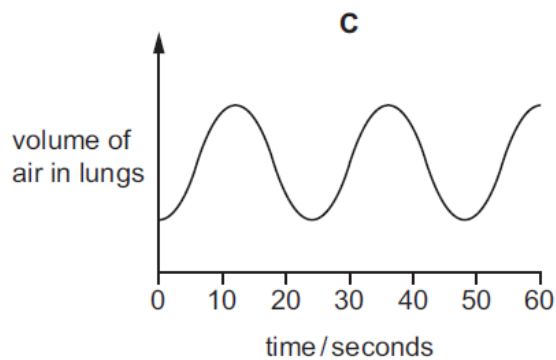
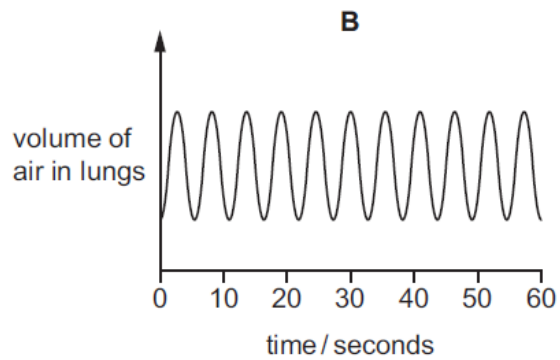
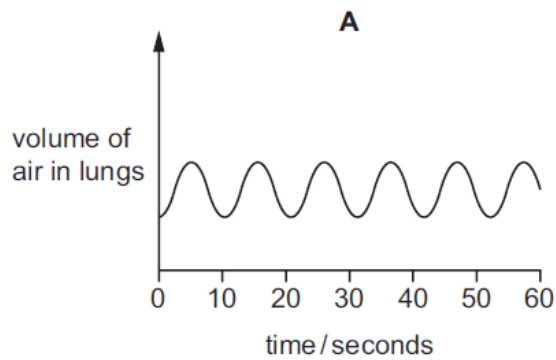
	diaphragm	external intercostal muscles	ribs
A	becomes dome shaped	contract	fall
B	becomes dome shaped	relax	rise
C	flattens	contract	rise
D	flattens	relax	fall

2. June/2022/Paper_12/No.19

The graphs show the depth and rate of breathing in an individual doing four different levels of activity.

The same scale for volume is used in each graph.

Which graph shows the individual being most active?



3. June/2022/Paper_21/No.2(a_b)

A man decides to do some fitness training to improve his ability to provide oxygen to his muscles.

(a) (i) Describe the route an oxygen molecule takes from the atmosphere to reach the muscles.

.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

(ii) The fitness training is designed to result in changes to the man's body.

Suggest **two** body changes that would improve his ability to provide oxygen to his muscles.

1

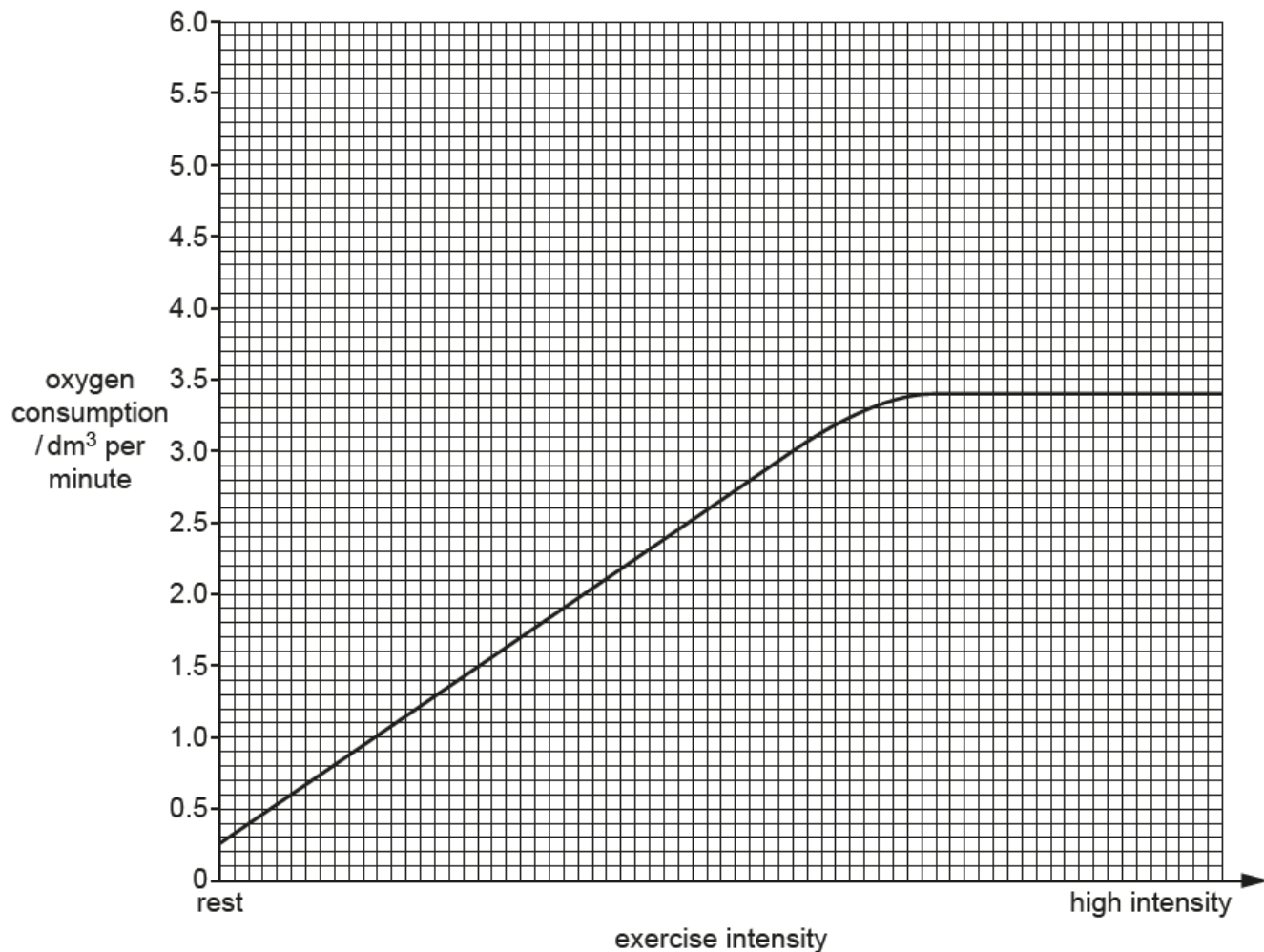
.....

2

..... [2]

- (b) The man measures how much oxygen his body uses (his oxygen consumption) at different intensities of exercise, from rest to high intensity.

His results are shown in the graph.



- (i) State the name of the chemical process that uses oxygen to release energy in the muscles.

..... [2]

- (ii) Use the graph to determine the maximum volume of oxygen the man consumes in one minute.

..... [1]

- (iii) The graph shows that it is possible for the man to increase the intensity of his exercise beyond the point at which he has reached his maximum oxygen consumption. He can only do this for a short period of time.

Explain why.

.....

.....

.....

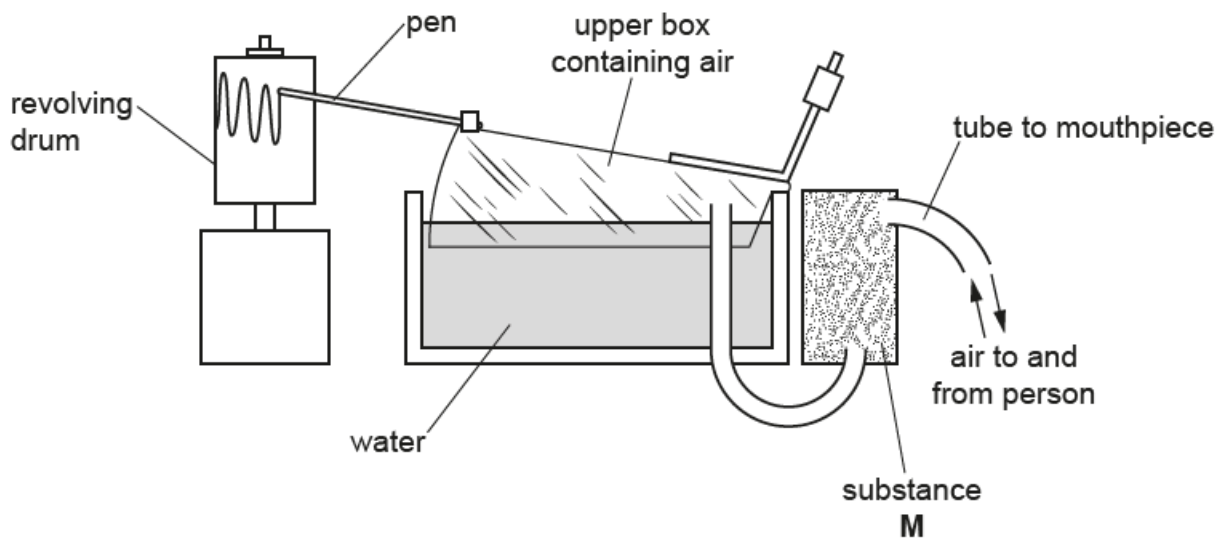
.....

..... [3]

- (iv) After four weeks of fitness training the man measures his oxygen consumption again. On the graph, sketch a line to show the expected results of successful fitness training. [2]

4. June/2022/Paper_22/No.2(a_b)

The diagram shows apparatus used to study breathing.



(a) (i) Describe what will happen to the upper box containing air as a person takes **one** breath **in** from the apparatus.

..... [1]

(ii) State the percentage of oxygen in atmospheric air.

..... %

Explain how the percentage of **oxygen** in the air in the upper box will change as a person breathes in **and** out through the apparatus several times.

.....

[3]

(iii) Substance **M** is present in the apparatus to absorb an excretory product from expired air.

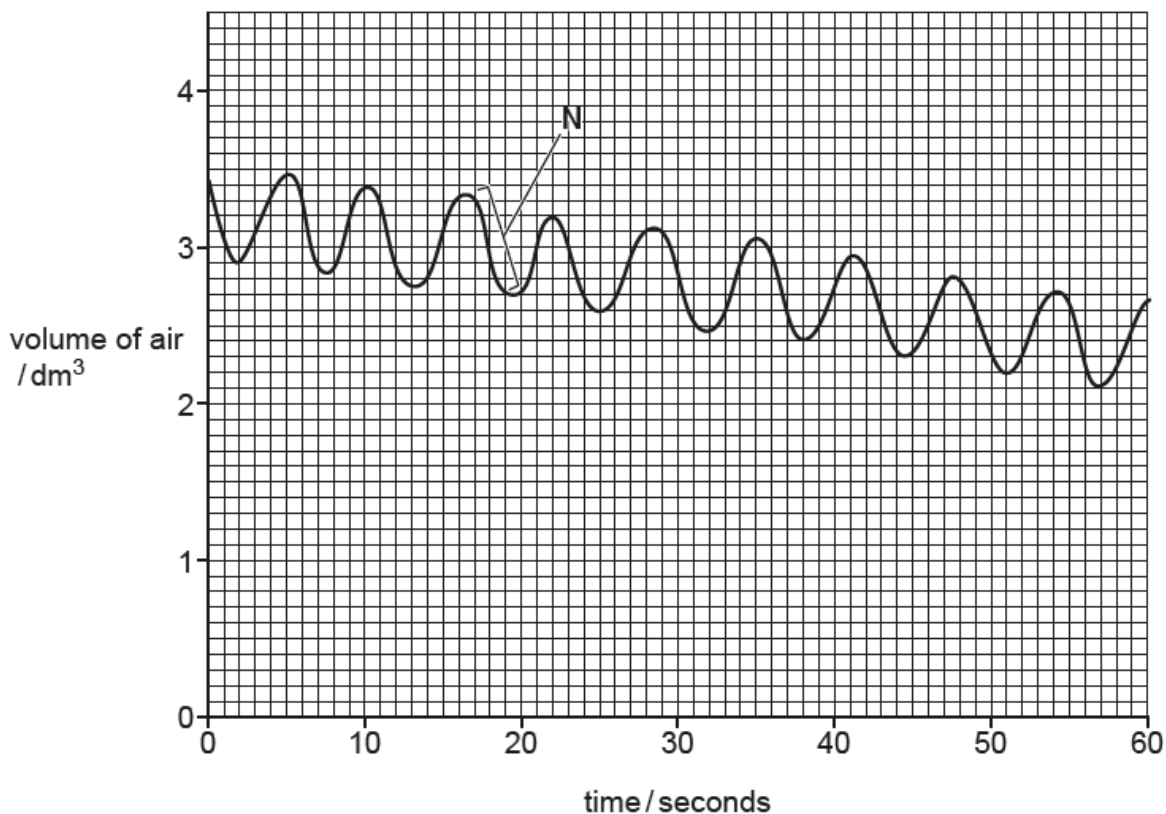
Name this excretory product.

.....

[1]

(b) The diagram shows a chart recorded by the pen on the revolving drum.

This chart was recorded for a period of one minute by a person at rest.



(i) Explain how the action of one **named** muscle caused the part of the chart labelled **N**.

.....

.....

.....

.....

.....

.....

.....

..... [3]

(ii) A second chart was recorded for a period of one minute by the same person after vigorous exercise.

State how an increased **rate** of breathing after exercise would be shown on this second chart.

.....

..... [1]

