12. Respiration

12.2 Aerobic respiration

Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

1 Which substances are used and produced in aerobic respiration in a plant cell?

	substances used in aerobic respiration	substances produced in aerobic respiration
A	carbon dioxide and glucose	oxygen and water
B	carbon dioxide and water	glucose and oxygen
C	glucose and oxygen	carbon dioxide and water
D	glucose and water	carbon dioxide and oxygen

2 What is the word equation for aerobic respiration?

A carbon dioxide + glucose → oxygen + water

B carbon dioxide + water → oxygen + glucose

C oxygen + glucose → carbon dioxide + water

D oxygen + water → carbon dioxide + glucose

3 What is the word equation for aerobic respiration?

A carbon dioxide + water → glucose + oxygen

B glucose + oxygen → carbon dioxide + water

C glycogen + oxygen → carbon dioxide + water

D water + oxygen → glucose + carbon dioxide

4 Substances involved in aerobic respiration are listed.

1 carbon dioxide

2 glucose

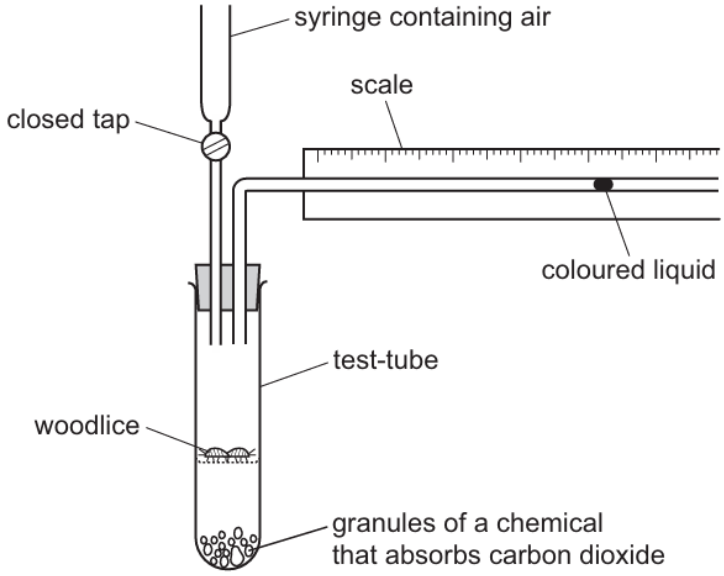
3 oxygen

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

5 A student used this apparatus to investigate the rate of aerobic respiration in woodlice.



Which statement describes and explains the movement of the coloured liquid when the woodlice are respiring?

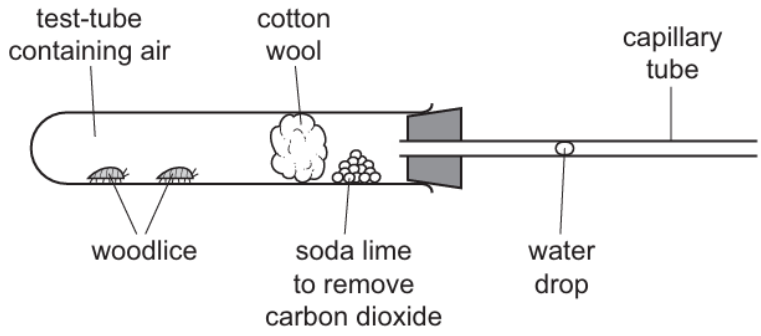
A The coloured liquid moves towards the test-tube because the woodlice are using carbon dioxide.

B The coloured liquid moves towards the test-tube because the woodlice are using oxygen.

C The coloured liquid moves away from the test-tube because the woodlice are using carbon dioxide.

D The coloured liquid moves away from the test-tube because the woodlice are using oxygen.

6 The diagram shows the apparatus used by a student to investigate respiration in woodlice (small arthropods).



Which explanation about the direction that the water drop will move is correct?

A The water drop will move away from the woodlice because respiration uses carbon dioxide.

B The water drop will move away from the woodlice because respiration uses oxygen.

C The water drop will move towards the woodlice because respiration uses carbon dioxide.

D The water drop will move towards the woodlice because respiration uses oxygen.

7 Which chemicals are needed to release energy in aerobic respiration?

A carbon dioxide and glucose

B carbon dioxide and water

C oxygen and glucose

D oxygen and water

8 The substances listed are associated with aerobic respiration.

1 carbon dioxide

2 glucose

3 oxygen

4 water

Which substances are the products of aerobic respiration?

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

9 Which process releases the most energy from one molecule of glucose?

A aerobic respiration

B anaerobic respiration in muscle

C anaerobic respiration in yeast

D photosynthesis

Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

10 Two molecules of glucose are aerobically respired.

How many molecules of water are produced? **(extended only)**

A 1 **B** 2 **C** 6 **D** 12

11 The symbol equation for aerobic respiration is shown.

$$C_6H_xO_y + 6O_2 \rightarrow 6CO_z + 6H_2O$$

Which numbers represent the letters shown in the equation as x, y and z? **(extended only)**

	x	y	z
A	2	12	6
B	6	2	12
C	6	12	2
D	12	6	2

12 How many molecules of carbon dioxide, glucose, oxygen and water are there in the balanced chemical equation for aerobic respiration? **(extended only)**

	carbon dioxide	glucose	oxygen	water
A	3	1	6	3
B	3	2	3	3
C	6	1	6	6
D	6	6	6	6

13 Which row shows aerobic respiration? **(extended only)**

	substrates	products
A	$6CO_2 + 6H_2O$	$C_6H_{12}O_6 + 6O_2$
B	$C_6H_{12}O_6 + 6CO_2$	$6H_2O + 6O_2$
C	$6CO_2 + 6O_2$	$C_6H_{12}O_6 + 6H_2O$
D	$C_6H_{12}O_6 + 6O_2$	$6CO_2 + 6H_2O$

14 In a balanced chemical equation for aerobic respiration, what are the products? **(extended only)**

A $6O_2$ and $6H_2O$

B $C_6H_{12}O_6$ and $6O_2$

C $6O_2$ and $6CO_2$

D $6CO_2$ and $6H_2O$

15 Which equation is aerobic respiration? **(extended only)**

A $6CO_2 + 6H_2O \rightarrow 6C_6H_{12}O_6 + 6O_2$

B $6O_2 + 6CO_2 \rightarrow 6H_2O + C_6H_{12}O_6$

C $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

D $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$

16 Which row correctly completes the balanced equation for aerobic respiration? **(extended only)**

$$X + 6O_2 \rightarrow 6CO_2 + Y$$

	X	Y
A	$6C_6H_{12}O_6$	H_2O
B	$C_6H_{12}O_6$	$6H_2O$
C	$6H_2O$	$C_6H_{12}O_6$
D	$C_6H_{10}O_6$	$6H_2O$

17 The substances listed are associated with aerobic respiration.

1 carbon dioxide

2 glucose

3 oxygen

4 water

Which substances are the products of aerobic respiration?

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

18 What is the correct equation for aerobic respiration? **(extended only)**

A $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

B $C_6H_{12}O_6 + 6CO_2 \rightarrow 6O_2 + 6H_2O$

C $C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O$

D $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

19 Aerobic respiration involves the break down of glucose.

$$C_6H_{12}O_6 + ...x...O_2 \rightarrow ...y...H_2O + ...z...CO_2 + \text{energy}$$

Which values for x, y and z balance the equation? **(extended only)**

	x	y	z
A	6	4	6
B	6	6	6
C	6	12	6
D	12	12	12