

12. Respiration

(Past Year Topical Questions 2010-2015)

May/June 2010 (11)

1 What is defined as the chemical reactions that break down food molecules in cells to release energy?

- A excretion
- B movement
- C nutrition
- D respiration

19 The table shows some of the features of respiration.

Which row is correct for anaerobic respiration?

	energy remaining in products	amount of energy released	chemical pathway	releases carbon dioxide
A	high	high	always the same	sometimes
B	high	low	different in different organisms	sometimes
C	low	high	different in different organisms	always
D	low	low	always the same	always

20 Four words are shown below.

alcohol anaerobic sugar yeast

These words can be used in the spaces P, Q, R and S to complete the sentence below.

'In brewing and bread making, respiration takes place. The micro-organism calledP..... usesQ..... as a source of food. The product of thisR..... respiration isS......'

Which combination of words correctly completes the sentences?

	alcohol	anaerobic	sugar	yeast
A	P	Q	R	S
B	Q	P	S	R
C	R	S	Q	P
D	S	R	Q	P

May/June 2011 (11)

- 22** Which statement about respiration is **not** correct?
- A** All living cells respire.
 - B** Heat is always produced.
 - C** Plants respire in the light and in the dark.
 - D** Plants take in carbon dioxide and give out oxygen.

May/June 2012 (11)

- 19** What is the equation for anaerobic respiration in yeast?
- A** glucose + oxygen → carbon dioxide + water
 - B** glucose → alcohol + carbon dioxide
 - C** glucose → alcohol + water
 - D** glucose → lactic acid + water
- 20** Which process depends on energy from respiration?
- A** diffusion
 - B** osmosis
 - C** peristalsis
 - D** photosynthesis
- 35** During aerobic respiration glucose is broken down.
- This process recycles
- A** carbon only.
 - B** carbon and water.
 - C** energy only.
 - D** water only.

May/June 2012 (12)

19 Which process, inside cells, releases energy useful to the human body?

- A digestion
- B excretion
- C mitosis
- D respiration

21 How are aerobic and anaerobic respiration similar?

- A Both involve breaking down glucose.
- B Both need a low concentration of oxygen.
- C In muscles, both produce carbon dioxide.
- D In yeast, both produce alcohol.

Oct/Nov 2012 (11)

19 What is produced by anaerobic respiration in a muscle?

	lactic acid	carbon dioxide
A	✓	✓
B	✓	x
C	x	✓
D	x	x

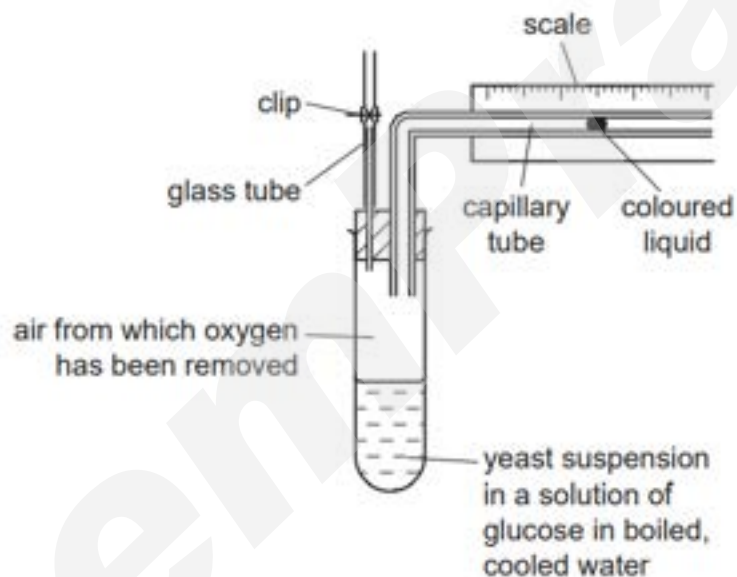
key

✓ = produced

x = not produced

Oct/Nov 2012 (13)

- 1 What is respiration?
- A breathing
 - B giving out carbon dioxide
 - C releasing energy from food
 - D taking in oxygen
- 20 The diagram shows apparatus used to investigate anaerobic respiration in yeast.



What happens to the coloured liquid?

- A moves rapidly to the left
- B moves slowly to the left
- C moves to the right
- D stays still

May/June 2013 (11)

20 Which chemical could be used to show that cells are respiring aerobically?

- A** Benedict's solution
- B** dilute sulfuric acid
- C** ethanol
- D** limewater

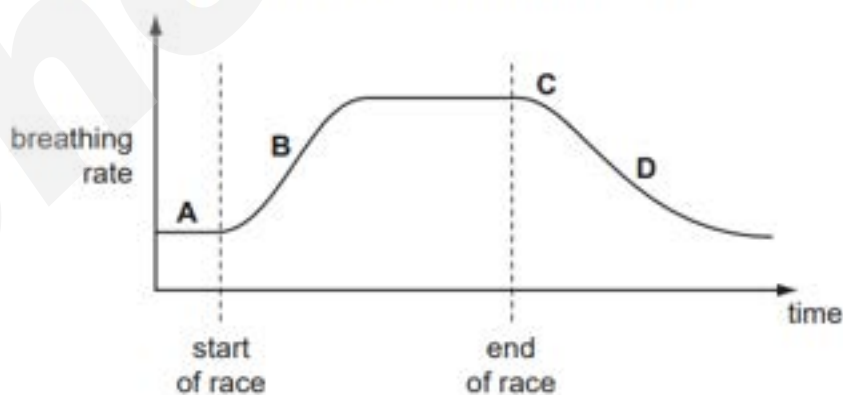
21 When does respiration take place in animals and plants?

	animals	plants
A	all the time	all the time
B	all the time	night time only
C	day time only	day time only
D	day time only	night time only

May/June 2013 (12)

19 An athlete takes part in a race. The graph shows her breathing rate before, during and after the race.

At which point does her body contain the greatest amount of lactic acid?



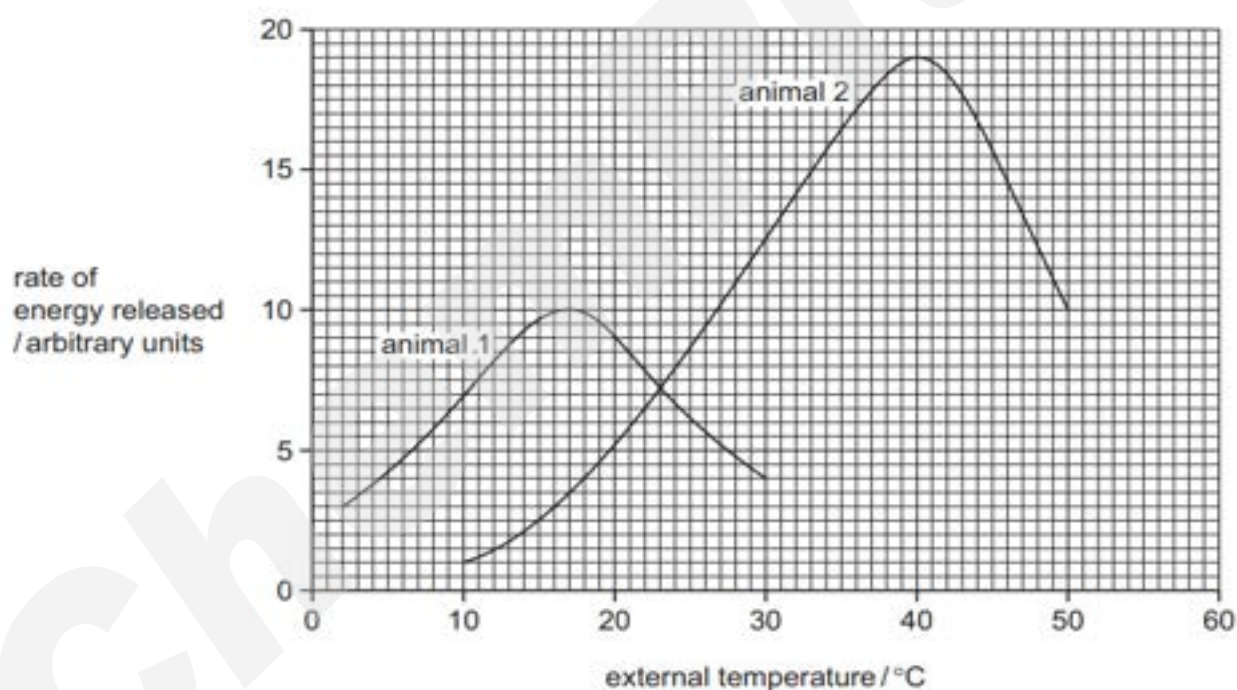
Oct/Nov 2013 (13)

20 Which process uses the greatest amount of energy?

- A** gaseous diffusion
- B** protein synthesis
- C** respiration
- D** starch digestion

May/June 2014 (11)

18 The graph shows the energy released by two animals through respiration as the external temperature changes.



Which conclusion can be drawn from the graph?

- A** Animals 1 and 2 release the least energy at 23 °C.
- B** Animal 2 always respire faster than animal 1.
- C** As the temperature rises, respiration always increases.
- D** The rate of respiration is the same for both animals at 23 °C.

20 Four word equations are shown.

P carbon dioxide + water \rightarrow glucose + oxygen

Q glucose + oxygen \rightarrow carbon dioxide + water

R glucose \rightarrow lactic acid

S glucose \rightarrow alcohol + carbon dioxide

What are the equations for anaerobic respiration in humans and anaerobic respiration in yeast?

	anaerobic respiration in humans	anaerobic respiration in yeast
A	Q	P
B	Q	S
C	R	P
D	R	S

36 What are products of respiration in green plants?

A glucose and carbon dioxide

B glucose and oxygen

C water and carbon dioxide

D water and oxygen

May/June 2014 (12)

19 What contains the greatest concentration of lactic acid?

- A a bottle of alcoholic drink
- B a loaf of freshly baked bread
- C muscle cells during vigorous exercise
- D yeast cells kept in glucose at 70 °C for 30 minutes

Oct/Nov 2014 (11)

18 What are the products of anaerobic respiration in muscles?

- A ethanol and carbon dioxide
- B ethanol only
- C lactic acid and carbon dioxide
- D lactic acid only

Oct/Nov 2014 (13)

18 Four metabolic reactions are shown.

- 1 carbon dioxide + water → glucose + oxygen
- 2 glucose → ethanol + carbon dioxide
- 3 glucose → lactic acid
- 4 glucose + oxygen → carbon dioxide + water

Which reactions take place in human cells to release energy?

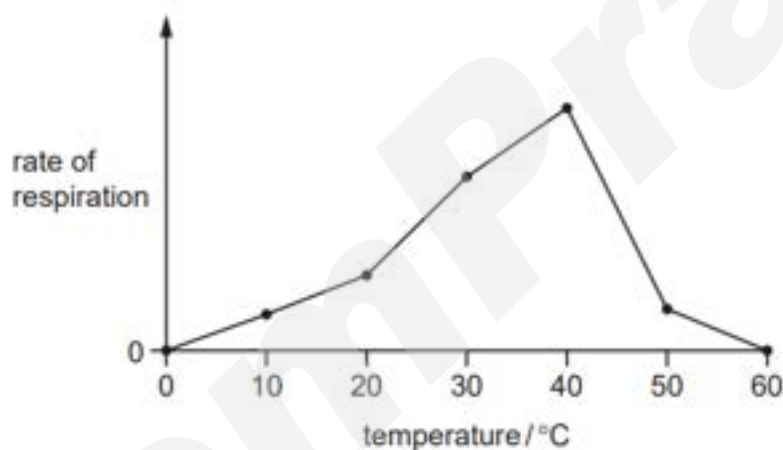
- A 1 and 2 B 1 and 3 C 2 and 4 D 3 and 4

May/June 2015 (11)

20 Which process in humans does **not** use energy released from respiration?

- A cell division
- B diffusion of oxygen
- C muscle contraction
- D protein synthesis

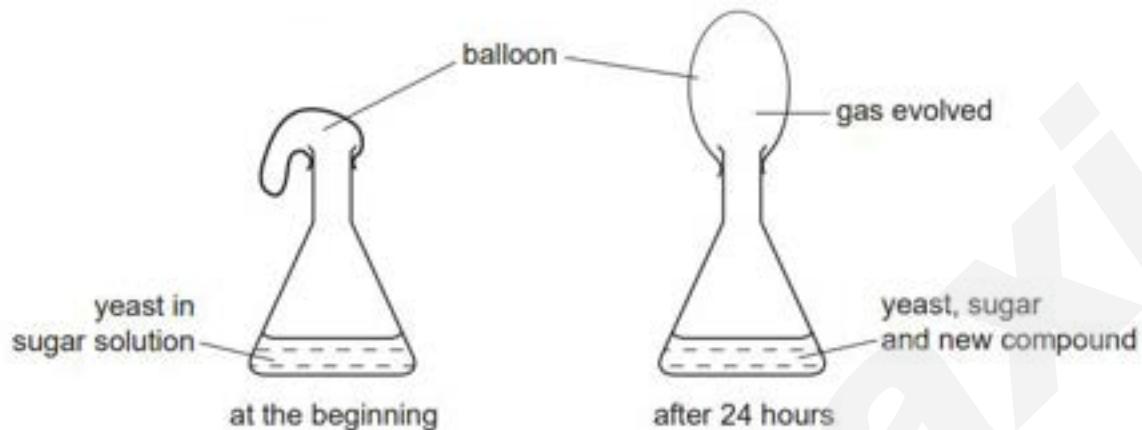
21 The graph shows the results of an experiment to investigate the rate of respiration of an organism at different temperatures.



What explains the difference between the rate of respiration at 50 °C and that at 30 °C?

- A enzymes working faster at 50 °C
- B enzymes working more slowly at 50 °C
- C less oxygen available at 50 °C
- D more oxygen available at 50 °C

22 The diagram shows an experiment to investigate the respiration of yeast.



Which gas is evolved and which new compound is present after 24 hours?

	gas evolved	new compound
A	carbon dioxide	ethanol (alcohol)
B	carbon dioxide	lactic acid
C	oxygen	ethanol (alcohol)
D	oxygen	lactic acid

May/June 2015 (12)

21 In which conditions do the leaves of a green plant respire?

	bright light	darkness
A	✓	✓
B	✓	x
C	x	✓
D	x	x

May/June 2015 (13)

21 Why does anaerobic respiration in muscles release less energy than aerobic respiration?

- A Energy is lost in carbon dioxide.
- B Energy is lost in oxygen.
- C Energy remains trapped in ethanol.
- D Energy remains trapped in lactic acid.

Oct/Nov 2015 (11)

1 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

Oct/Nov 2015 (13)

18 The list shows four metabolic processes.

- 1 carbon dioxide + water → glucose + oxygen
- 2 glucose → alcohol + carbon dioxide
- 3 glucose → lactic acid
- 4 glucose + oxygen → carbon dioxide + water

Which of these processes occur in muscles?

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