



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE

Paper 1 Multiple Choice

0653/11

October/November 2014

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)



READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, glue or correction fluid.

Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

DO NOT WRITE IN ANY BARCODES.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 20.

Electronic calculators may be used.

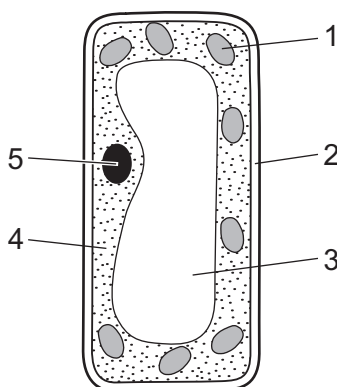
This document consists of **17** printed pages and **3** blank pages.



1 Which characteristics help to define a living organism?

- A diffusion, movement, respiration
- B excretion, nutrition, sensitivity
- C excretion, reproduction, transpiration
- D growth, inspiration, nutrition

2 The diagram shows a plant cell.



Which two parts are found in plant cells but **not** in animal cells?

- A 1 and 5
- B 2 and 3
- C 2 and 4
- D 3 and 5

3 The table shows the concentration (in parts per million) of three ions inside and outside a plant cell.

	inside cell	outside cell
magnesium ions	38	50
nitrate ions	825	700
sulfate ions	145	200

In which directions would the ions diffuse?

	magnesium ions	nitrate ions	sulfate ions
A	+	+	+
B	+	–	+
C	–	+	–
D	–	–	–

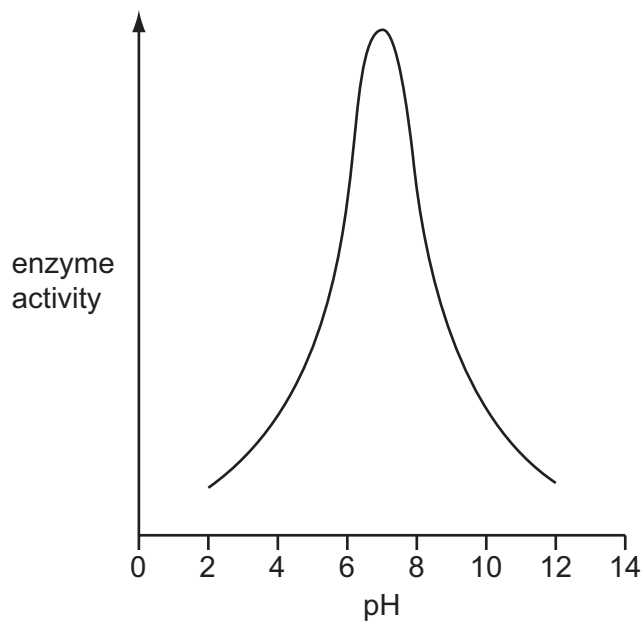
key

+ = diffuses into cell

– = diffuses out of cell

- 4 An experiment is carried out to investigate the effect of pH on the activity of an enzyme.

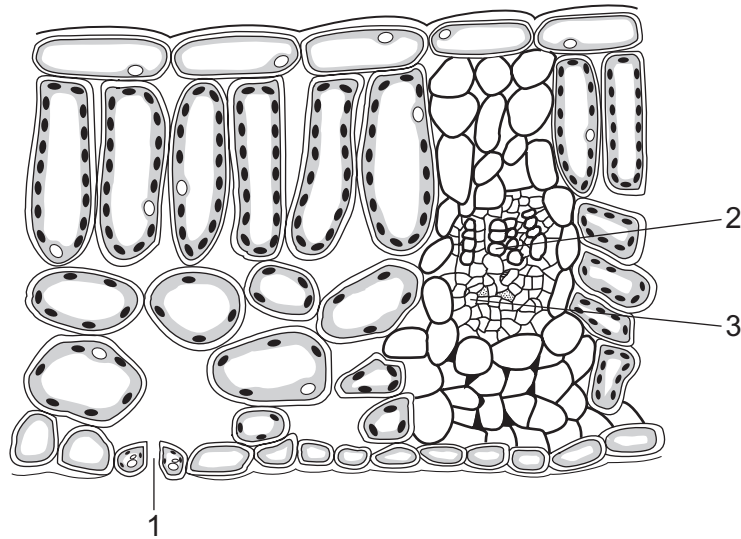
The graph shows the results.



At which pH is this enzyme most active?

- A** 2 **B** 5 **C** 7 **D** 12
- 5 Which two nutrients are needed for the development of strong bones and teeth?
- A** vitamin C and calcium
B vitamin C and iron
C vitamin D and calcium
D vitamin D and iron

6 The diagram shows a section through a leaf.



Which part brings water to the leaf and through which part does water leave?

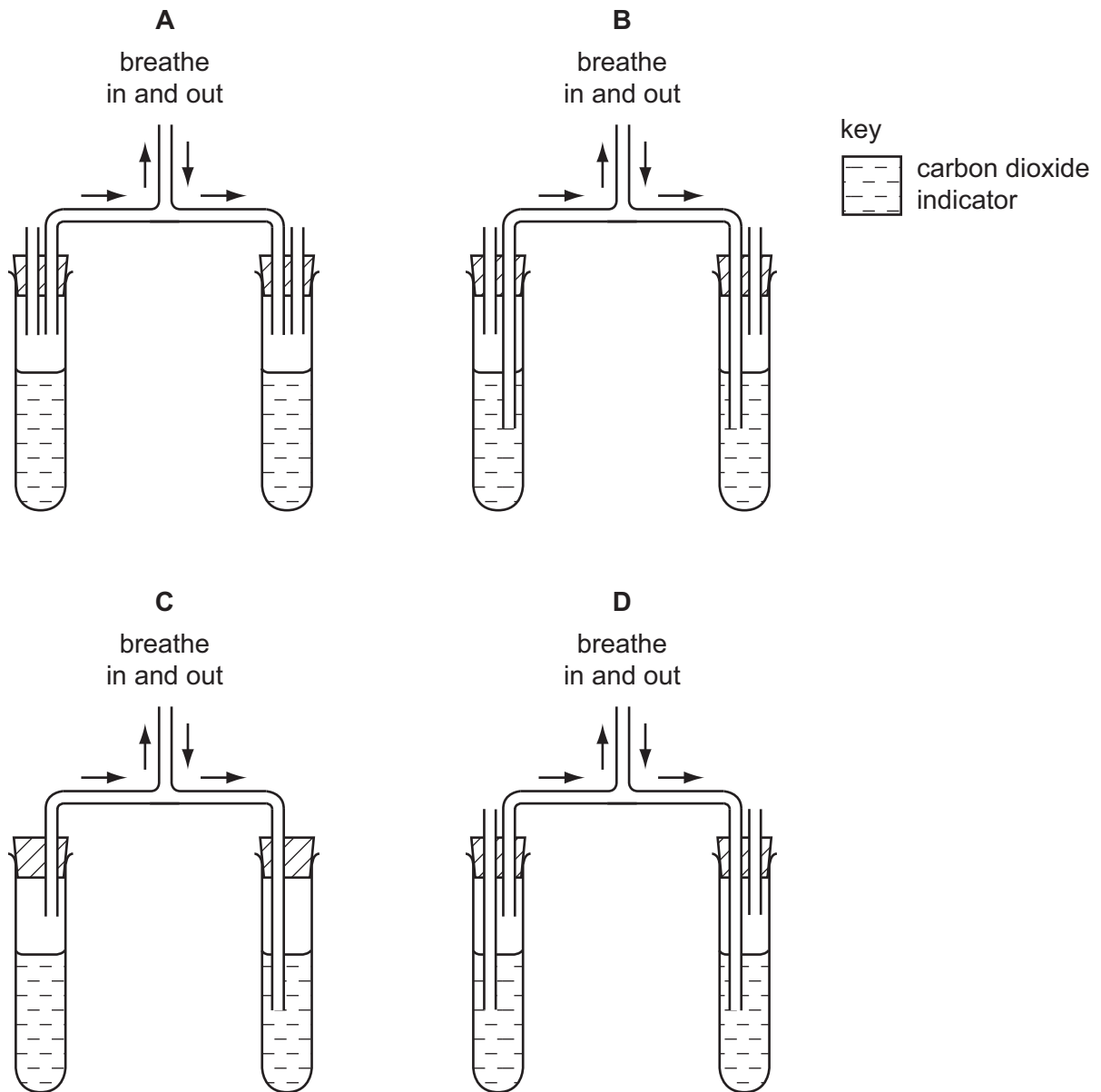
	brings water	water leaves
A	1	2
B	1	3
C	2	1
D	3	1

7 Which row describes the movement of a substance in a plant transport tissue?

	tissue	substance	direction of movement
A	phloem	sugar	down only
B	phloem	sugar	up and down
C	xylem	water	up and down
D	xylem	water and mineral ions	down only

- 8 Four students assembled apparatus intended to show that air breathed out contains more carbon dioxide than air breathed in.

Which apparatus is assembled correctly?



- 9 Which gives these structures in order of their increasing diameter?

- A bronchi → bronchioles → trachea
- B bronchi → trachea → bronchioles
- C bronchioles → bronchi → trachea
- D trachea → bronchi → bronchioles

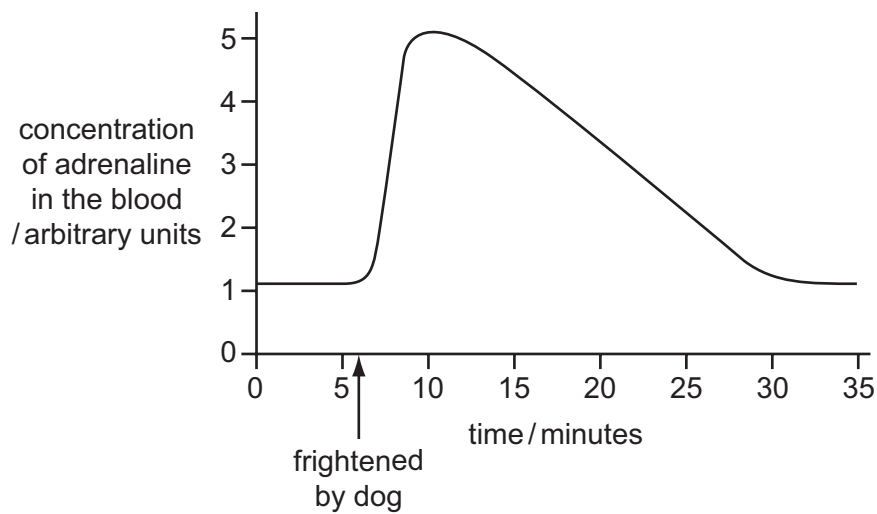
- 10** When a food is heated with Benedict's solution, an orange colour appears.

Which nutrient must be present in the food?

- A** fat
- B** protein
- C** reducing sugar
- D** starch

- 11** A student is frightened by a dog and runs away.

The changes in the concentration of adrenaline in the student's blood are shown in the graph.



What explains the gradual fall in the adrenaline concentration after the fright?

- A** It is destroyed by the liver.
 - B** It is reabsorbed by the glands that produced it.
 - C** It is respired to release energy.
 - D** It is used up by the contracting muscles.
- 12** Where does a fertilised human egg normally become implanted?
- A** ovary
 - B** oviduct
 - C** uterus
 - D** vagina

- 13 The diagram shows a food chain.

maize → mouse → owl

Which terms correctly describe the organisms in this food chain?

	maize	mouse	owl
A	consumer	carnivore	producer
B	consumer	herbivore	carnivore
C	producer	carnivore	herbivore
D	producer	herbivore	carnivore

- 14 Two liquids are separated by fractional distillation.

This is possible because the liquids differ in their

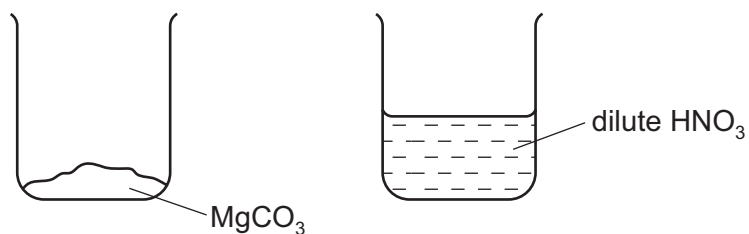
- A** boiling points.
- B** colour.
- C** density.
- D** solubility in water.

- 15 The fertiliser ammonium sulfate has the formula $(\text{NH}_4)_2\text{SO}_4$.

How many atoms of each element are present?

	number of hydrogen atoms	number of nitrogen atoms	number of oxygen atoms	number of sulfur atoms
A	4	1	1	1
B	4	2	4	1
C	8	1	4	1
D	8	2	4	1

16 The contents of the two beakers shown are mixed.

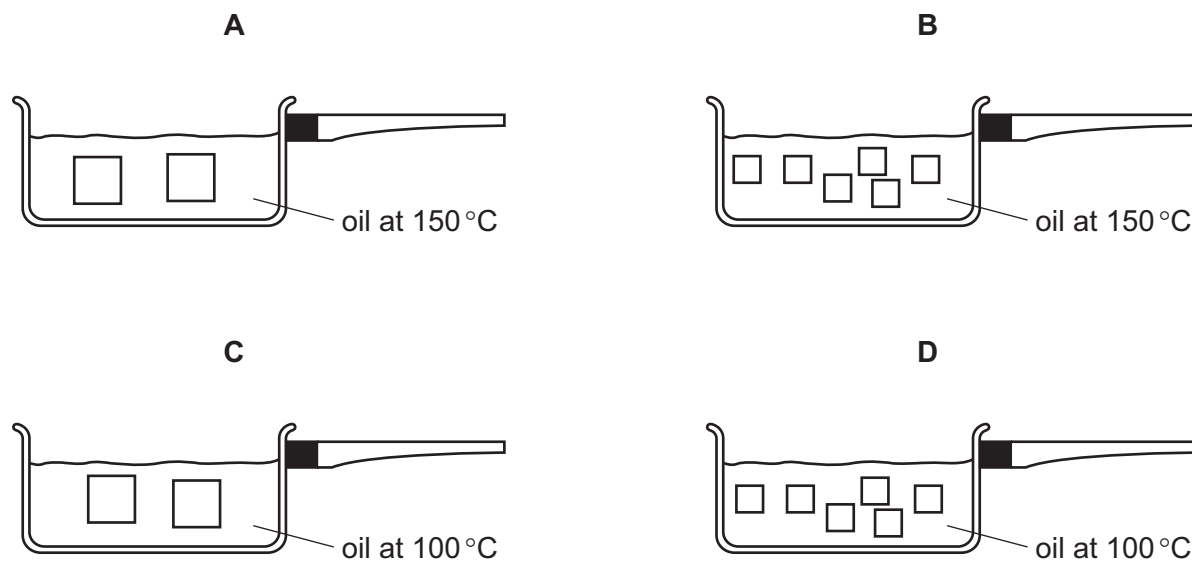


Which salt is formed?

- A magnesium nitrate
- B magnesium sulfate
- C manganese nitrate
- D manganese sulfate

17 A sweet potato is cut into pieces and cooked.

In which pan does the potato cook most quickly?

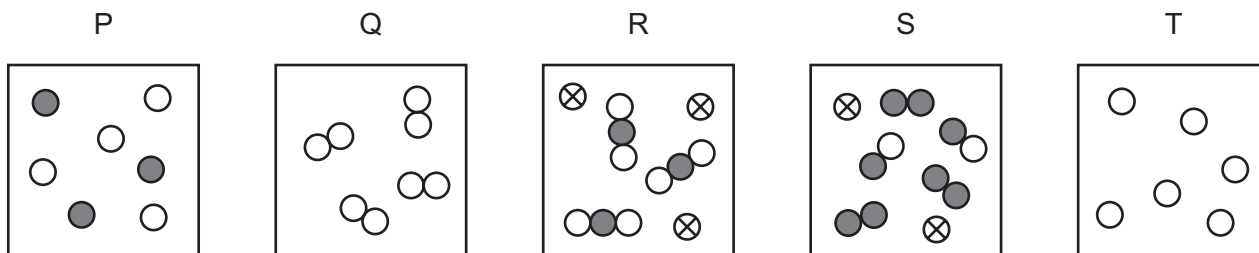


18 Element X forms a basic oxide.

Which row describes element X and its position in the Periodic Table?

	type of element	position in the Periodic Table
A	metal	on the left
B	metal	on the right
C	non-metal	on the left
D	non-metal	on the right

19 The diagrams represent different substances.



Which row correctly describes the substances?

	only separate atoms	only molecules	mixture of atoms and molecules
A	P	Q	S
B	Q	T	R
C	T	P	R
D	T	Q	P

20 In the electrolysis of molten lead(II) bromide, what is the electrolyte?

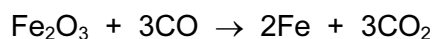
- A** anode
- B** bromine
- C** lead
- D** lead bromide

21 The table shows the initial and final temperatures in a series of experiments.

Which experiment is most exothermic?

	initial temperature /°C	final temperature /°C
A	16.0	24.0
B	18.5	27.0
C	17.5	26.5
D	18.5	14.0

- 22 Iron(III) oxide, Fe_2O_3 , reacts with carbon monoxide, CO , to produce iron and carbon dioxide. The equation for the reaction is



Which statement is **not** correct?

- A Carbon is neither oxidised nor reduced.
 - B Carbon is oxidised.
 - C Iron is reduced.
 - D This is a redox reaction.
- 23 Which statement about transition metals is **not** correct?
- A They are often used as catalysts.
 - B They form colourless compounds.
 - C They have high densities.
 - D They have high melting points.
- 24 Which statement about Group I elements is correct?
- A Their melting points increase down the group.
 - B They are relatively soft metals.
 - C They do not react with cold water.
 - D They include sodium, potassium and calcium.
- 25 Gasoline is a hydrocarbon fuel obtained from crude oil.

Which statement is correct?

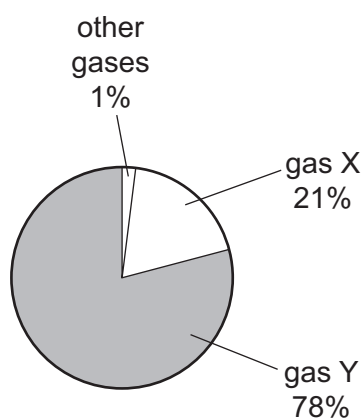
- A Gasoline burns to form carbon dioxide and water.
- B Gasoline contains the elements carbon, hydrogen and oxygen.
- C Gasoline is used as a fuel for diesel engines.
- D The combustion of gasoline is an endothermic reaction.

- 26 Copper can be made from copper oxide by reacting it with carbon at a high temperature.

Why is carbon used?

- A It does not react with copper.
- B It is a conductor of electricity.
- C It is a high melting point solid.
- D It is more reactive than copper.

- 27 The diagram shows the approximate composition of air.

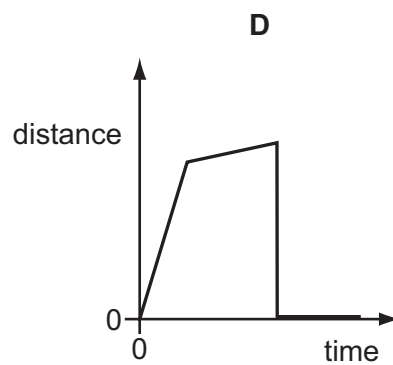
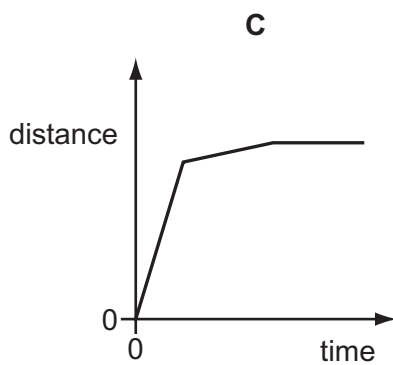
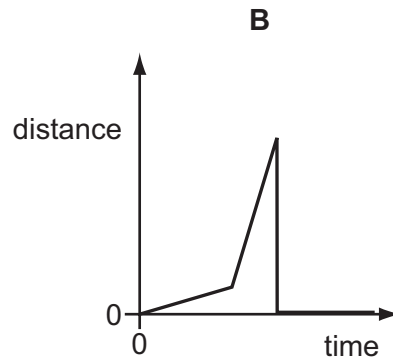
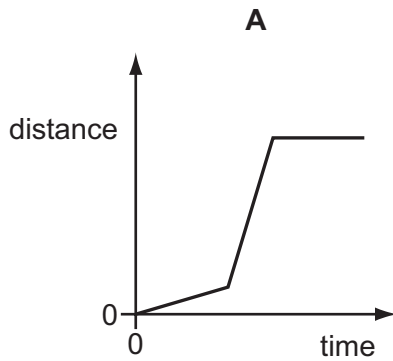


What are gases X and Y?

	gas X	gas Y
A	carbon dioxide	oxygen
B	nitrogen	oxygen
C	oxygen	carbon dioxide
D	oxygen	nitrogen

28 A boy walks along a track. He starts running, and finally stops for a rest.

Which distance/time graph represents his journey?



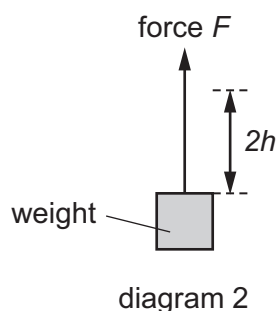
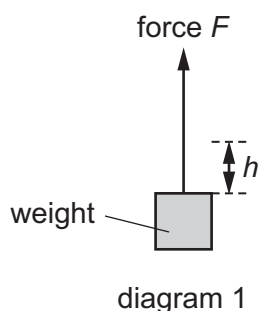
29 Which line in the table shows the unit for force, the unit for mass and the unit for weight?

	force	mass	weight
A	kg	kg	N
B	kg	N	kg
C	N	kg	N
D	N	N	kg

30 Diagram 1 shows a force F lifting a weight through a height h .

Diagram 2 shows the same force F lifting the same weight through a height $2h$.

In both diagrams, air resistance and friction are negligible.



Each lift can take either 1 s or 10 s.

Which row shows the greatest power being developed when the weight is lifted?

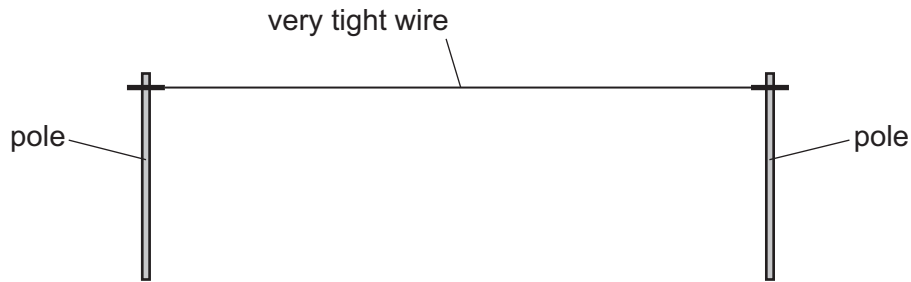
	total height lifted	time taken for the lift / s
A	h	1
B	h	10
C	$2h$	1
D	$2h$	10

31 A liquid evaporates when molecules leave its surface.

Which molecules leave the surface, and what happens to the temperature of the remaining liquid?

- A** The more energetic molecules leave and the temperature falls.
- B** The more energetic molecules leave and the temperature rises.
- C** The less energetic molecules leave and the temperature falls.
- D** The less energetic molecules leave and the temperature rises.

- 32 A telephone engineer connects a wire between two poles on a very hot day in a desert. He makes the wire very tight.



During the night, it becomes very cold.

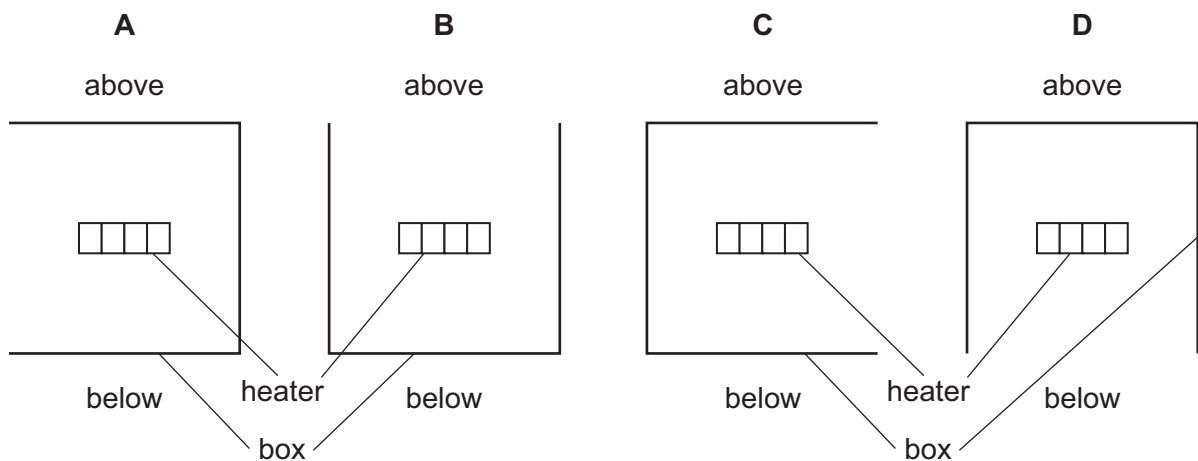
What could happen to the wire, and why?

	what could happen	why
A	it breaks	it contracts
B	it breaks	it expands
C	it sags lower down	it contracts
D	it sags lower down	it expands

- 33 An electric heater is placed inside a metal box which has one side open. The diagram shows four possible positions of the box.

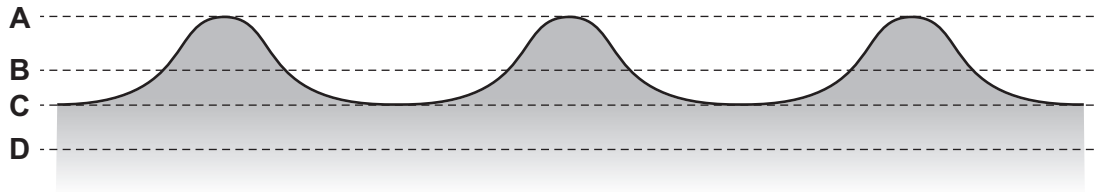
The heater is switched on for several minutes.

In which position does the box become the hottest?



- 34 The diagram shows a section through waves on water.

Which dotted line shows the position of the water surface before the wave reaches it?



- 35 A plane mirror is on a wall.

Which description of the image formed by the mirror is correct?

- A upright and smaller than the object
- B upright and the same size as the object
- C inverted and smaller than the object
- D inverted and the same size as the object

- 36 Which electromagnetic waves have the smallest wavelength and which electromagnetic waves have the highest frequency?

	shortest wavelength	highest frequency
A	radio waves	gamma rays
B	microwaves	microwaves
C	gamma rays	gamma rays
D	microwaves	radio waves

- 37 The sound from a drum is loud and has a low pitch.

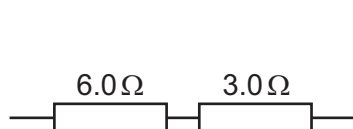
Which row describes the amplitude and the frequency of the sound?

	amplitude	frequency
A	large	high
B	large	low
C	small	high
D	small	low

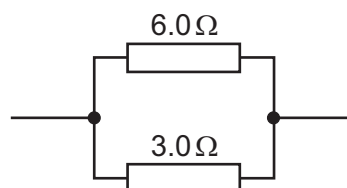
- 38 When a plastic rod is rubbed with a cloth, the rod becomes positively charged.

How is this explained?

- A Electrons have been added to the rod.
 - B Electrons have been removed from the rod.
 - C Neutrons have been added to the rod.
 - D Neutrons have been removed from the rod.
- 39 Why is a fuse used in an electric circuit in a house?
- A to increase the resistance of the circuit
 - B to keep the power used at a constant value
 - C to prevent a short circuit from occurring
 - D to stop the cables overheating
- 40 Two resistors of resistance $6.0\ \Omega$ and $3.0\ \Omega$ are combined first in series and then in parallel.



arrangement 1



arrangement 2

Which row shows the resistance of arrangement 1 and the resistance of arrangement 2?

	resistance of arrangement 1	resistance of arrangement 2
A	$9\ \Omega$	$2\ \Omega$
B	$9\ \Omega$	$9\ \Omega$
C	$18\ \Omega$	$2\ \Omega$
D	$18\ \Omega$	$9\ \Omega$

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DATA SHEET

The Periodic Table of the Elements

[illegible]

The volume of one mole of any gas is 24 dm^3 at room temperature and pressure (r.t.p.).

COMBINED SCIENCE

0653/12

Paper 1 Multiple Choice

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45 minutes

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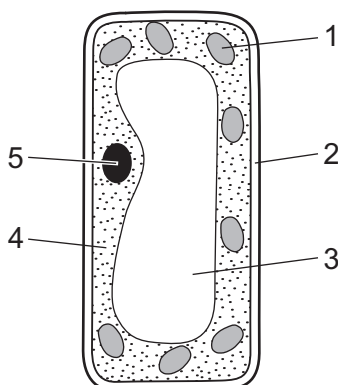
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A copy of the Periodic Table is printed on page 20.

Electronic calculators may be used.

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- 1 The diagram shows a plant cell.



Which two parts are found in plant cells but **not** in animal cells?

- A** 1 and 5 **B** 2 and 3 **C** 2 and 4 **D** 3 and 5
- 2 Which characteristics help to define a living organism?
- A** diffusion, movement, respiration
B excretion, nutrition, sensitivity
C excretion, reproduction, transpiration
D growth, inspiration, nutrition
- 3 The table shows the concentration (in parts per million) of three ions inside and outside a plant cell.

	inside cell	outside cell
magnesium ions	38	50
nitrate ions	825	700
sulfate ions	145	200

In which directions would the ions diffuse?

	magnesium ions	nitrate ions	sulfate ions
A	+	+	+
B	+	–	+
C	–	+	–
D	–	–	–

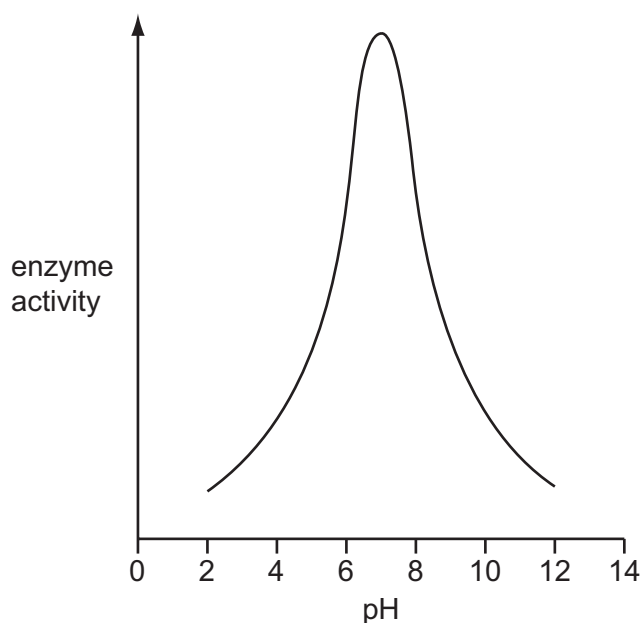
key

+ = diffuses into cell

– = diffuses out of cell

- 4 Which two nutrients are needed for the development of strong bones and teeth?
- A** vitamin C and calcium
- B** vitamin C and iron
- C** vitamin D and calcium
- D** vitamin D and iron
- 5 An experiment is carried out to investigate the effect of pH on the activity of an enzyme.

The graph shows the results.

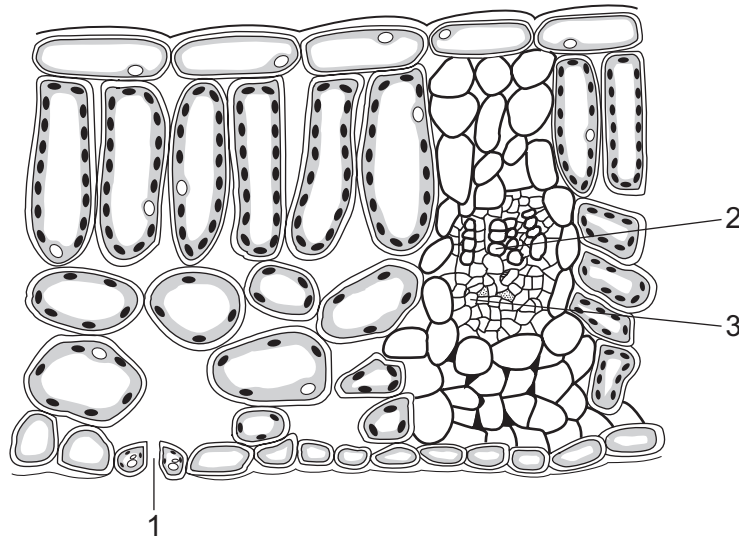


At which pH is this enzyme most active?

- A** 2 **B** 5 **C** 7 **D** 12
- 6 Which row describes the movement of a substance in a plant transport tissue?

	tissue	substance	direction of movement
A	phloem	sugar	down only
B	phloem	sugar	up and down
C	xylem	water	up and down
D	xylem	water and mineral ions	down only

- 7 The diagram shows a section through a leaf.



Which part brings water to the leaf and through which part does water leave?

	brings water	water leaves
A	1	2
B	1	3
C	2	1
D	3	1

- 8 Which gives these structures in order of their increasing diameter?

- A** bronchi → bronchioles → trachea
- B** bronchi → trachea → bronchioles
- C** bronchioles → bronchi → trachea
- D** trachea → bronchi → bronchioles

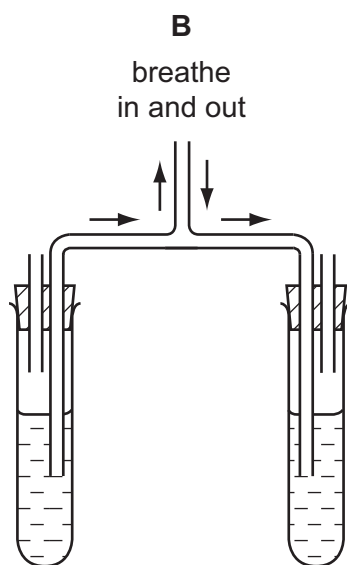
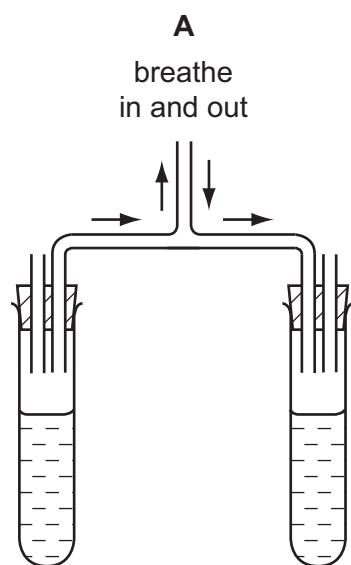
- 9 When a food is heated with Benedict's solution, an orange colour appears.

Which nutrient must be present in the food?

- A** fat
- B** protein
- C** reducing sugar
- D** starch

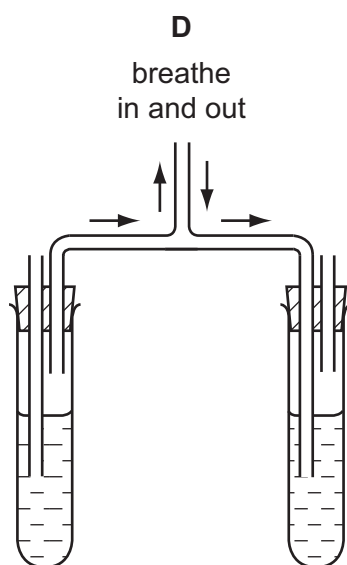
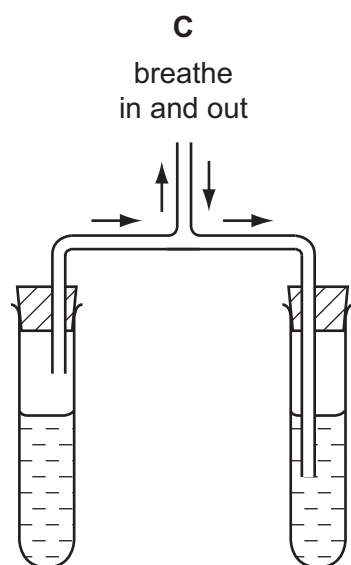
- 10 Four students assembled apparatus intended to show that air breathed out contains more carbon dioxide than air breathed in.

Which apparatus is assembled correctly?



key

 carbon dioxide indicator

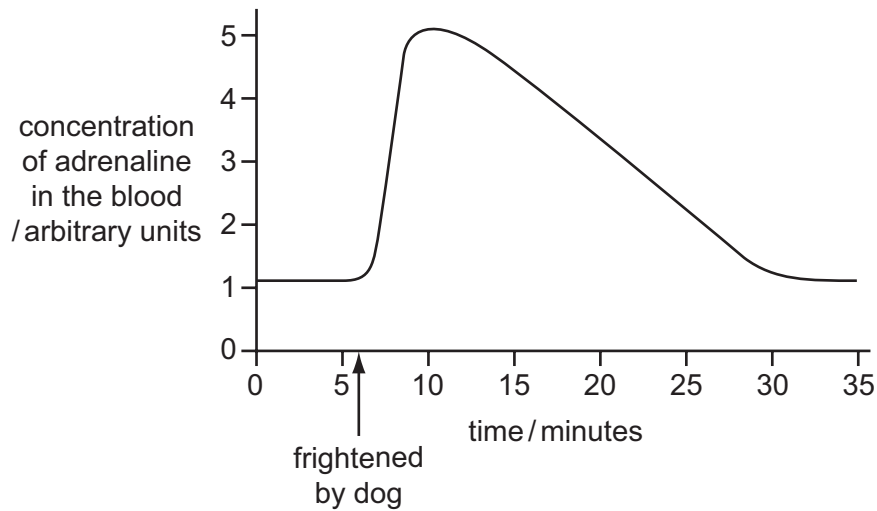


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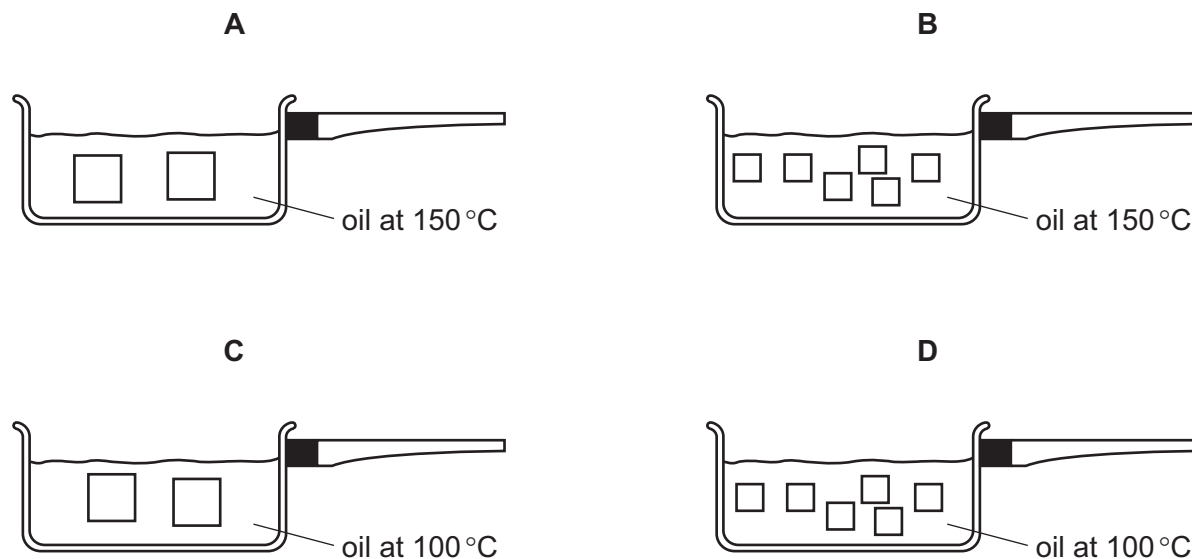
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In which pan does the potato cook most quickly?



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This is possible because the liquids differ in their

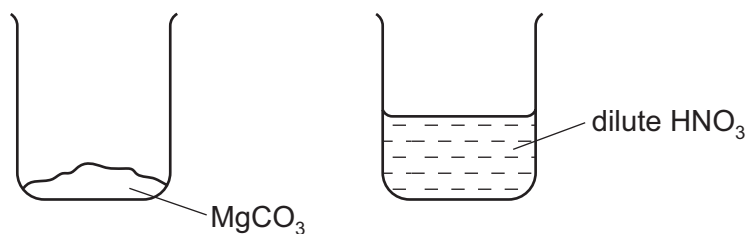
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How many atoms of each element are present?

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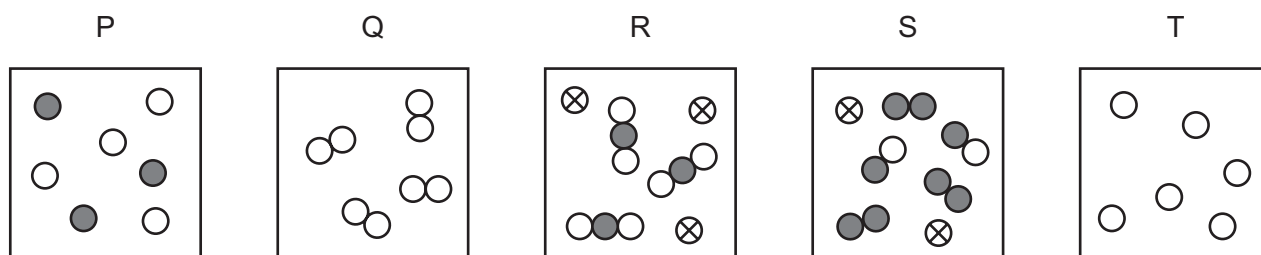
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Which row describes element X and its position in the Periodic Table?

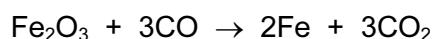
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Which experiment is most exothermic?

	initial temperature / °C	final temperature / °C
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Which statement is **not** correct?

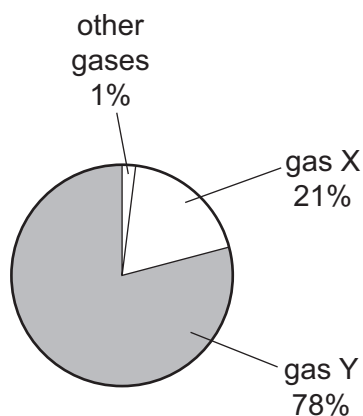
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Which statement is correct?

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- B Gasoline contains the elements carbon, hydrogen and oxygen.
- C Gasoline is used as a fuel for diesel engines.
- D The combustion of gasoline is an endothermic reaction.

26 The diagram shows the approximate composition of air.



What are gases X and Y?

	gas X	gas Y
A	carbon dioxide	oxygen
B	nitrogen	oxygen
C	oxygen	carbon dioxide
D	oxygen	nitrogen

27 Copper can be made from copper oxide by reacting it with carbon at a high temperature.

Why is carbon used?

- A** It does not react with copper.
- B** It is a conductor of electricity.
- C** It is a high melting point solid.
- D** It is more reactive than copper.

28 Diagram 1 shows a force F lifting a weight through a height h .

Diagram 2 shows the same force F lifting the same weight through a height $2h$.

In both diagrams, air resistance and friction are negligible.

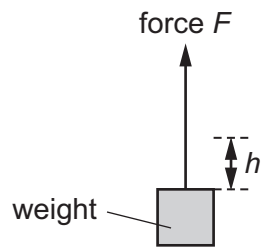


diagram 1

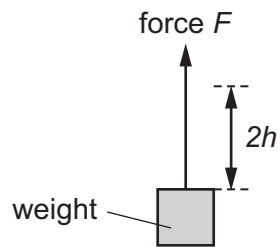


diagram 2

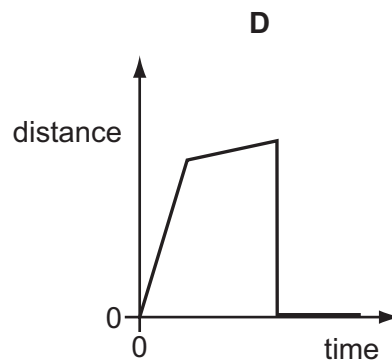
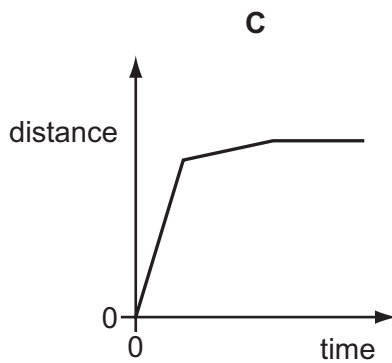
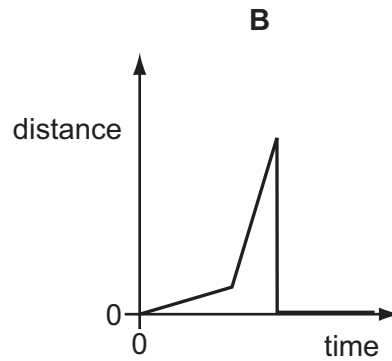
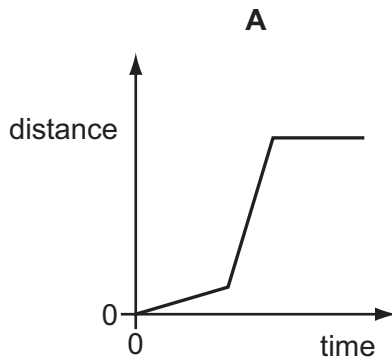
Each lift can take either 1 s or 10 s.

Which row shows the greatest power being developed when the weight is lifted?

	total height lifted	time taken for the lift / s
A	h	1
B	h	10
C	$2h$	1
D	$2h$	10

29 A boy walks along a track. He starts running, and finally stops for a rest.

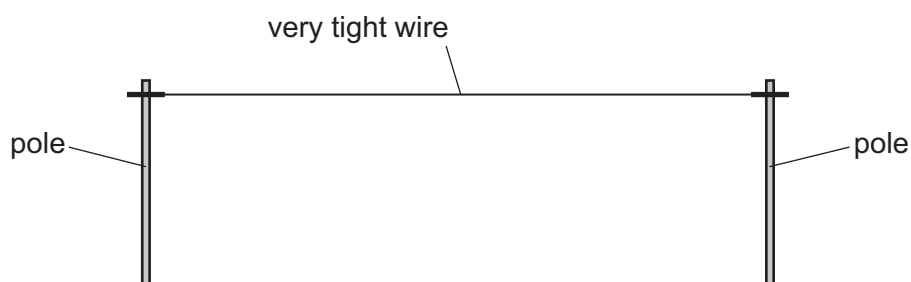
Which distance/time graph represents his journey?



30 Which line in the table shows the unit for force, the unit for mass and the unit for weight?

	force	mass	weight
A	kg	kg	N
B	kg	N	kg
C	N	kg	N
D	N	N	kg

- 31 A telephone engineer connects a wire between two poles on a very hot day in a desert. The engineer makes the wire very tight.



During the night, it becomes very cold.

What could happen to the wire, and why?

	what could happen	why
A	it breaks	it contracts
B	it breaks	it expands
C	it sags lower down	it contracts
D	it sags lower down	it expands

- 32 A liquid evaporates when molecules leave its surface.

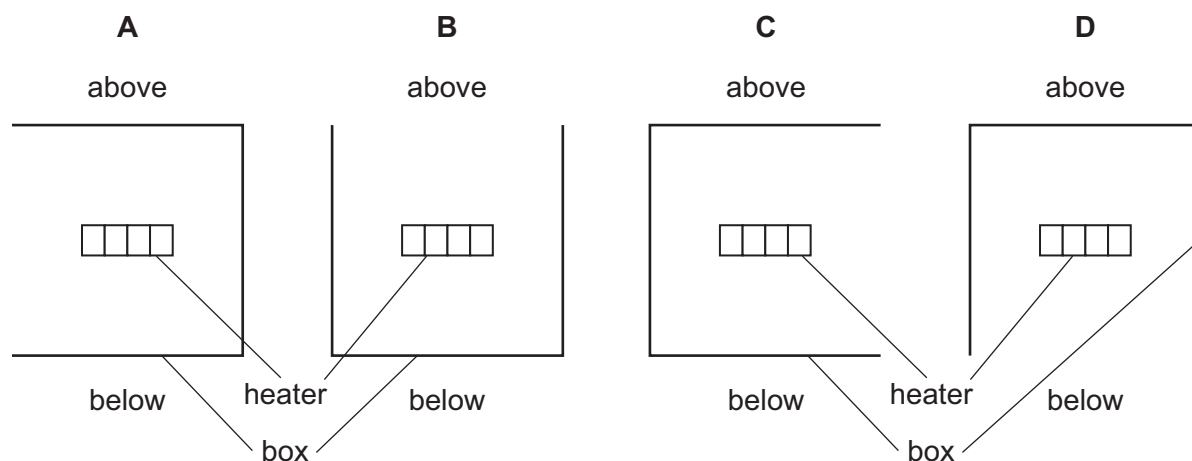
Which molecules leave the surface, and what happens to the temperature of the remaining liquid?

- A** The more energetic molecules leave and the temperature falls.
- B** The more energetic molecules leave and the temperature rises.
- C** The less energetic molecules leave and the temperature falls.
- D** The less energetic molecules leave and the temperature rises.

- 33 An electric heater is placed inside a metal box which has one side open. The diagram shows four possible positions of the box.

The heater is switched on for several minutes.

In which position does the box become the hottest?



- 34 A plane mirror is on a wall.

Which description of the image formed by the mirror is correct?

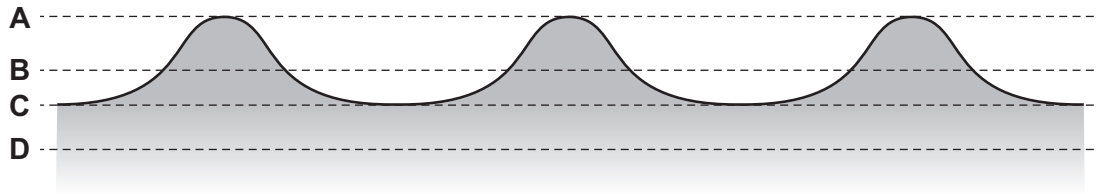
- A upright and smaller than the object
 - B upright and the same size as the object
 - C inverted and smaller than the object
 - D inverted and the same size as the object
- 35 The sound from a drum is loud and has a low pitch.

Which row describes the amplitude and the frequency of the sound?

	amplitude	frequency
A	large	high
B	large	low
C	small	high
D	small	low

- 36 The diagram shows a section through waves on water.

Which dotted line shows the position of the water surface before the wave reaches it?



- 37 Which electromagnetic waves have the smallest wavelength and which electromagnetic waves have the highest frequency?

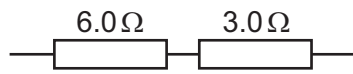
	shortest wavelength	highest frequency
A	radio waves	gamma rays
B	microwaves	microwaves
C	gamma rays	gamma rays
D	microwaves	radio waves

- 38 When a plastic rod is rubbed with a cloth, the rod becomes positively charged.

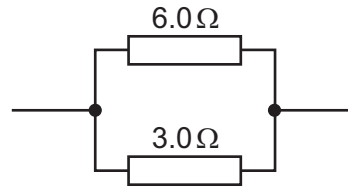
How is this explained?

- A** Electrons have been added to the rod.
- B** Electrons have been removed from the rod.
- C** Neutrons have been added to the rod.
- D** Neutrons have been removed from the rod.

- 39 Two resistors of resistance $6.0\ \Omega$ and $3.0\ \Omega$ are combined first in series parallel.



arrangement 1



arrangement 2

Which row shows the resistance of arrangement 1 and the resistance of arrangement 2?

	resistance of arrangement 1	resistance of arrangement 2
A	$9\ \Omega$	$2\ \Omega$
B	$9\ \Omega$	$9\ \Omega$
C	$18\ \Omega$	$2\ \Omega$
D	$18\ \Omega$	$9\ \Omega$

- 40 Why is a fuse used in an electric circuit in a house?

- A** to increase the resistance of the circuit
- B** to keep the power used at a constant value
- C** to prevent a short circuit from occurring
- D** to stop the cables overheating

Group

Key

a	X
---	----------

a = relative atomic mass
X = atomic symbol
b = proton (atomic) number

*58-71 Lanthanoid series
90-103 Actinoid series

IPA CAMBRIDGE



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE

0653/13

Paper 1 Multiple Choice

October/November 2014

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)



READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, glue or correction fluid.

Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

DO NOT WRITE IN ANY BARCODES.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 20.

Electronic calculators may be used.

This document consists of **18** printed pages and **2** blank pages.

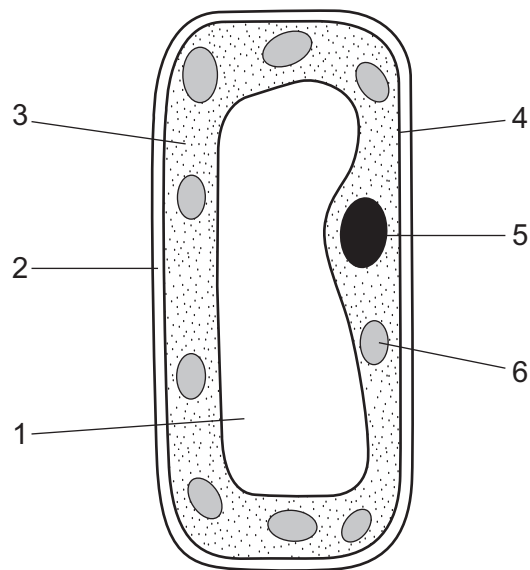


- 1 A car enters a garage, is filled with fuel and is driven away.

Which characteristic of living organisms is **not** matched by the car in this situation?

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

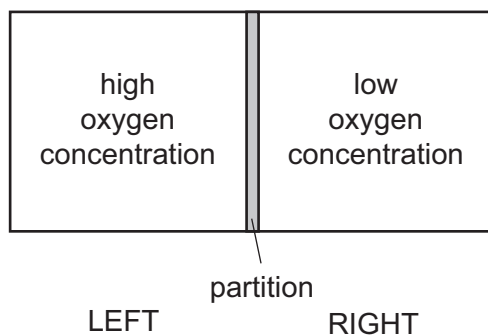
- 2 The diagram shows a cell from the leaf of a plant.



Which parts are found in animal cells?

- A 1, 2 and 3
- B 2, 3 and 4
- C 3, 4 and 5
- D 4, 5 and 6

- 3 Two samples of air are placed in a sealed container, as shown.

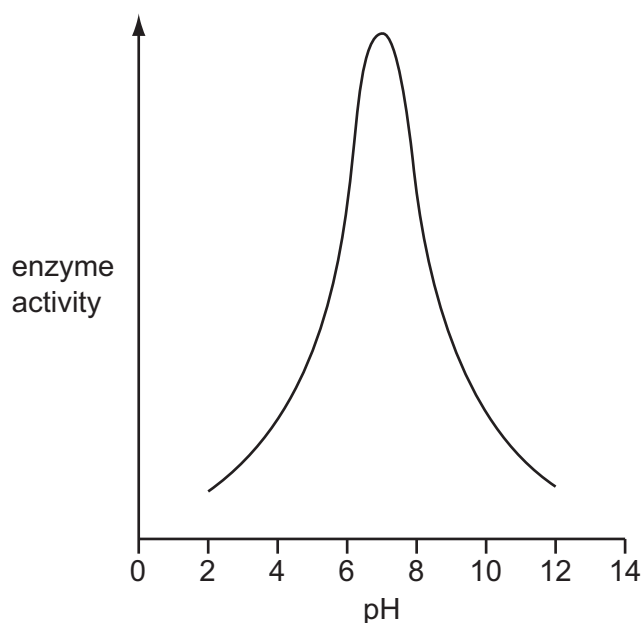


The partition is removed.

What will be the situation in the container one hour later?

- A All the oxygen molecules have stopped moving.
 - B Oxygen molecules are moving in all directions.
 - C There will be a higher concentration of oxygen on the left than on the right.
 - D There will be a higher concentration of oxygen on the right than on the left.
- 4 An experiment is carried out to investigate the effect of pH on the activity of an enzyme.

The graph shows the results.



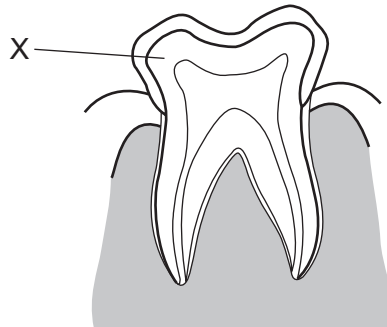
At which pH is this enzyme most active?

- A 2
- B 5
- C 7
- D 12

5 In leaves, which type of cells surround stomata?

- A guard cells
- B palisade cells
- C phloem
- D xylem

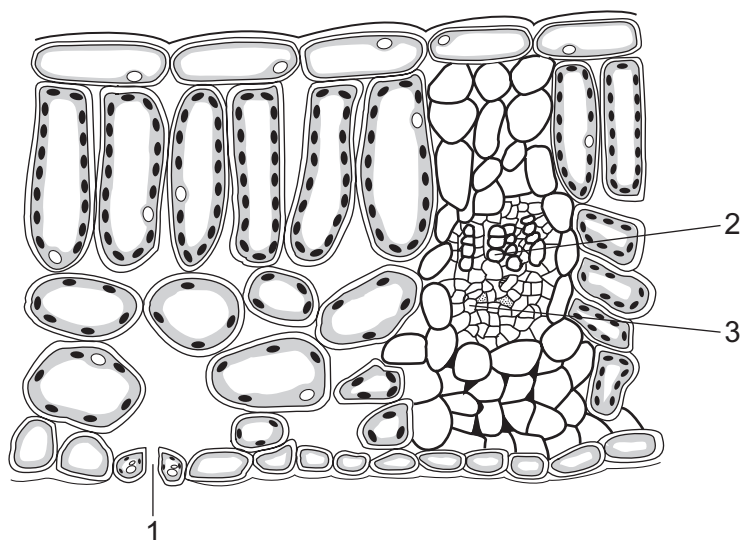
6 The diagram shows a section through a tooth.



What is part X?

- A cement
- B dentine
- C enamel
- D pulp

7 The diagram shows a section through a leaf.

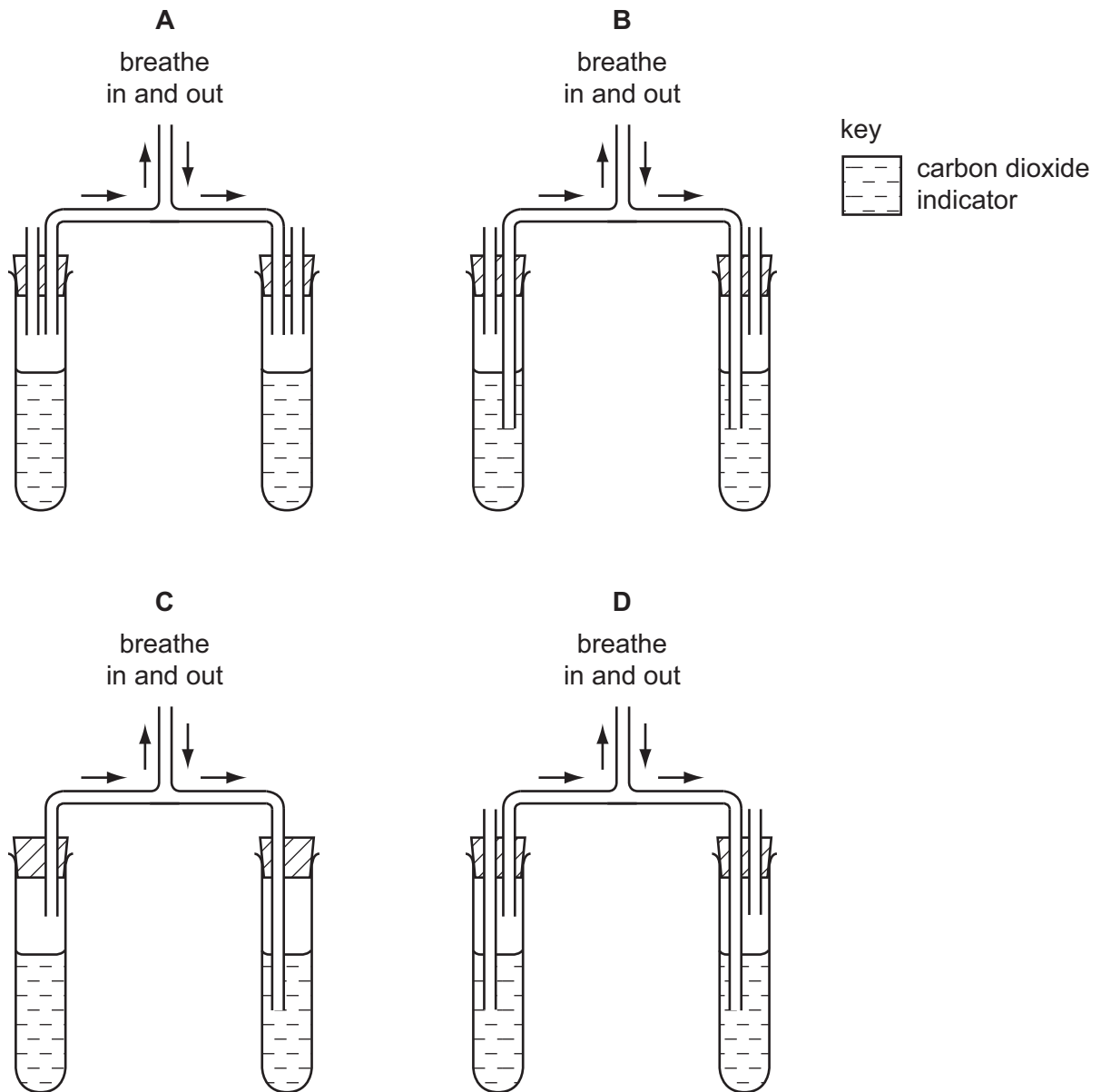


Which part brings water to the leaf and through which part does water leave?

	brings water	water leaves
A	1	2
B	1	3
C	2	1
D	3	1

- 8 Four students assembled apparatus intended to show that air breathed out contains more carbon dioxide than air breathed in.

Which apparatus is assembled correctly?



- 9 What are the reactants in aerobic respiration?

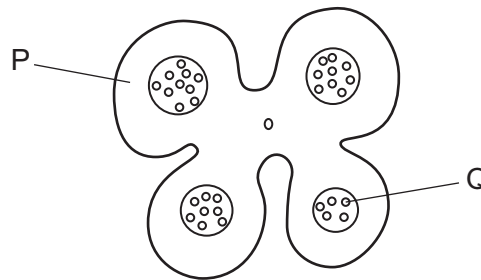
- A** carbon dioxide and oxygen
- B** carbon dioxide and water
- C** glucose and oxygen
- D** glucose and water

- 10** Insulin is a hormone that is secreted into the blood to control blood sugar.

What happens to insulin after it has done its work?

- A** It builds up in the blood.
- B** It is absorbed by the sugar.
- C** It is destroyed by the pancreas.
- D** It is removed by the liver.

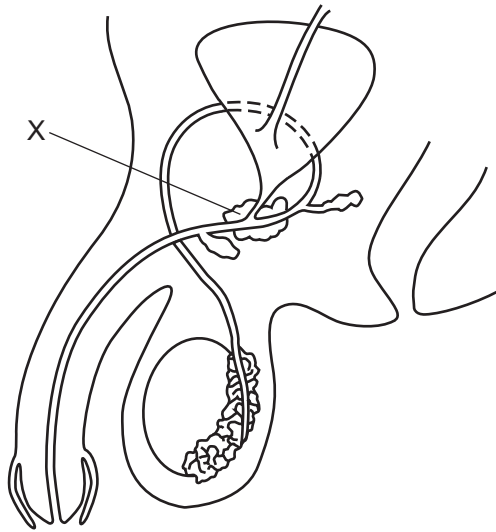
- 11** The diagram shows a cross-section through part of a stamen of a plant.



Which row identifies P and Q?

	P	Q
A	anther	egg
B	anther	pollen grain
C	stigma	egg
D	stigma	pollen grain

12 The diagram shows the male reproductive system.



What is the part labelled X?

- A prostate gland
- B sperm duct
- C testis
- D urethra

13 The diagram shows a food chain.

tree → caterpillar → bird

Which words describe the caterpillar?

- A carnivore and producer
- B consumer and carnivore
- C consumer and herbivore
- D producer and herbivore

14 Two liquids are separated by fractional distillation.

This is possible because the liquids differ in their

- A boiling points.
- B colour.
- C density.
- D solubility in water.

15 The formulae of two minerals are given below.

name of mineral	formula
andalusite	Al_2SiO_5
olivine	$\text{Fe}_2\text{Mg}_2\text{SiO}_4$

Which statement about the formulae of andalusite and olivine is correct?

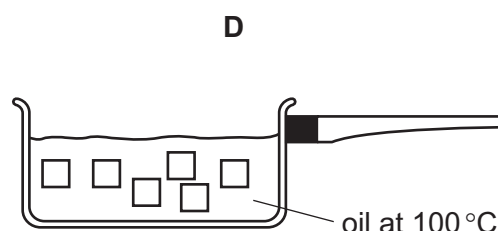
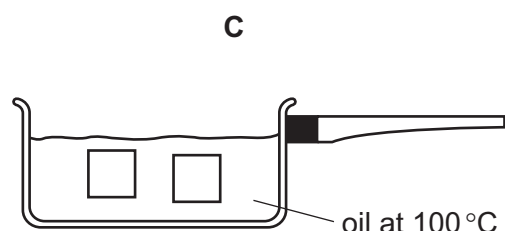
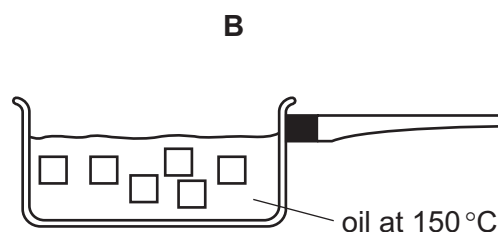
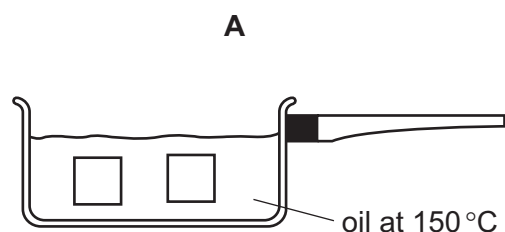
- A They contain the same metals.
- B They contain the same number of oxygen atoms.
- C They contain the same number of silicon atoms.
- D They contain the same total number of atoms.

16 Which word equation shows a thermal decomposition?

- A ammonia + nitric acid → ammonium nitrate
- B hydrogen + oxygen → water
- C magnesium carbonate → magnesium oxide + carbon dioxide
- D potassium chloride + silver nitrate → potassium nitrate + silver chloride

17 A sweet potato is cut into pieces and cooked.

In which pan does the potato cook most quickly?

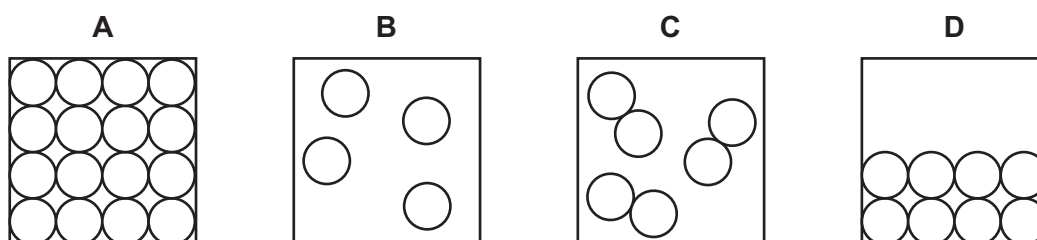


18 Element X forms a basic oxide.

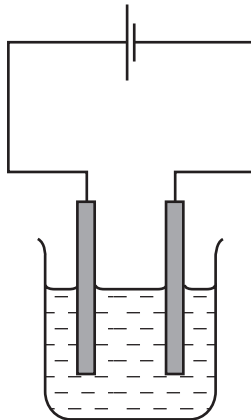
Which row describes element X and its position in the Periodic Table?

	type of element	position in the Periodic Table
A	metal	on the left
B	metal	on the right
C	non-metal	on the left
D	non-metal	on the right

19 Which diagram represents gaseous molecules?



20 A circuit is set up to pass a current through a solution.



What is added to the circuit to show that a current flows?

- A** an anode
- B** a battery
- C** a cathode
- D** a lamp

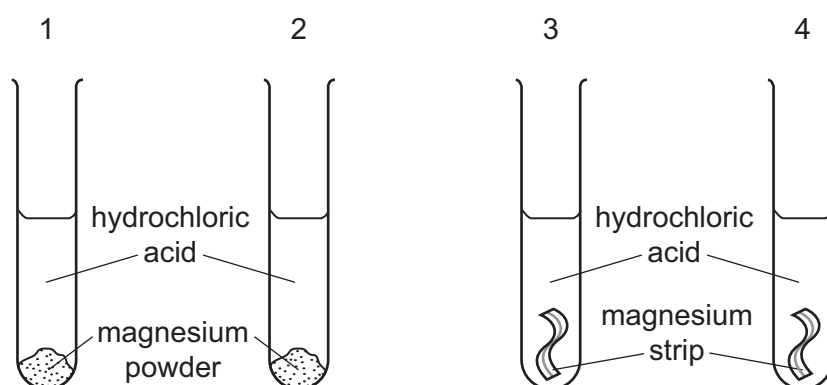
21 The initial and final temperatures of two chemical reactions are shown.

reaction	initial temperature / °C	final temperature / °C
1	19	23
2	20	16

Which statement is correct?

- A Both reactions are endothermic.
- B Both reactions are exothermic.
- C Reaction 1 is endothermic and reaction 2 is exothermic.
- D Reaction 1 is exothermic and reaction 2 is endothermic.

22 Magnesium is added to four separate test-tubes containing hydrochloric acid as shown. The mass of magnesium and volume of hydrochloric acid are the same in each test-tube.



test-tube	1	2	3	4
magnesium	powder	powder	strip	strip
hydrochloric acid	dilute	concentrated	concentrated	dilute
temperature	30 °C	50 °C	50 °C	30 °C

Which experiment is the fastest and which experiment is the slowest?

	fastest	slowest
A	1	2
B	1	4
C	2	3
D	2	4

23 Gasoline is a hydrocarbon fuel obtained from crude oil.

Which statement is correct?

- A** Gasoline burns to form carbon dioxide and water.
- B** Gasoline contains the elements carbon, hydrogen and oxygen.
- C** Gasoline is used as a fuel for diesel engines.
- D** The combustion of gasoline is an endothermic reaction.

24 The noble gases make up Group 0 of the Periodic Table.

Which statement is correct?

- A** Argon exists as non-bonded atoms.
- B** Krypton is very poisonous.
- C** Neon burns in pure oxygen with a red flame.
- D** The chemical formula for helium is He_2 .

25 P, Q, R and S are four different elements.

P is a metal that floats on water.

Q is a non-metal and its oxide is coloured.

R is a dense metal.

S has a green colour and its boiling point is -35°C .

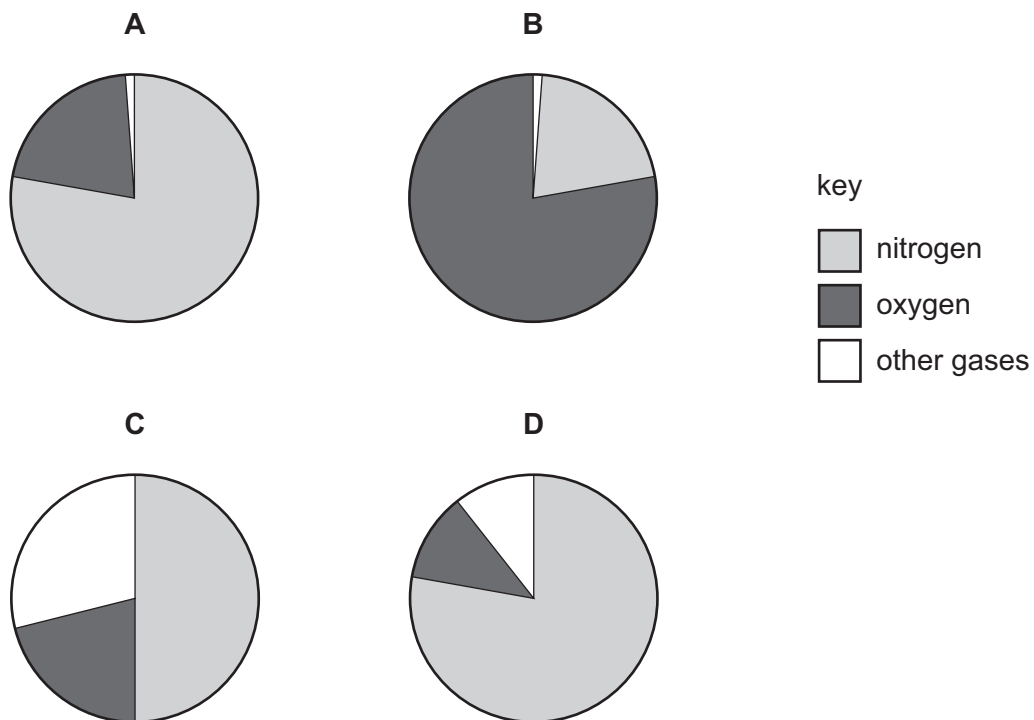
Which row describes the elements?

	transition element	non-transition element
A	P, R	Q, S
B	P, R, S	Q
C	Q, R	P, S
D	R	P, Q S

26 Which statement about alloys is correct?

- A** They are made from metals because metals are poor electrical conductors.
- B** They are mixtures of compounds that contain metals.
- C** They have all the same properties as the metals from which they are made.
- D** They have different properties to the metals from which they are made.

27 Which pie chart shows the composition of clean air?

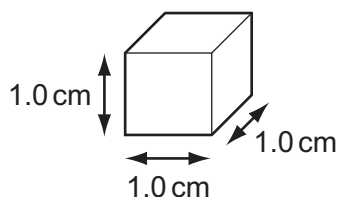


28 A vehicle takes 30 minutes to travel a distance of 60 km.

What is the average speed of the vehicle?

- A** 2.0 km/hour
- B** 30 km/hour
- C** 120 km/hour
- D** 1800 km/hour

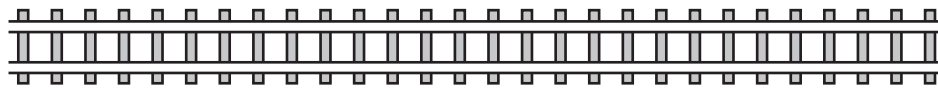
29 A cube of aluminium has sides of length 1.0 cm.



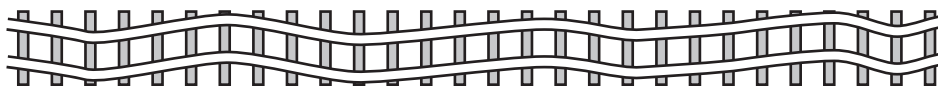
Compared with this cube, which statement about a cube of aluminium with sides of 2.0 cm is correct?

- A** It has the same density.
- B** It has the same mass.
- C** It has twice the density.
- D** It has twice the mass.

- 30 Which energy resource can be used to obtain electricity without any moving parts?
- A hydroelectric
 - B solar cells
 - C tides
 - D wave
- 31 Which statement describes evaporation?
- A The most energetic molecules of a liquid escape from the surface into the air.
 - B The most energetic molecules of a liquid return to the liquid from the air.
 - C The least energetic molecules of a liquid escape from the surface into the air.
 - D The least energetic molecules of a liquid return to the liquid from the air.
- 32 A badly designed railway line changes shape when the temperature of the air around it changes by a large amount.



railway line before the temperature change



railway line after the temperature change

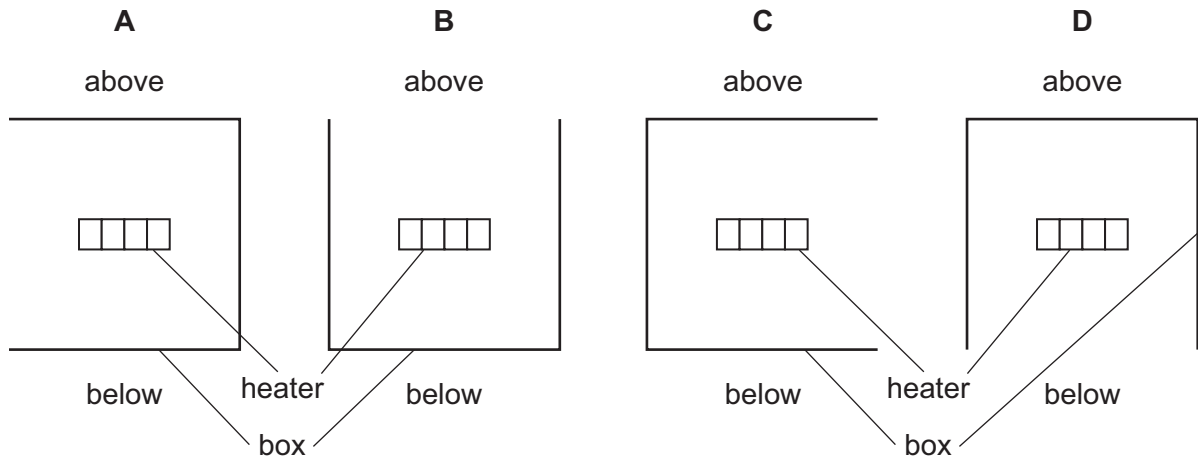
How has the temperature changed, and what change to the railway line has this caused?

	temperature change	change to railway line
A	decreased	contracted
B	decreased	expanded
C	increased	contracted
D	increased	expanded

- 33** An electric heater is placed inside a metal box which has one side open. The diagram shows four possible positions of the box.

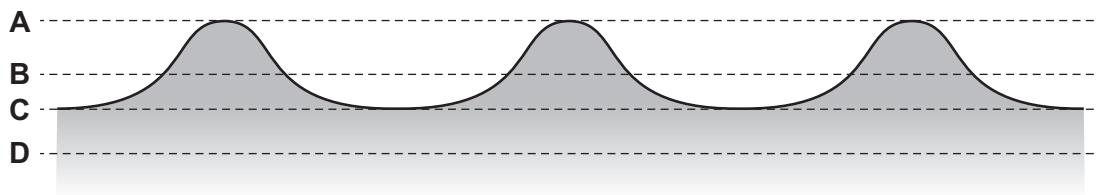
The heater is switched on for several minutes.

In which position does the box become the hottest?



- 34** The diagram shows a section through waves on water.

Which dotted line shows the position of the water surface before the wave reaches it?



- 35** A plane mirror is on a wall.

Which description of the image formed by the mirror is correct?

- A** upright and smaller than the object
- B** upright and the same size as the object
- C** inverted and smaller than the object
- D** inverted and the same size as the object

- 36** Electromagnetic waves are used to scan passengers' luggage before they board an aeroplane.

Electromagnetic waves are also used in a television remote controller.

Which type of electromagnetic wave is used for each of these purposes?

	scanning luggage	television remote controller
A	radio waves	infra-red waves
B	radio waves	ultraviolet waves
C	X-rays	infra-red waves
D	X-rays	ultraviolet waves

- 37** A woman hammers a post into the ground.

A boy starts a stop-watch when he sees the hammer hit the post. He stops the stop-watch when he hears the sound of the hammer hitting the post.

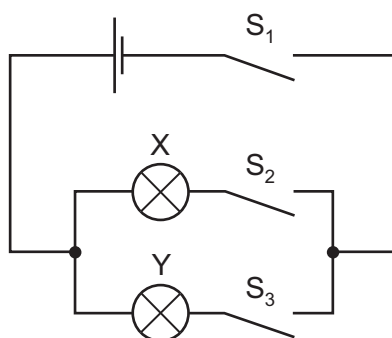
The stop-watch reading is 0.60 seconds.

The speed of sound in air is 330 m/s.

What is the distance between the boy and the post?

- A** 99 m **B** 198 m **C** 275 m **D** 550 m

- 38** The diagram shows an electric circuit.



Which switches should be closed so that lamp X is lit but lamp Y is not lit?

- A** S_1 , S_2 and S_3
B S_1 and S_2 only
C S_1 and S_3 only
D S_2 and S_3 only

39 Why is a fuse used in an electric circuit in a house?

- A to increase the resistance of the circuit
- B to keep the power used at a constant value
- C to prevent a short circuit from occurring
- D to stop the cables overheating

40 Diagram 1 shows two identical resistors R_1 and R_2 connected in series in a circuit.

In diagram 2, R_2 has been removed.

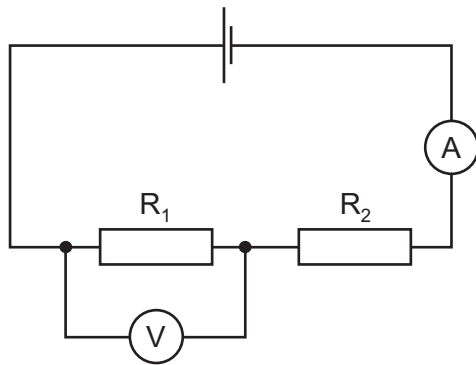


diagram 1

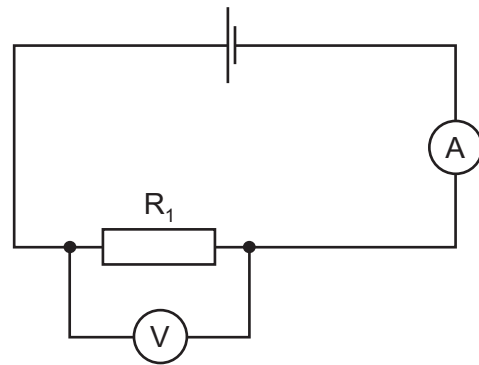


diagram 2

What has happened to the reading on the ammeter and what has happened to the reading on the voltmeter in diagram 2?

	ammeter	voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

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b = proton (atomic) number

Key