Cambridge Checkpoint

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

SCIENCE **1113/02**

Paper 2 **For Examination from 2012**

SPECIMEN PAPER

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
You should show all your working in the booklet.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total	

This document consists of **15** printed pages and **1** blank page.

UNIVERSITY of CAMBRIDGE International Examinations

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For Examiner's Use

1 Litmus is made from a plant pigment.
It is **red** when placed in an **acidic** solution.
It is **blue** when placed in an **alkaline** solution.
It is **purple** when neutral.

(a) What do we call substances that change colour like this?

..... [1]

(b) What colour would litmus be in a solution of pH 10?

..... [1]

(c) What colour would you expect litmus to be in pure water?

..... [1]

(d) Excess acid in the stomach can cause indigestion.

What would be the safest thing to neutralise excess acid in the stomach?
Tick (✓) the correct box.

☐ vinegar (acid)

☐ salt water (neutral)

☐ sodium hydrogencarbonate (mild alkali)

☐ caustic soda (strong alkali)

[1]

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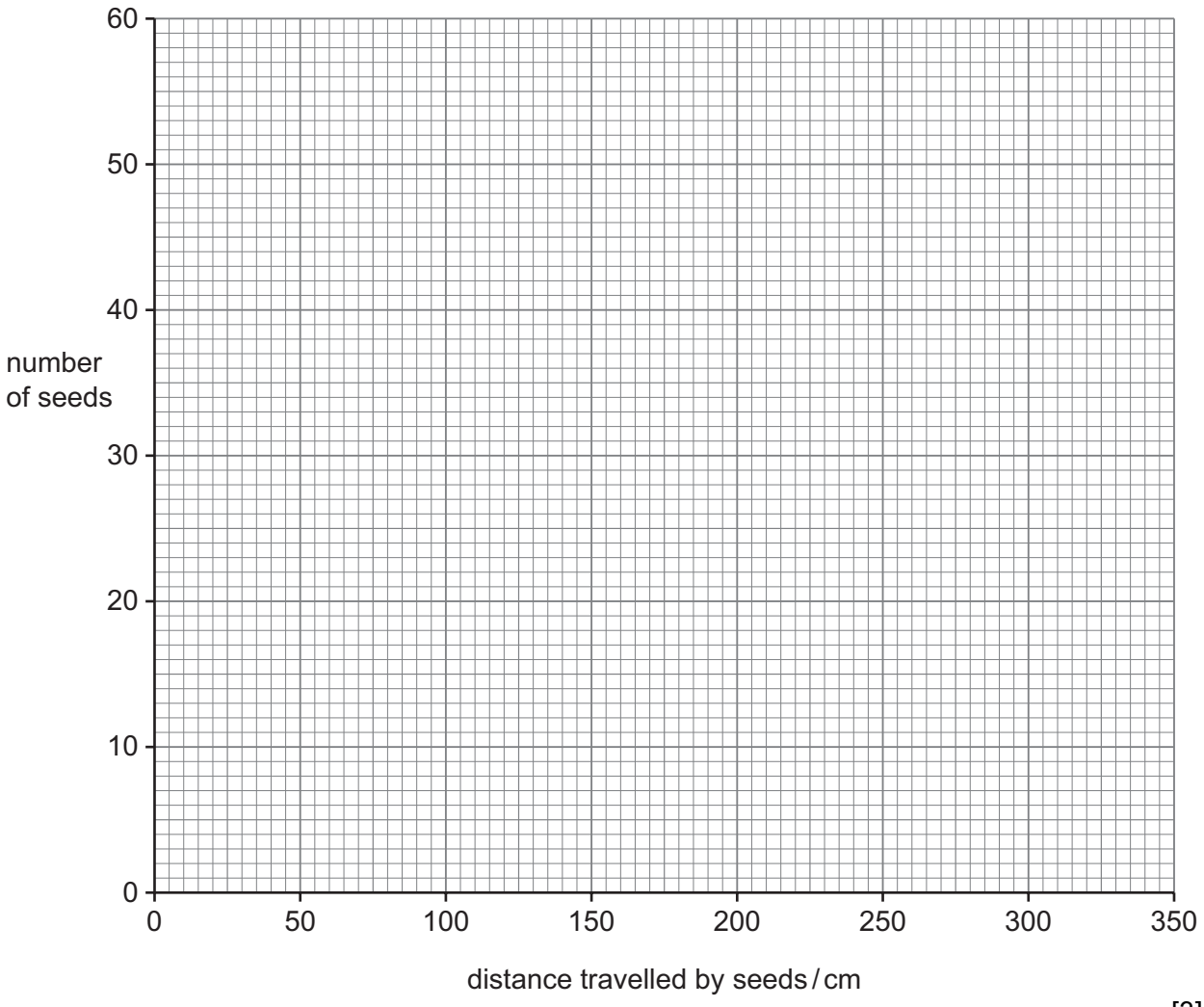
2 A plant called Himalayan balsam produces seed pods. These pods explode and the seeds shoot out in all directions.

(a) Carlos finds 175 seeds on the ground around a Himalayan balsam plant. He measures the distance of each seed from the plant.

The table shows his results.

distance of seeds from plant / cm	0–50	51–100	101–150	151–200	201–250	251–300
number of seeds	55	45	30	25	15	5

(i) Draw a histogram to display these results.



[3]

(ii) How many seeds travelled more than 200 cm?

..... [1]

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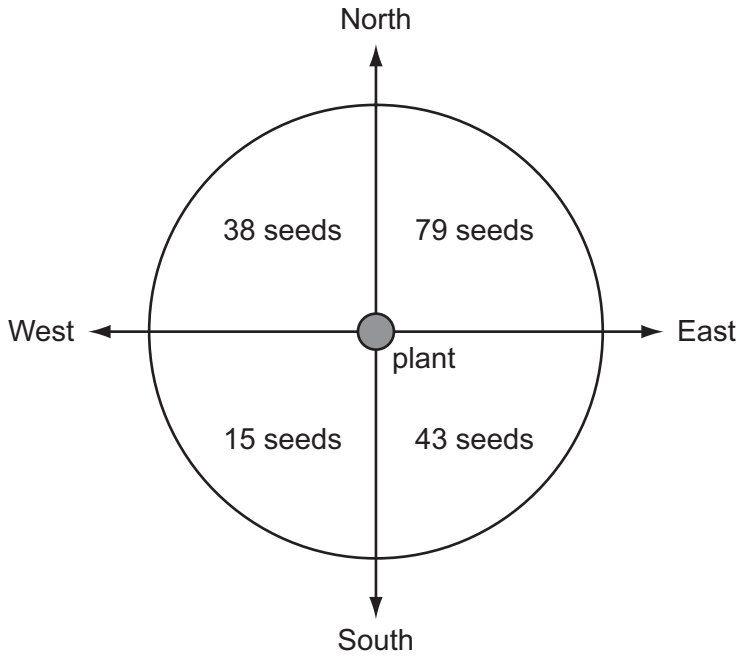
(b) Although the seeds shot out in all directions, they were not spread evenly around the plant.

The diagram shows where Carlos finds the seeds around the plant.



Carlos thinks that more seeds are in the north-east section because the wind blew from the south-west.

He wants to find more evidence to decide if his explanation might be correct.

Which **two** pieces of evidence would support his explanation? Tick (✓) the **two** correct boxes.

There are always more seeds close to the plant than further away. ☐

When the wind blows from the south-east, the smallest number of seeds is found in the south-east section. ☐

When there is no wind, the seeds are found in equal numbers in each section. ☐

[1]

(c) The spreading of seeds away from the parent plant is called dispersal.

Suggest **two** reasons why seed dispersal is useful to Himalayan balsam plants.

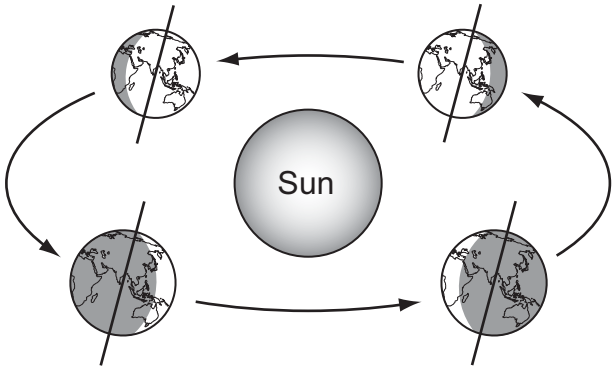
1 .....

2 ..... [2]

[Turn over

For Examiner's Use

3 The diagram shows the Earth moving around the Sun.



(a) What causes day and night on Earth? Tick (✓) the correct box.

The Earth moves round the Sun once every 24 hours. ☐

The Earth spins on its axis once every 24 hours. ☐

The Sun moves round the Earth once every 24 hours. ☐

The Sun spins on its axis once every 24 hours. ☐

[1]

(b) Two students are discussing the Sun and the Moon.

Luca says: The Sun gives out light that it produces itself.
Anya says: The Moon does not give out light. It only reflects light from the Sun.

Who is correct? Tick (✓) the correct box.

Luca only ☐

Anya only ☐

both Luca and Anya ☐

neither Luca nor Anya ☐

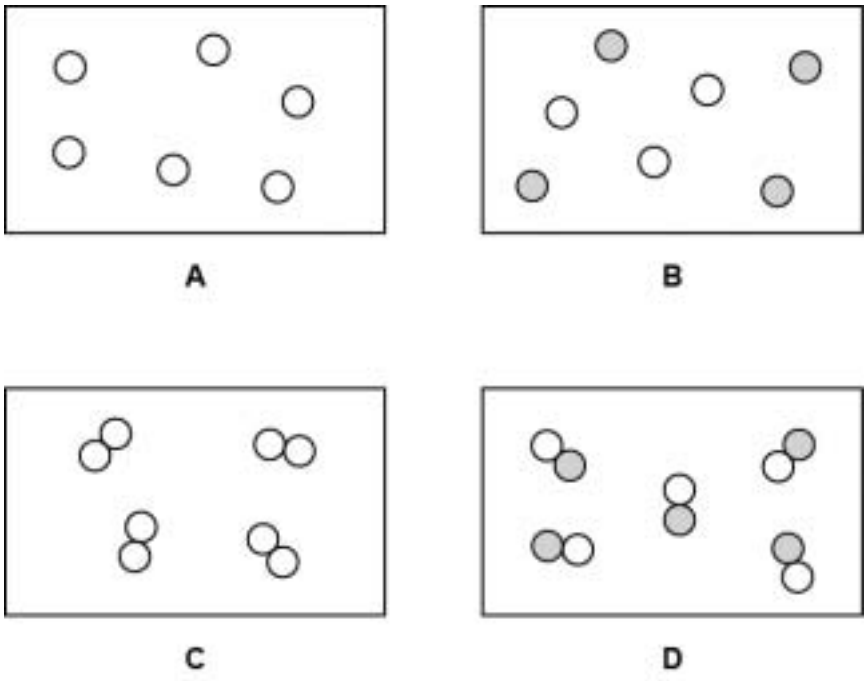
[1]

(c) Underline the **two** words in the list that are the names of planets.

Earth Jupiter Moon Sun [1]

For Examiner's Use

4 The diagrams show some arrangements of particles.



Write the letter of the diagram that represents

(a) molecules of a compound

..... [1]

(b) an element made up of atoms

..... [1]

(c) a mixture of different elements.

..... [1]

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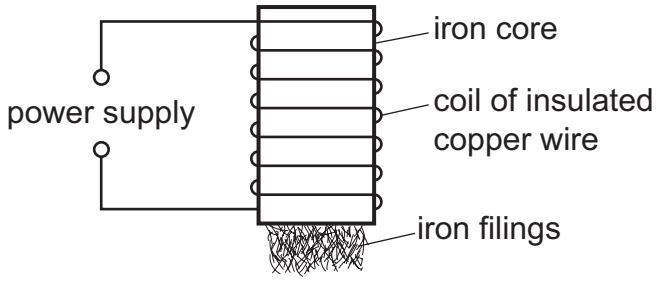
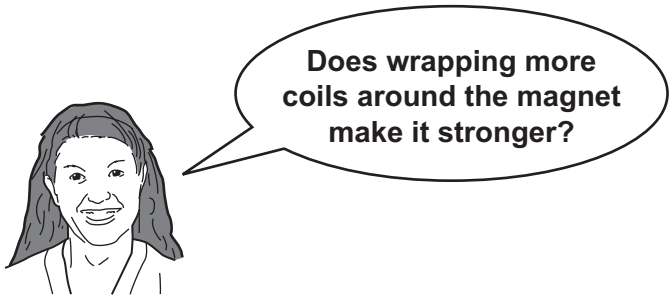
5 Sam and Shakira make an electromagnet as shown.

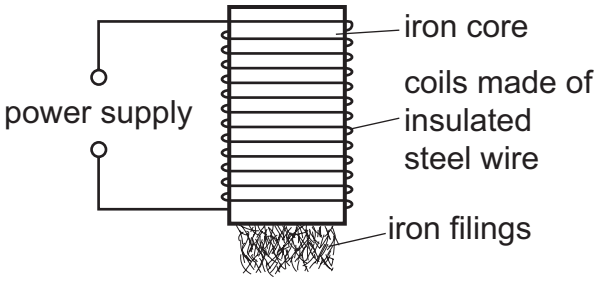


Their teacher asks them to plan an experiment to answer this question.

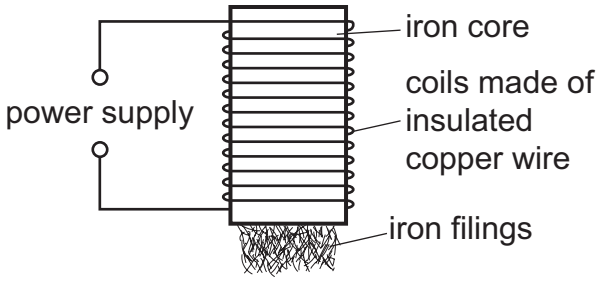


She tells them that they can test the strength of their magnets by measuring the mass of iron filings that they pick up.

The diagram shows the changes that Sam and Shakira make to their magnets when they begin their experiment.



Sam



Shakira

(a) Explain why Sam's experiment will **not** answer the teacher's question.

.....

..... [2]

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(b) These are the results that Shakira writes down. She writes them in the order that she collects them.

number of coils 5, 10, 15, 20, 25, 30

mass of iron filings in grams 2, 6, 23, 18, 22, 25

(i) In the space, draw a results table and complete it by writing in Shakira's results.

Use a ruler to draw your results chart.

[2]

(ii) Describe the pattern in Shakira's results.

.....

[1]

(iii) In your results chart, draw a circle around the result that does **not** fit the pattern. [1]

(iv) Suggest **one** way in which Shakira could make her results more reliable.

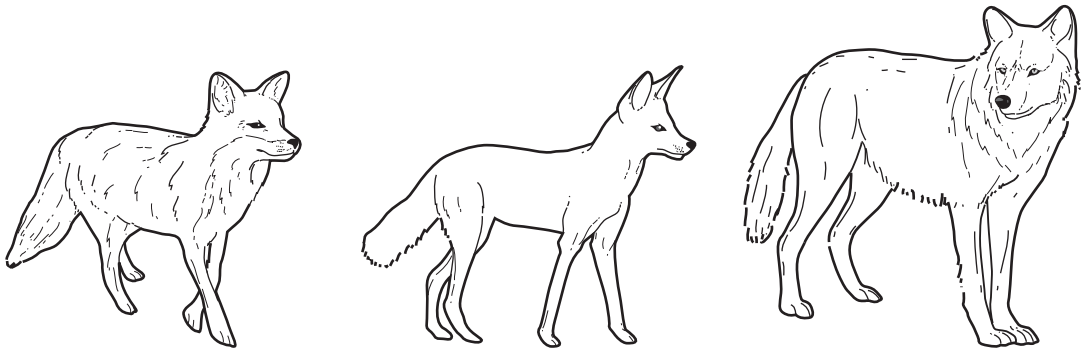
.....

[1]

For Examiner's Use

6 There are about 35 different species in the dog family.

(a) The diagrams show three different species within the dog family. These are a fox, a jackal and a wolf.



fox jackal wolf

(i) Describe **one** way, shown in the diagrams, in which a wolf differs from both the fox and the jackal.

.....

[1]

(ii) Foxes, jackals and wolves are classified by scientists as three separate species. Explain why.

.....

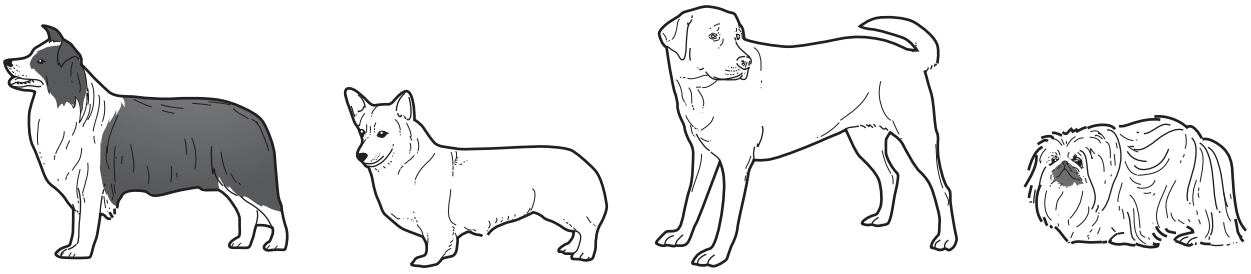
[1]

(b) Modern domestic dogs are thought to have descended from wolves.

Humans may have caught and tamed wolves and kept them to help with hunting.

Modern domestic dogs are thought to have evolved about 15 000 years ago.

The diagrams show four breeds of modern domestic dogs.
Although they look different, they all belong to the same dog species which scientists call *Canis familiaris*.



collie corgi labrador pekinese

(i) What word is used to describe the differences between animals of the same species?

.....

[1]

(ii) Wild dog species such as foxes or jackals are all very similar to each other. Modern domestic dogs have many differences in size, shape and colour.

Explain why.

.....

..... [2]

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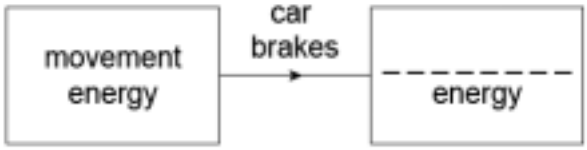
For Examiner's Use

7 Write the missing terms in these energy transformation diagrams.

(a)

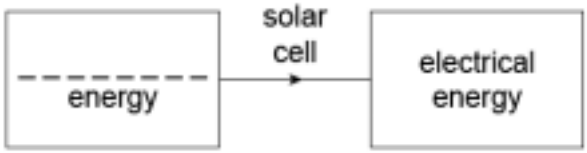
[1]

(b)



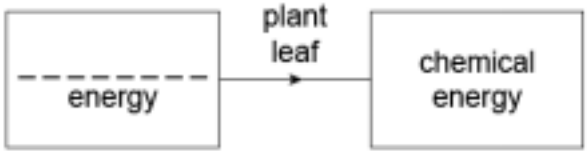
[1]

(c)



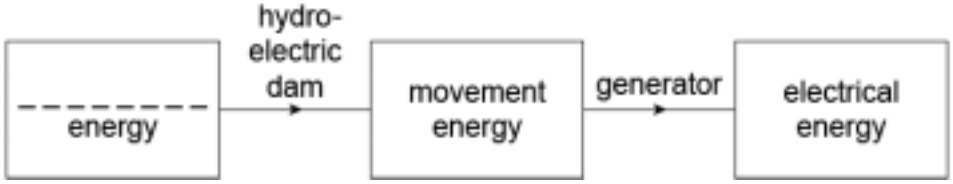
[1]

(d)



[1]

(e)



[1]

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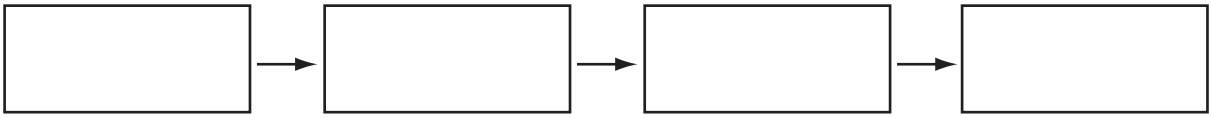
8 Read this information about plants and animals in a garden. Use the information to answer the questions.

- A gardener grows cabbages in her garden.
- Some of the cabbages are eaten by caterpillars.
- Birds eat some of the caterpillars.
- Snakes eat some of the birds.

(a) (i) Use the information to complete the food chain.
Write your answers in the boxes.



[2]

(ii) Name **one** organism in the food chain which is a predator.

..... [1]

(iii) Which organism is a producer?

..... [1]

(b) The gardener sprays her cabbages with a chemical to kill the caterpillars.

What will happen to the number of birds?

Explain why.

.....

..... [1]

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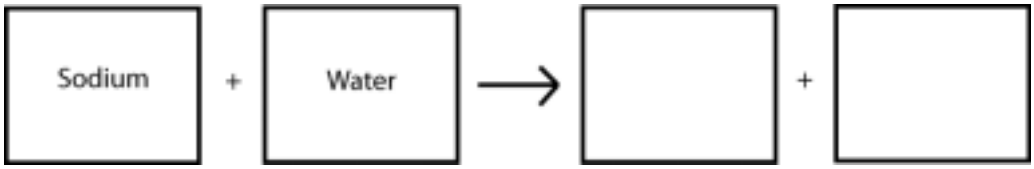
9 **(a)** When sodium is added to water, a new compound is formed, a gas is produced and heat is given out in the reaction.

(i) Write the correct scientific word that is used to indicate that heat is given out in a reaction.

..... [1]

(ii) Complete the word equation.



[2]

(b) Put a tick (✓) if heat is given out in the process.

burning	evaporation	melting	neutralisation

[2]

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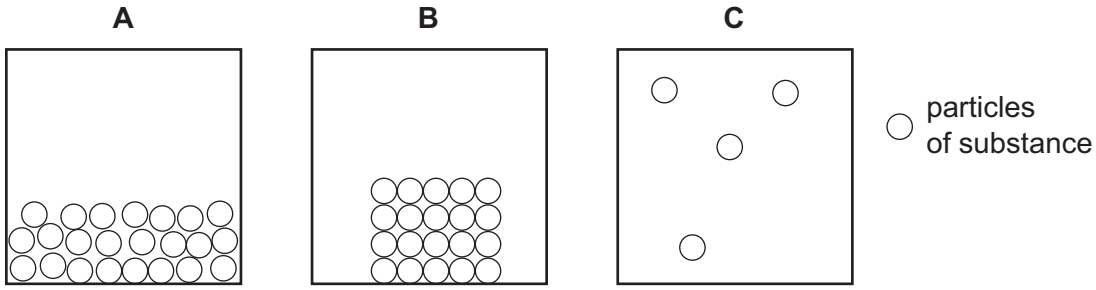
10 The boxes **A**, **B** and **C** show particles of substances in one of three different physical states: solid, liquid and gas.



(a) Write the letter of the box which

(i) contains a liquid.

..... [1]

(ii) contains particles vibrating about fixed positions.

..... [1]

(b) How could the particles in the box you have given in **(a) (ii)** be made to vibrate more quickly?

..... [1]

(c) (i) Write the letter of the box in which the particles would quickly escape if the top of the box was removed.

..... [1]

(ii) What is the name of the process by which the particles escape?
Underline the correct answer.

evaporation **diffusion** **vaporisation** [1]

(iii) Why do the particles escape?

..... [1]

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