



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge Checkpoint

CANDIDATE
NAME

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NUMBER

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NUMBER

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SCIENCE

1113/01

Paper 1

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.

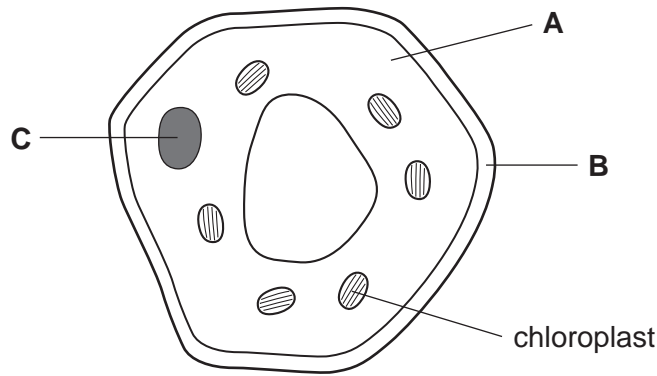
The number of marks is given in brackets [] at the end of each question or part question.

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.

1 The diagram shows a plant cell.



(a) Name the parts labelled **A**, **B** and **C**.

A

B

C

[3]

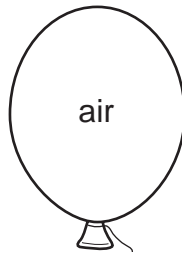
(b) Why are chloroplasts important to plants?

..... [1]

(c) Name **two** structures present in a plant cell that are **not** present in an animal cell.

..... and [2]

2 The diagram shows a balloon containing air.



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(a) Explain how the air particles exert a pressure on the inside of the balloon.

.....
..... [2]

(b) The air in the balloon is heated by leaving the balloon in a sunny place.

State **two** effects this has on the air particles.

1
2 [2]

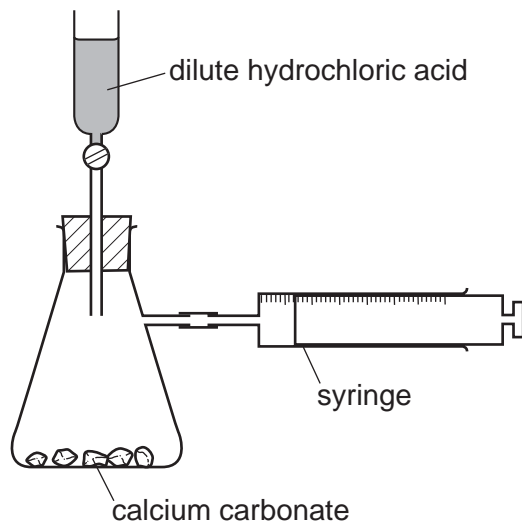
(c) State **one** way in which the balloon changes when it is left in a sunny place.

..... [1]

- 3 Maya investigates the reaction between calcium carbonate and hydrochloric acid.

She adds dilute hydrochloric acid to some calcium carbonate (marble chips), at room temperature.

She collects the gas given off in a gas syringe.



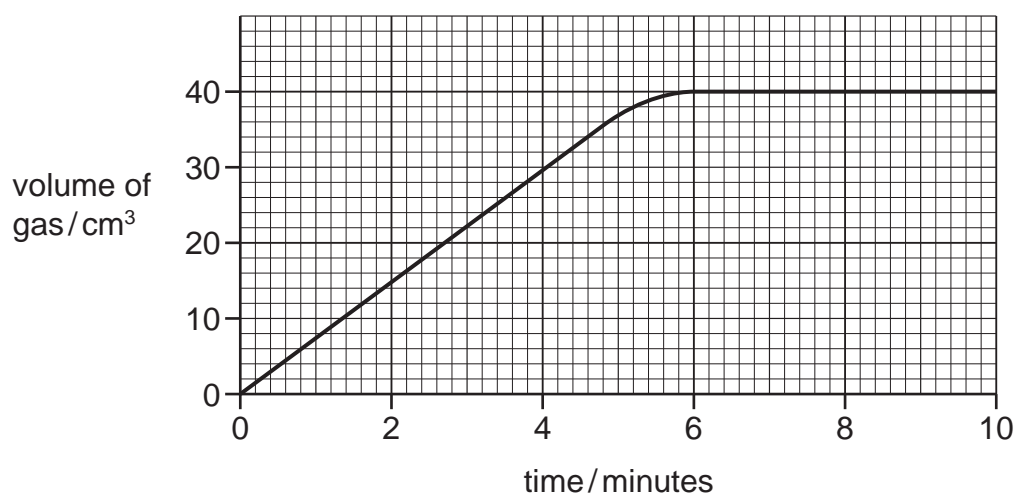
- (a) Suggest **one** safety hazard in this experiment. How can Maya reduce the risk from this hazard?

hazard

how to reduce the risk [2]

- (b) Maya measures the volume of gas in the gas syringe every two minutes, until the reaction stops.

The graph shows her results.



What is the total volume of gas given off in the reaction?

..... cm³ [1]

(c) When the reaction stops, there is still some calcium carbonate in the bottom of the flask.

(i) After how many minutes does the reaction stop?

..... minutes [1]

(ii) Why does the reaction stop? Tick (✓) the correct box.

The calcium carbonate has all reacted.

The hydrochloric acid has all reacted.

The temperature has risen too high.

[1]

(d) Maya wants to find out if increasing the temperature increases the rate of the reaction.

She repeats her experiment, but this time at a higher temperature.

State **two** variables that Maya should keep the same in her experiment.

1

2 [2]

- 4 (a) A scientist sets up two experiments. In both experiments he has a torch, two pieces of card with holes in them and a screen.

- (i) The first experiment is shown in diagram 1.

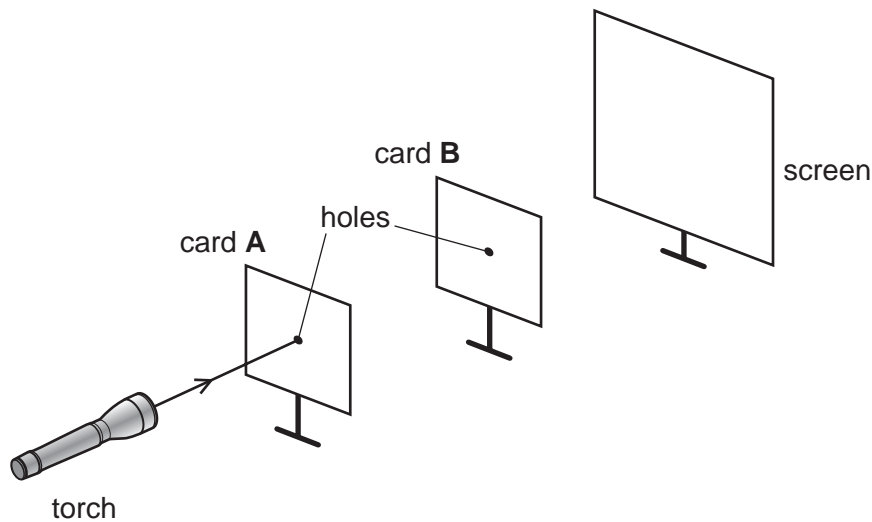


diagram 1

The scientist could see a spot of light on the screen.

Draw the ray of light to show its path on diagram 1, after it has passed through the hole in card A. [1]

- (ii) The second experiment is shown in diagram 2.

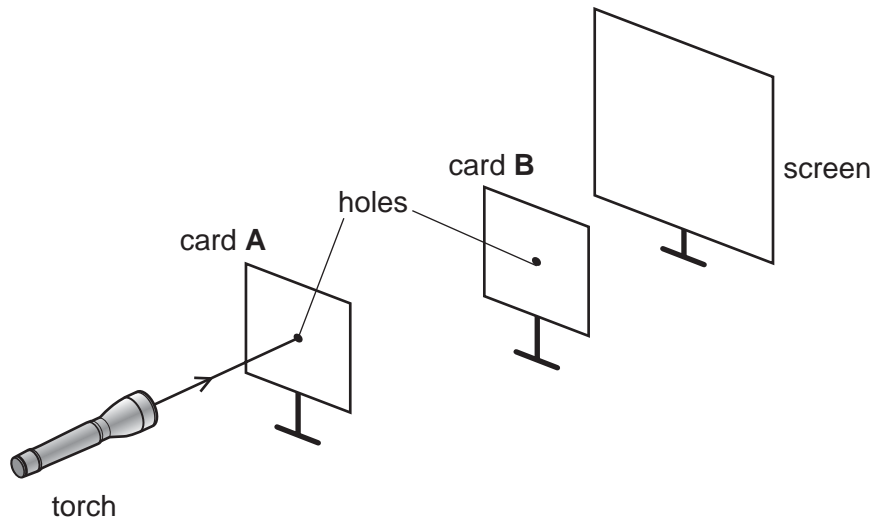


diagram 2

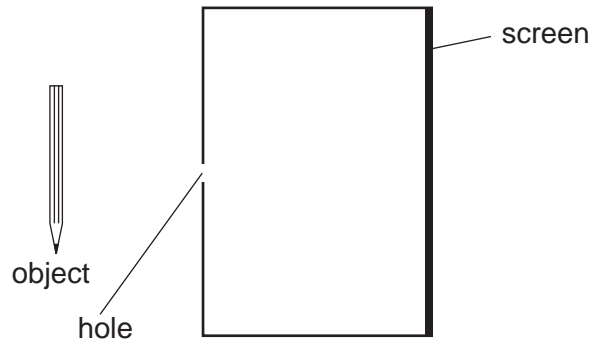
The hole in card B is **not** in line with the hole in card A.
Draw the ray of light to show its path on diagram 2. [1]

- (iii) Explain why the light is unable to reach the screen.

.....

..... [1]

(b) A pinhole camera allows an image of an object to be projected onto a screen.



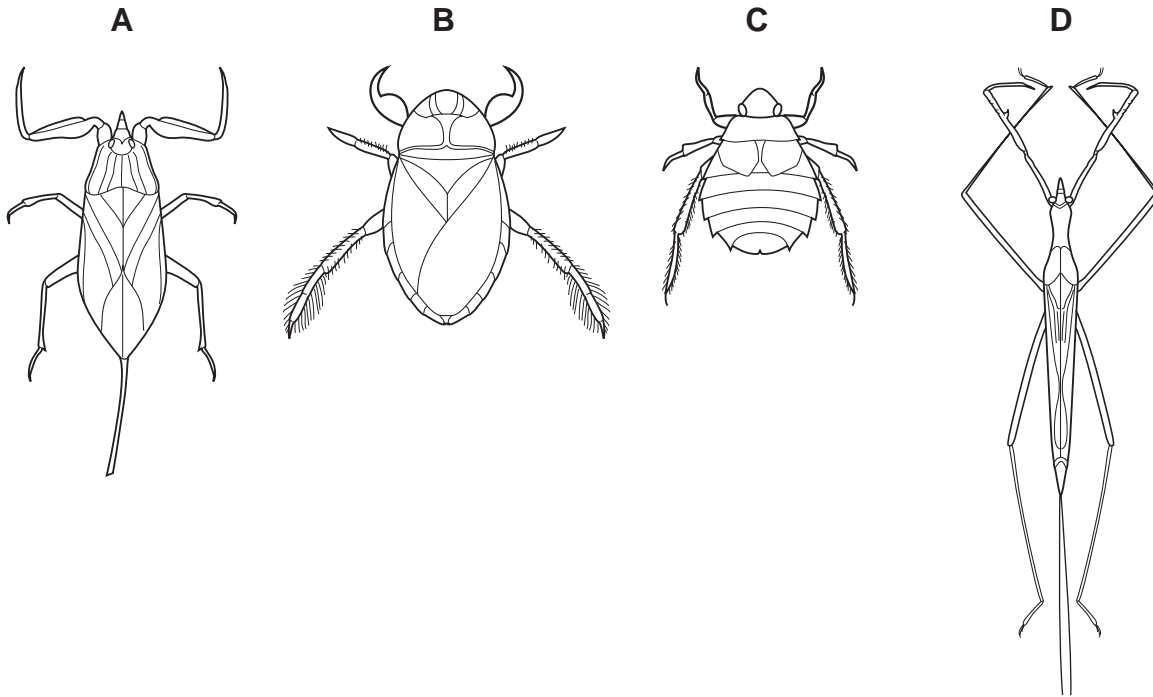
Draw **two** rays of light, one from the bottom of the pencil and one from the top of the pencil, to show how the image forms on the screen. [2]

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- 5 Some students are investigating a river ecosystem. They use nets to sweep through the water. They empty the contents into a shallow container of water, examine the animals present and record what they see.

*For
Examiner's
Use*

(a) The diagram shows a student's record.



All four animals can be classified into the same group.
Name the group and give a reason for your answer.

.....
..... [2]

- (b) The student uses this key to identify the animals **A** and **B**.
Fill in the correct names.

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1 The animal has one or more breathing tubes extending from the end of its abdomen. **go to 2**

The animal does not have a long breathing tube extending from the end of its abdomen. **go to 3**

2 The animal has a long, thin, stick-like body. *Ranatra linearis*

The animal has an oval-shaped body. *Nepa cinerea*

3 The front legs are muscular and claw-like. *Ilyocoris cimicoides*

The front legs are not muscular or claw-like. *Aphelocheirus aestivalis*

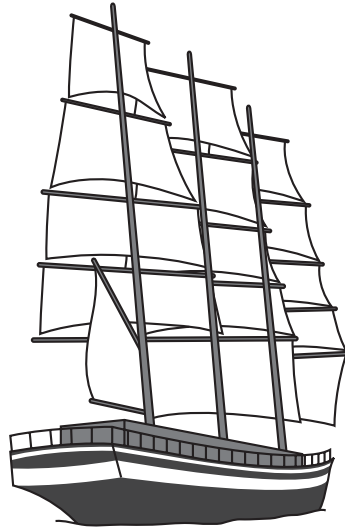
Animal **A** is

Animal **B** is [2]

- 6 Read the article about Ferdinand Magellan who led the first voyage around the world.
Use the information in this article and your biological knowledge to answer the questions.

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Magellan's Voyage. Proof that the World is round!



In 1519, Ferdinand Magellan sailed from Spain to find a western route to the Spice Islands. He took 237 men in five ships.

Each ship carried a supply of basic foods including cheese, flour, oil, meat and vegetables. There were also some live animals, including chickens.

The ships eventually reached the Spice Islands but only one continued the journey back to Spain. This was the *Victoria*. The sailors on the *Victoria* became very ill before they arrived home. They had bleeding gums and sores which would not heal. One sailor though, called Elcarno, used to eat a spoonful of fruit jam every day. He did not develop any of these symptoms.

(a) Magellan's ships set sail with basic foods that provided a balanced diet.

What is meant by a *balanced diet*?

.....
.....
..... [2]

(b) Suggest why Magellan took some live animals with him on the voyage.

..... [1]

(c) Most of the sailors on the *Victoria* developed a deficiency disease called scurvy.

(i) What is meant by a *deficiency disease*?

.....
..... [1]

(ii) Describe **one** symptom of scurvy.

..... [1]

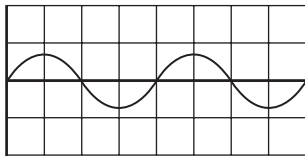
(iii) What is the cause of scurvy?

..... [1]

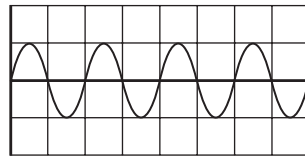
(iv) Suggest why Elcarno did **not** develop this deficiency disease.

..... [1]

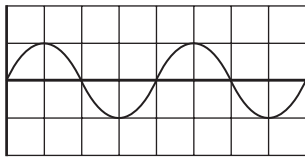
7 A scientist uses an oscilloscope to record the traces made from four different sounds.
The diagrams show the traces made from these four sounds.



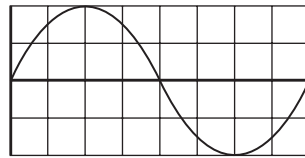
trace A



trace B



trace C



trace D

(a) Which is the loudest sound?

..... [1]

(b) Which sound has the highest pitch?

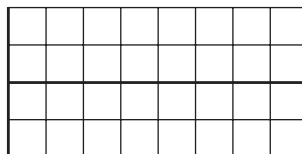
..... [1]

(c) The scientist makes a fifth sound.

This sound has the **same amplitude** as the sound that made trace B.

It has the **same frequency** as the sound that made trace D.

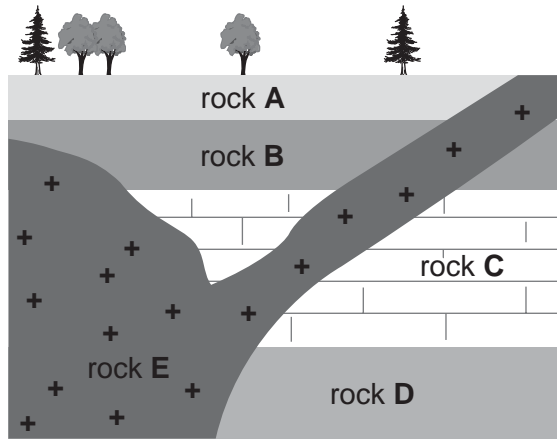
Draw the trace that his fifth sound makes on the oscilloscope.



[2]

8 The diagram shows the rocks on the sides of a deep quarry.

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Rocks **A**, **B** and **C** are sedimentary rocks. They were formed when tiny rock particles built up in layers and were compressed.

Rock **D** was formed when limestone (a sedimentary rock) was heated to a very high temperature, at high pressure, and then cooled.

Rock **E** was formed when hot magma (liquid rock) cooled and solidified.

(a) Rock **A** contains fossils.

(i) What is a fossil?

.....
 [2]

(ii) Choose the letters of **two other** rocks that could contain fossils.

..... and [1]

(b) Suggest how the limestone was heated to form rock **D**.

.....
 [1]

9 Ice, water and steam all contain water molecules.

Complete these sentences using words from the list.

You may use them once, more than once, or not at all.

larger than **the same as** **smaller than**

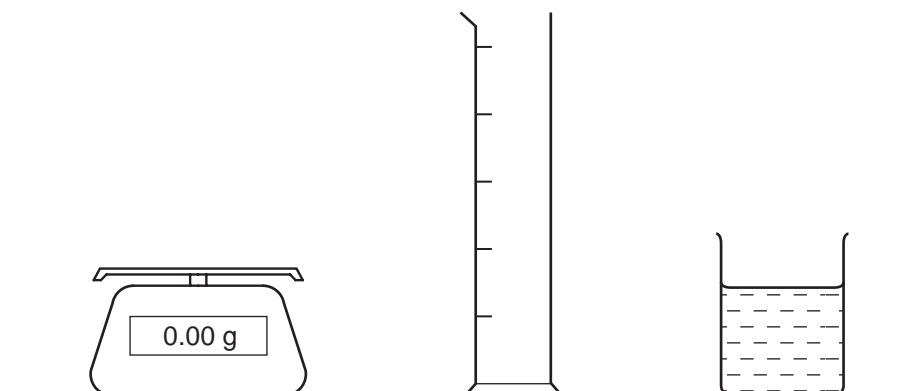
(a) In steam, the distance between the molecules is the
distance between the molecules in water. [1]

(b) In steam, the forces between the molecules are the
forces between the molecules in water. [1]

(c) In water, the mass of one molecule is the mass of
one molecule in steam. [1]

10 Amulu uses this apparatus to measure the density of water.

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The sentences describe his experiment for measuring the density of the water, but they are not in the correct order.

A Pour 50 cm³ water into the measuring cylinder.

B Divide the mass of the water by 50.

C Remove the empty measuring cylinder from the scales.

D Place the empty measuring cylinder on the scales.

E Subtract the mass of the measuring cylinder from the mass of the measuring cylinder and water.

F Note the mass of the empty measuring cylinder.

G Note the mass of the measuring cylinder and water.

H Place the measuring cylinder and water on the scales.

Write the correct order in the boxes. The first one has been done for you.

D							
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[5]

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