

CANDIDATE  
NAME

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CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**SCIENCE**

**1113/01**

Paper 1

**October 2015**

**45 minutes**

Candidates answer on the Question Paper.

Additional Materials:      Pen                      Calculator  
                                        Pencil  
                                        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 an HB pencil for any diagrams, graphs or rough working.

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

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

You should show all your working in the booklet.

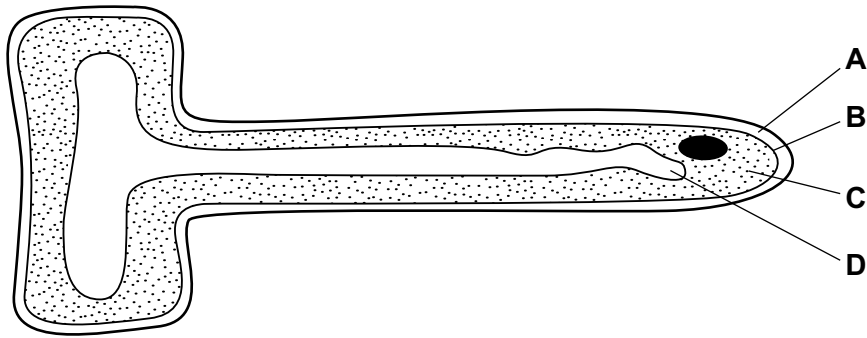
At the end of the examination, fasten all your work securely together.

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.

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

1 The diagram shows what a root hair cell looks like when viewed with a microscope.



(a) Identify the structures labelled **A** and **B** on the diagram.

**A** .....

**B** ..... [2]

(b) Describe **one** way you can tell that this is a plant cell and **not** an animal cell.

..... [1]

(c) Which cell structure, usually found in plant cells, **is missing** from root hair cells?

..... [1]

(d) Write down **one** function of a root hair cell.

..... [1]

2 Petronella investigates several indicators.

She finds this table on the internet.

indicator	pH 1	pH 4	pH 7	pH 10	pH 13
Methyl Orange	red	yellow	yellow	yellow	yellow
Phenolphthalein	colourless	colourless	colourless	pink	pink
Universal Indicator	red	orange	green	blue	purple

(a) Petronella tests a liquid with some of the indicators.

The table shows her results.

indicator	colour of the indicator in the liquid
Methyl Orange	red
Phenolphthalein	colourless

Estimate the pH value of the liquid.

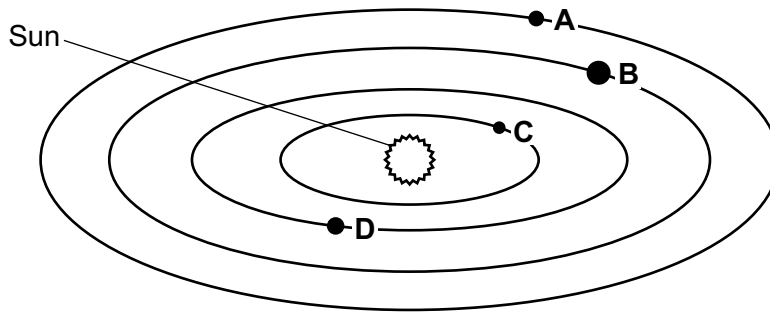
..... [1]

(b) Litmus is another indicator.

Complete the sentence about the colour of litmus.

Litmus is ..... in acid and ..... in alkali. [1]

3 The solar system is made up of planets and the Sun.



(a) The diagram shows the four planets nearest to the Sun.

What are the names of planets **A**, **B**, **C** and **D**?

**A** .....

**B** .....

**C** .....

**D** ..... [2]

(b) Complete the sentences.

Choose from the following.

planet **A**

planet **B**

planet **C**

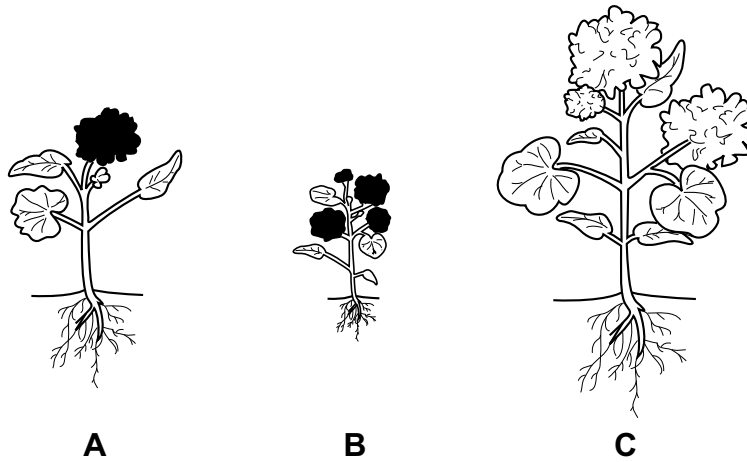
planet **D**

The planet with the **smallest** orbit around the Sun is .....

The planet that takes the **shortest** time to orbit the Sun is ..... [2]

4 The pictures show some geranium plants.

They all belong to the same species but show variation.



(a) The geranium plants have different coloured flowers.

Describe two **other** ways in which these geranium plants show variation.

- 1 .....
- 2 ..... [2]

(b) Which of the following processes are directly involved in the sexual reproduction of geranium plants?

Tick (✓) the **two** correct boxes.

- |                |                          |
|----------------|--------------------------|
| photosynthesis | <input type="checkbox"/> |
| pollination    | <input type="checkbox"/> |
| respiration    | <input type="checkbox"/> |
| fertilisation  | <input type="checkbox"/> |
| excretion      | <input type="checkbox"/> |

[2]

5 This question is about elements.

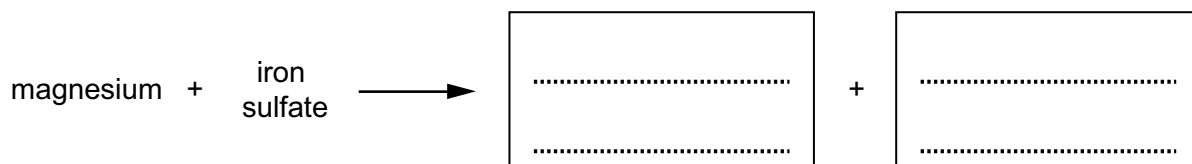
(a) Draw straight lines to match the **element** with its correct **chemical symbol**.

element	chemical symbol
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">neon</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">N</div>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">nitrogen</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Ne</div>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">sodium</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Na</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">S</div>

[2]

(b) Magnesium will displace iron from iron sulfate solution.

Complete the word equation for this reaction.



[2]

(c) Copper is placed in iron sulfate solution. There is no reaction.

Why is there no reaction?

Tick (✓) the box next to the correct sentence.

Copper is higher in the reactivity series than iron.

Copper is more reactive than iron.

Iron is more reactive than copper.

Iron sulfate is higher in the reactivity series than copper sulfate.

[1]

6 Rajiv investigates the reaction between magnesium and different acids.

He adds a 1 cm length of magnesium to four different acids.

He measures the time it takes for all the magnesium to react.

The table shows his results.

acid	time to react
citric acid	183
ethanoic acid	156
hydrochloric acid	58
sulfuric acid	64

(a) What is missing from Rajiv's results table?

..... [1]

(b) Which acid took the **most** time to react?

..... [1]

(c) Rajiv wants to display his results in a different way.

Which would be the **best** way to display the results?

Circle the correct answer.

bar chart

line graph

pie chart

scatter graph

[1]

(d) Rajiv thinks the result for hydrochloric acid is wrong.

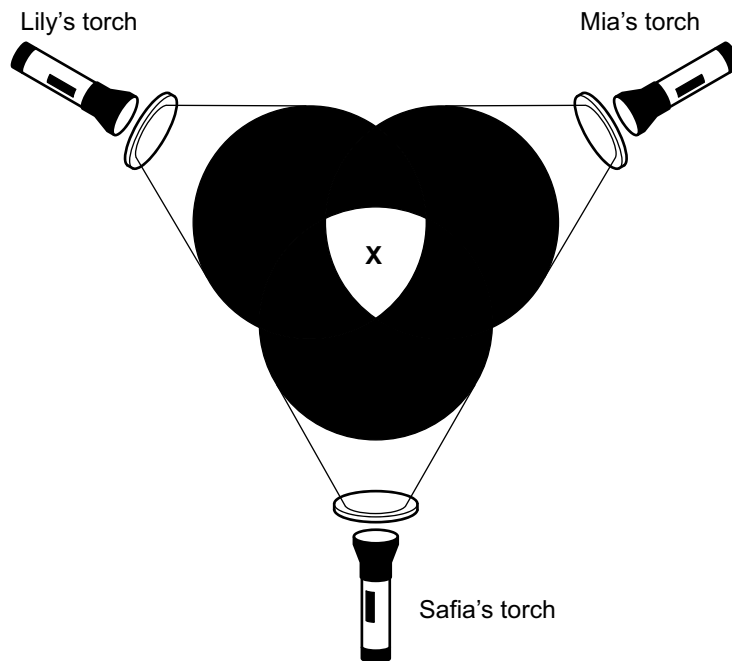
What should he do to check his result?

..... [1]

7 Lily, Mia and Safia mix different coloured light.

They use light of the same intensity.

- Lily has a pure blue light torch.
- Mia has a pure green light torch.
- Safia has a pure red light torch.
- They make the light from the three torches overlap.



(a) Complete the sentences.

Choose from the following words.

**black      cyan      green      magenta      white      yellow**

- (i) When Lily's torch light overlaps with Mia's torch light, .....  
light is produced. [1]
- (ii) When Safia's torch light overlaps with Lily's torch light, .....  
light is produced. [1]
- (iii) When all three torch lights overlap ..... light is  
produced. [1]



(b) Lily switches off her torch light.

What happens to the colour of light at X?

..... [1]

8 This question is about the changes that take place during adolescence.

One of these changes in females is the growth of breasts.

(a) Describe **one** visible change that takes place during adolescence in **both** males and females.

..... [1]

(b) Describe two **functions** of the ovaries.

1 .....

2 .....

[2]

(c) In the first part of the menstrual cycle, the uterus produces a thick inner lining.

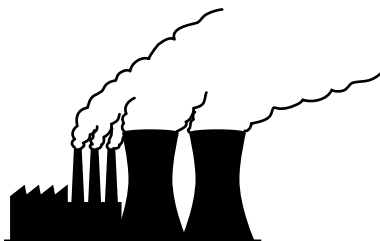
(i) What is the purpose of this lining?

..... [1]

(ii) What happens to this lining if an egg is **not** fertilised?

..... [1]

9 Many power stations burn fossil fuels.



The demand for energy is increasing all the time.

Burning fossil fuels meets most of the world's energy needs.

(a) In the future we **cannot** keep on using fossil fuels to meet the demand for energy.

Explain why.

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

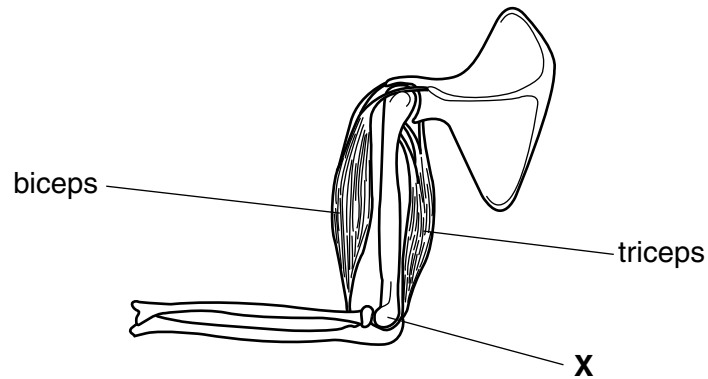
(b) Many people say that we will have to increase the use of renewable energy sources.

Name **two** renewable energy sources.

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

10 Look at the diagram.

It shows muscles and bones in the arm.



(a) Joint **X** is a hinge joint.

Describe the kind of movement a hinge joint allows.

..... [1]

(b) The bones in joint **X** are part of the skeletal system.

One function of the skeletal system is to allow movement.

Write down one **other** function of the skeletal system.

..... [1]

11 Look at the picture. It shows a fossil.



The fossil record provides evidence of organisms that have lived on the Earth.

(a) Complete the sentences about fossils.

Choose words from the list.

**age      decayed      hard      size      soft      squashed**

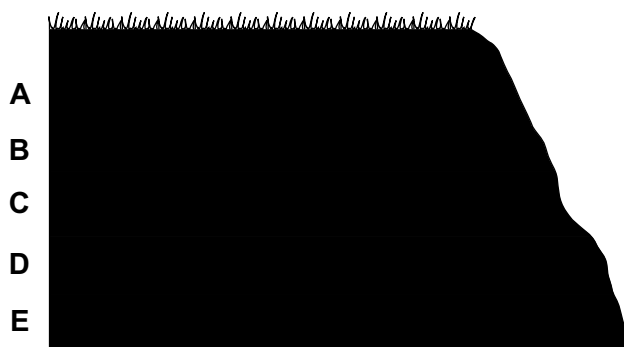
Fossils are often the remains of the ..... parts of the animal.

The rest of the animal would have .....

The fossil record can be used to estimate the ..... of the Earth. [3]

(b) Rocks are found in layers.

Look at the diagram.



Suggest which layer has the **oldest** fossils.

..... [1]

(c) Fossils can be found in sedimentary rocks such as sandstone.

Why do igneous rocks **not** contain fossils?

Tick (✓) the correct answer.

There were no animals around when igneous rocks formed.

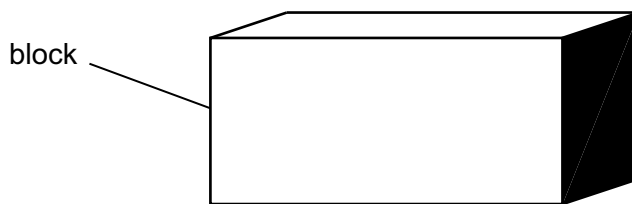
Animals only lived near water where sedimentary rocks formed.

Igneous rocks form under pressure.

The temperature of the molten rock would have destroyed the remains of the organism.

[1]

12 Angelique and Carlos want to measure the density of a block.



(a) What equipment would they use to measure the **mass** of the block?

..... [1]

(b) Describe one way they measure the **volume** of the block.

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

(c) Angelique and Carlos write down their results.

The mass of the block is 210 g.

The volume of the block is 30 cm<sup>3</sup>.

Calculate the **density** of the block.

density = ..... [2]

(d) What are the units of density?

Circle the correct answer.

**g cm<sup>3</sup>**      **cm<sup>3</sup> g**      **g/cm<sup>3</sup>**      **cm<sup>3</sup>/g**      [1]

13 Chlorine gas, salt water and sodium chloride all contain chlorine.

Draw lines from these **substances** to the correct **type** of substance.

substance	type
chlorine	mixture
salt water	element
sodium chloride	compound

[1]

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