

CANDIDATE  
NAME

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CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**SCIENCE**

**1113/01**

Paper 1

**October 2016**

**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.

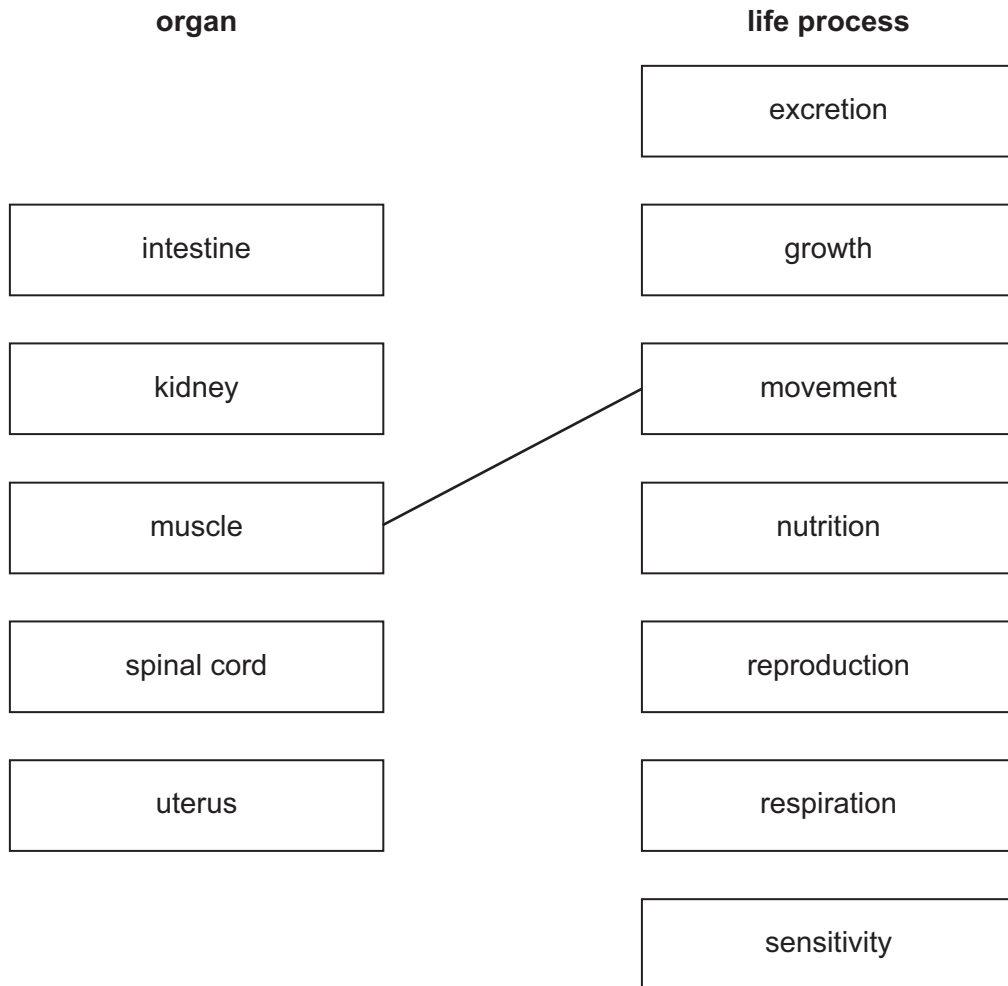
This document consists of **15** printed pages and **1** blank page.

1 There are seven characteristics of living things. These are called life processes.

In humans, different organs specialise in different life processes.

Draw a line from each **organ** to its **life process**.

One has been done for you.

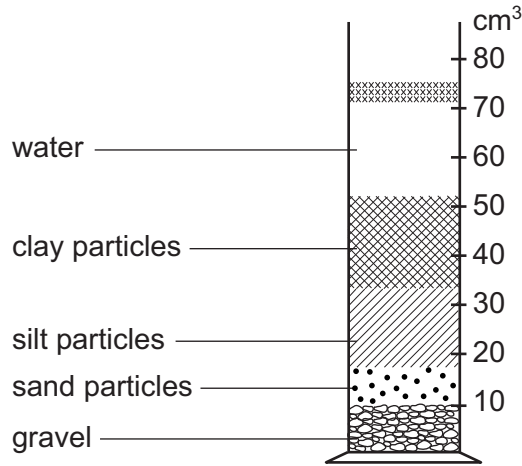


[4]

2 Carlos investigates soil.

He mixes a sample of soil with water in a measuring cylinder.

He then leaves the mixture to settle out into layers.



(a) Which layer is made up of the **largest** particles?

..... [1]

(b) What is the volume of gravel in the soil sample?

..... cm<sup>3</sup> [1]

(c) Which particles are smaller in size, clay or silt?

clay  silt

Explain how you can tell from the diagram of the measuring cylinder.

..... [1]

(d) Different types of soils have different amounts of sand, clay, gravel and silt particles.

These give the soils different properties.

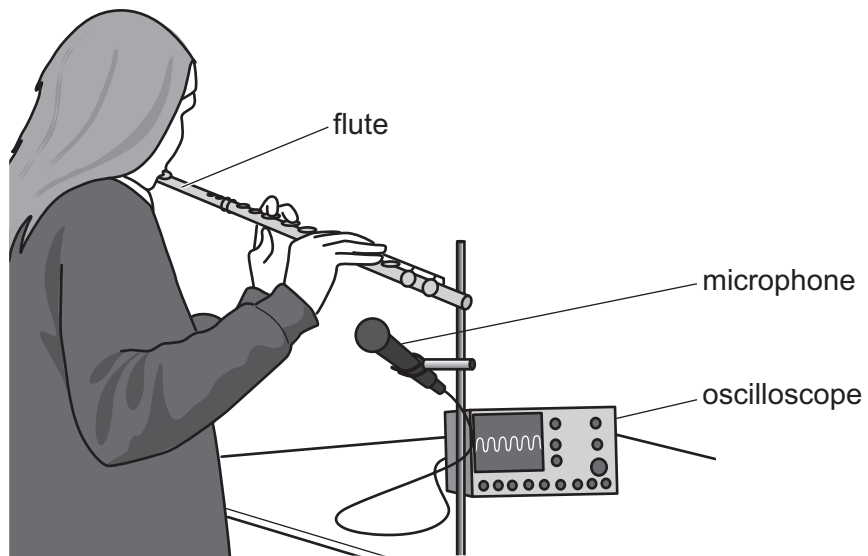
Circle the correct words to complete the sentences about clay soils and sandy soils.

Sandy soils have **fewer** / **more** sand particles than clay soils.

Between the sand particles there are **large** / **small** air spaces.

Sandy soils are **more** / **less** likely to become waterlogged. [2]

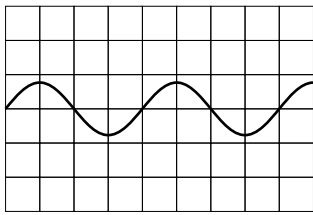
3 Safia plays her flute.



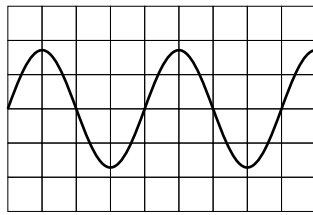
The oscilloscope shows the sounds the flute makes.

Safia plays six different notes on her flute.

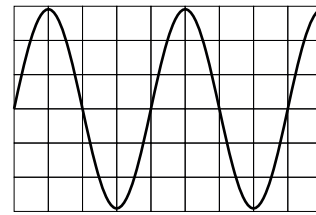
Here are six oscilloscope pictures.



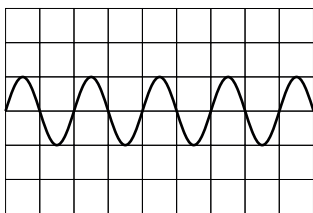
**A**



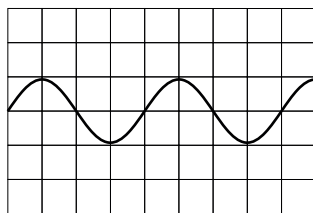
**B**



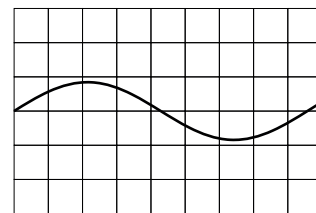
**C**



**D**



**E**



**F**

(a) Which sound is the **loudest**?

Circle the correct answer.

A      B      C      D      E      F

[1]

(b) Which sound has the **greatest amplitude**?

Circle the correct answer.

A      B      C      D      E      F

[1]

(c) Which sound has the **highest pitch**?

Circle the correct answer.

A      B      C      D      E      F

[1]

(d) Which sound has the **highest frequency**?

Circle the correct answer.

A      B      C      D      E      F

[1]

4 Gabriella has brown hair and green eyes.

She plays the piano and speaks Italian and French.

Gabriella has inherited some of her features from her parents.



Gabriella’s mother is Italian and plays the violin. She has brown hair.

Gabriella’s father is French, plays the piano and has green eyes.

(a) Tick the boxes next to the features that Gabriella has **inherited** from her parents.

features	✓ = inherited from her parents
brown hair colour	
green eye colour	
her gender (female)	
playing the piano	
speaking French and Italian	

[2]

(b) (i) Which part of a cell contains the information for inherited features?

..... [1]

(ii) Describe how this inherited information was passed on to Gabriella from her parents?

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

5 Look at the diagram.

It shows some of the elements in the Periodic Table.

			H							He
Li	Be			B	C	N	O	F		Ne
Na	Mg			Al	Si	P	S	Cl		Ar
K	Ca	transition elements								

(a) Use the Periodic Table to answer these questions.

(i) Write down the chemical symbol of the most reactive element in Group 7.

..... [1]

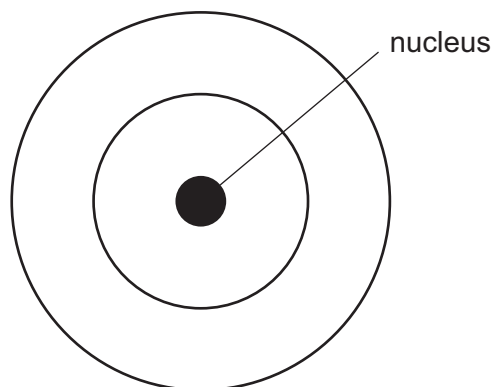
(ii) Write down the chemical symbol of the element with only three protons inside its nucleus.

..... [1]

(iii) Write down the chemical symbol of the element in Group 2 **and** Period 3.

..... [1]

(b) Look at the diagram.



Complete the diagram to show the arrangement of electrons in an atom of carbon. [2]

6 Hair dryers work by using energy transfers.

The picture shows the inside of a hair dryer.

Complete the labels to show the energy transfers.

Choose from

**chemical**

**elastic potential**

**electrical**

**kinetic**

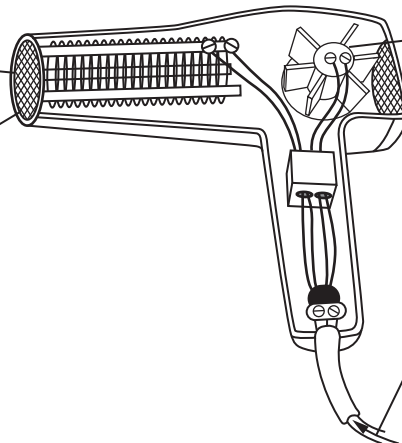
**nuclear**

**sound**

**thermal**

The air inside the hair dryer is hot. It has ..... energy.

The air leaving the hair dryer makes a noise. It has ..... energy.



The motor turns showing it has ..... energy.

The hair dryer is supplied with ..... energy.

[2]



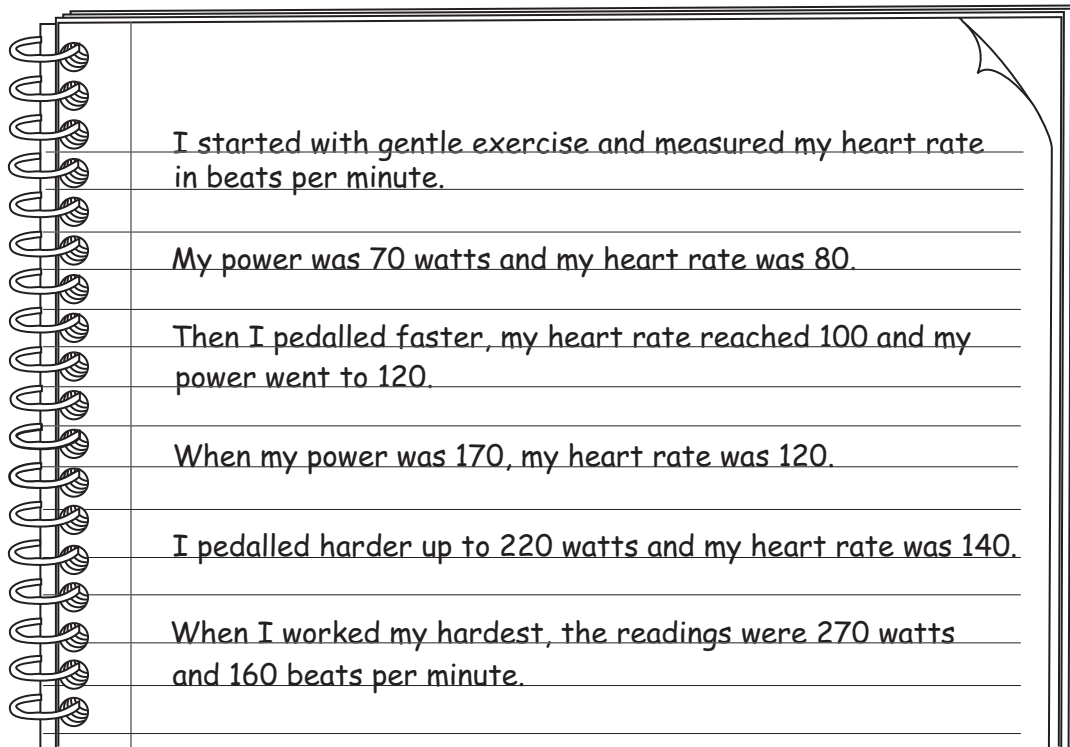
7 Jamila uses an exercise bicycle to improve her fitness.

She measures her power and her heart rate as she cycles.

(a) Write down one **other** piece of data she could collect to measure her fitness.

..... [1]

(b) Read Jamila's notes carefully.



Draw a table to show Jamila's results, including the correct units.

[3]

8 Aiko and Mike want to make the salt copper sulfate.

They react copper oxide with an acid.

(a) (i) What is the name of the acid they use?

..... [1]

(ii) What type of reaction takes place?

Circle the correct reaction.

**burning**

**condensation**

**fermentation**

**neutralisation**

**oxidation**

[1]

(b) The sentences **A–F** describe the method they use.

They are in the wrong order.

**A** The filtrate is left for several days for the crystals to grow.

**B** The filtrate is heated until the first crystals appear.

**C** The reaction mixture is filtered to remove the excess copper oxide.

**D** Excess copper oxide is added to the acid.

**E** The filtrate is put into an evaporating dish.

**F** The reaction mixture is heated carefully for three minutes.

Fill in the boxes to show the correct order.

One box has been done for you.

			<b>E</b>		
--	--	--	----------	--	--

[2]

(c) Look at sentence **F**.

Write down **one** safety precaution Aiko and Mike should obey.

..... [1]

9 Yuri investigates the time it takes for different sized parachutes to fall to the ground.



He records his results in a table

area of parachute in cm <sup>2</sup>	time for parachute to fall to the ground in seconds		
	test 1	test 2	test 3
50	1.7	1.5	2.8
113	3.0	3.6	3.3
201	6.2	6.3	6.7
314	9.5	9.9	10.0

(a) Calculate the average (mean) time for the parachute with the largest area.

average (mean) time = ..... seconds [1]

(b) There is **one** anomalous result in the table.

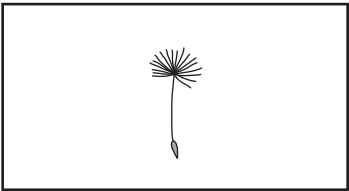
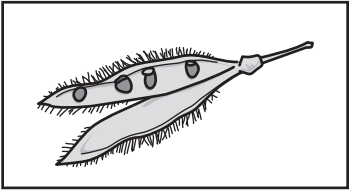
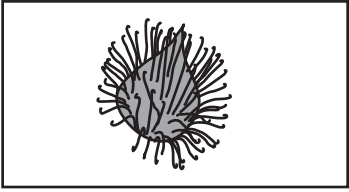

Circle the anomalous result. [1]

(c) What do the data tell Yuri about the relationship between the area of the parachute and the air resistance?

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

10 The diagrams show four different fruits and four methods of dispersal.

(a) Draw straight lines to match each **fruit** to its correct **method of dispersal**.

fruit	method of dispersal
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">animal dispersal</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">explosive self-dispersal</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">water dispersal</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">wind dispersal</div>

[3]

(b) Give a reason why plants need to disperse their fruits and seeds.

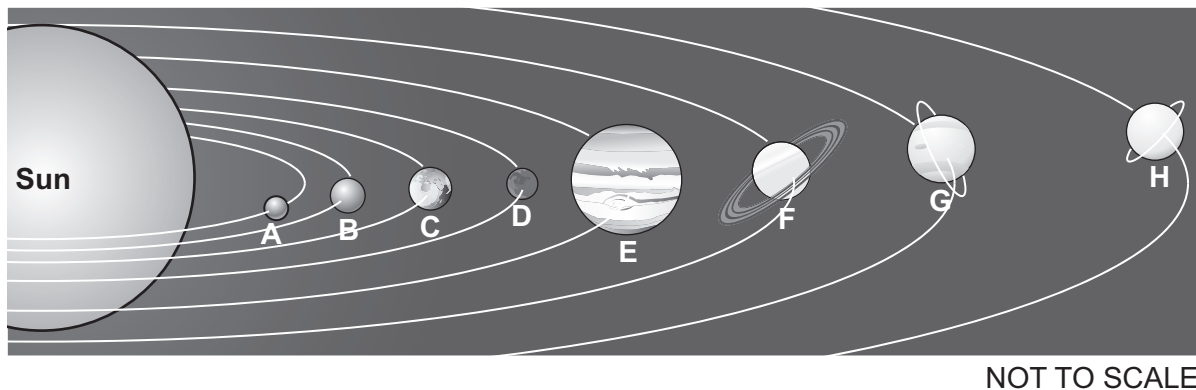
..... [1]

11 Hydrated oxide of iron (rust) forms when iron and steel are left exposed outside.

Which two other chemicals are required for iron and steel to rust?

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

12 Look at the diagram of the Sun and eight planets.



(a) Planet **C** is the Earth.

There are two planets with a **smaller** orbit than the Earth.

Write down the letters of these two planets.

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

(b) What are the names of planets **A**, **D** and **F**?

**A** .....

**D** .....

**F** ..... [1]

(c) Complete the sentence.

Choose the letter from the list.

**A      B      C      D      E      F      G      H**

The planet that takes the **shortest** time to orbit the Sun is ..... [1]

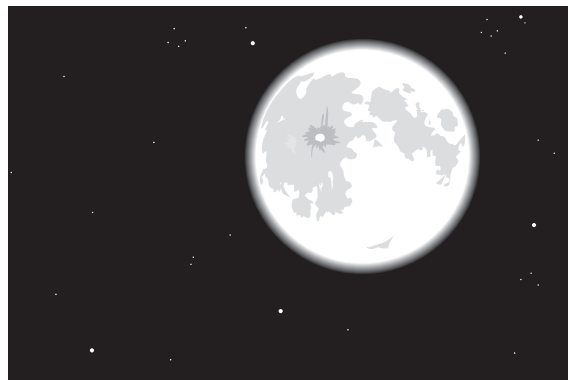
13 (a) Here is some information about objects in the universe.

name	type of object	is it a source of light?
Sirius	star	.....
Earth	planet	.....
Venus	planet	.....
Pallas	asteroid	.....
Canopus	star	.....

Complete the table by writing **yes** or **no**.

[2]

(b) We can see the Moon.



Complete the sentence.

The Moon can be seen from the Earth because light from the Sun is

.....

[1]

14 There are two different types of energy sources.

(a) One type of energy source **cannot** be replaced once it is used up.

What is the name of this type of energy source?

..... [1]

(b) Circle the two energy sources from the list that **cannot** be replaced once they are used up.

**biomass**

**coal**

**crude oil (petroleum)**

**geothermal**

**solar**

**wind**

[1]

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