Cambridge Secondary 1 Checkpoint

Cambridge International Examinations
Cambridge Secondary 1 Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

9627913219

SCIENCE **1113/01**

Paper 1 **April 2016**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Pen Pencil Ruler Calculator

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.

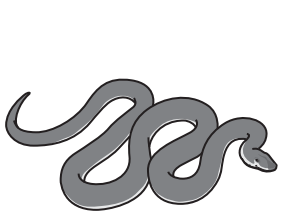
Answer **all** questions.
You should show all your working in the booklet.

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.

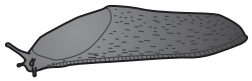
This document consists of **14** printed pages and **2** blank pages.

1 The diagram shows four animals found living near a field of cabbage plants.

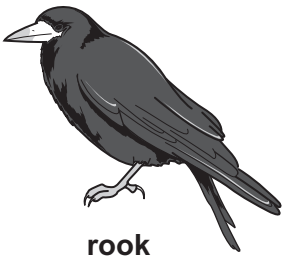
The animals all belong to the same food chain but are not in the correct order.



snake



slug



rook

toad

Read the following information to help you to work out the food chain.

- **Rooks** have no predators and are the top carnivores in this food chain.
- **Slugs** are herbivores and are the main prey of **toads**.
- **Cabbages** are producers and make food for the food chain.
- The energy for the food chain is provided by sunlight.
- **Snakes** are predators of **toads**.

(a) Write the names of the organisms in the spaces in the correct order to finish the food chain.

sunlight → ..... → ..... → **toad** → ..... → .....

[2]

(b) What is the number of **trophic levels** in this food chain?

..... [1]

(c) When organisms die, their bodies become food for decomposers.

Give an example of a decomposer and explain why decomposers are important.

example of a decomposer .....

why decomposers are important .....

..... [2]

2 Look at the information about six different rocks.

rock	description of rock	how rock was formed
A	large crystals of different colours	liquid rock (magma) cooled slowly underground
B	black with small crystals	liquid rock (lava) from an erupting volcano cooled rapidly above ground
C	black with lots of thin layers	mudstone was changed by high pressure
D	white hard solid	limestone was changed by heat and high pressure
E	yellow and crumbles into sand	layers of sand were compressed
F	white and grey hard solid	chalk was changed by heat and high pressure

(a) Rocks **A** and **B** both formed from cooling liquid rock.

(i) What type of rock are **A** and **B**?

.....

[1]

(ii) The crystals in rock **A** are **larger** than in rock **B**.

Suggest a reason why.

.....

.....

[1]

(b) Which rock is a **sedimentary** rock?

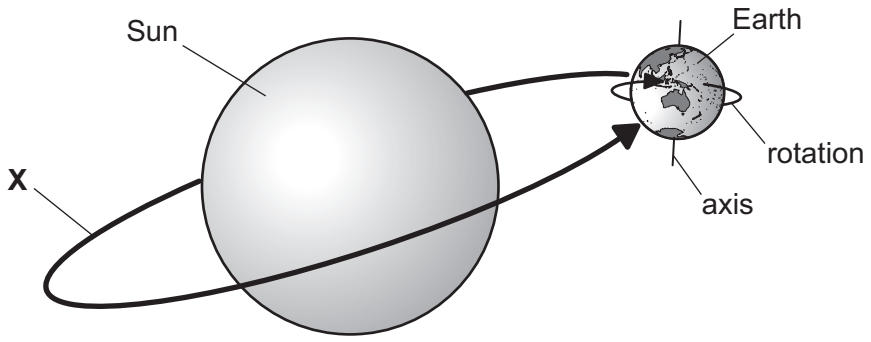
Choose from **C**, **D**, **E** or **F**. ..... [1]

(c) Rock **E** contains the remains of organisms that lived millions of years ago.

What word is used to describe these remains? ..... [1]

[Turn over

3 Look at the diagram of the Sun and the Earth.



NOT TO SCALE

(a) Write down the name of path **X**.

.....

[1]

(b) The Earth turns on its own axis.

How many hours does it take the Earth to complete one rotation?

..... hours [1]

(c) Complete the sentence.

Choose the **best** answer from the list.

an absorber of light

a reflector of light

a refractor of light

a source of light

The Sun is ..... . [1]

(d) Complete the sentence.

Choose the **best** answer from the list.

absorbed by its surface

emitted by its surface

reflected by its surface

refracted by its surface

A planet is seen because light is ..... . [1]

4 This question is about the changes that take place during puberty and adolescence.

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

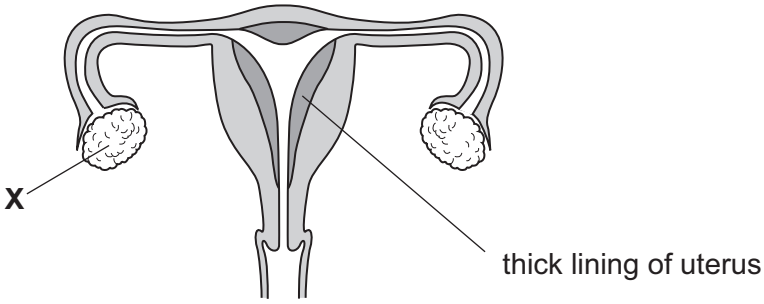
(a) Describe **one** visible sign of puberty which occurs in **both** males and females.

.....

[1]

(b) Look at the diagram.

It shows the reproductive system of a woman.



(i) What is the name of the organ labelled **X**?

.....

[1]

(ii) One function of organ **X** is to release chemicals which help to control fertility.

What is the **other** function of organ **X**?

.....

[1]

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

(i) What is the purpose of this lining?

.....

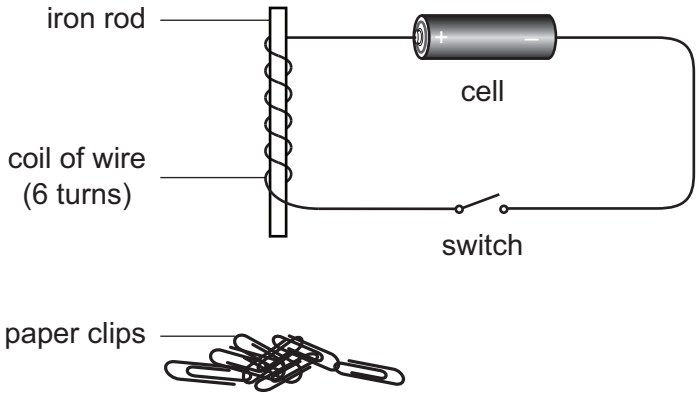
[1]

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

.....

[1]

5 Lily makes an electromagnet as shown.



Lily uses the electromagnet to pick up paper clips.

(a) Lily predicts:

"Increasing the number of turns of wire around the iron rod will make it stronger."

This prediction does not explain what is stronger.

Complete the sentence to explain what is stronger.

Increasing the number of turns of wire around the iron rod will make .....

..... [1]

(b) Lily does the investigation.

Look at her results.

number of turns	number of paper clips picked up
2	0
4	2
6	4
8	5

Is Lily's prediction correct?

Explain your answer.

.....

..... [1]

(c) Lily wants to improve the investigation.

Describe what Lily could do to improve the investigation.

.....

..... [1]

6 Safia investigates endothermic and exothermic reactions.

She mixes different chemicals together and records the temperature change.

(a) Complete her table of results by

- calculating the change in temperature for water mixed with ammonium nitrate
- writing either endothermic or exothermic in the last column.

chemicals being mixed	temperature at start in °C	temperature at end in °C	change in temperature in °C	endothermic or exothermic reaction
ethanoic acid + sodium carbonate	19	15	–4	.....
hydrochloric acid + sodium carbonate	19	23	+4	.....
water + ammonium nitrate	19	14	.....	.....

[2]

(b) The reaction between hydrochloric acid and sodium carbonate is an example of neutralisation.

This neutralisation reaction forms a salt, a gas and a colourless liquid.

Write down the names of the **three** products of this reaction.

1 .....

2 .....

3 ..... [3]

7 Oliver always beats Mike at computer games.

Oliver says that this is because his nervous system works faster than Mike's.

They find a computer program which records how long it takes a person to press a key when the screen changes colour.

They each do the test four times. Their results are shown in the table.

Oliver's data in the table is incomplete.

	time taken to press a key after the screen changes colour in seconds				**total time in seconds**	**average time in seconds**
	1st trial	**2nd trial**	**3rd trial**	**4th trial**		
Mike	0.32	0.26	0.28	0.30	1.16	0.29
Oliver	0.30	0.26	0.26	0.42	.....	.....

(a) (i) Calculate the total time Oliver took to do his four trials.

Write your answer in the table.

[1]

(ii) Use your result for **(a)(i)** to find Oliver's average time for the four trials.

Write your answer in the table.

[1]

(iii) Do the results support Oliver's idea that his nervous system works faster than Mike's?

.....

Give a reason for your answer.

..... [1]

(b) Oliver says that his trials contain an **anomalous** result.

(i) Explain what Oliver means by an anomalous result.

.....

.....

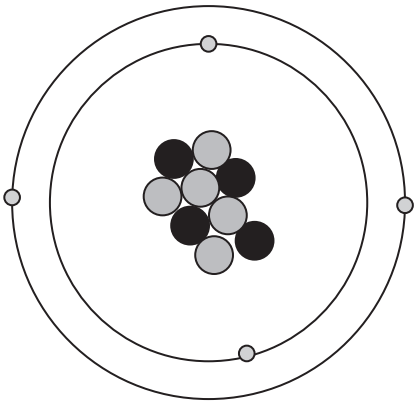
Which of Oliver's results is anomalous?

..... [2]

(ii) Suggest what Mike and Oliver should do to make their results more reliable.

..... [1]

8 Look at the diagram of a beryllium atom.



(a) (i) How many **electrons** are in the atom?

..... [1]

(ii) How many **neutrons** are in the atom?

..... [1]

(b) Write down the chemical symbol for beryllium.

..... [1]

(c) Lithium is the third element in the Periodic Table.

Beryllium is the fourth element.

Lithium has fewer neutrons than beryllium.

Describe **two other** ways in which the structure of a lithium atom is **different** from a beryllium atom.

1 .....

2 ..... [2]

(d) Which one of these scientists did research on the structure of an atom?

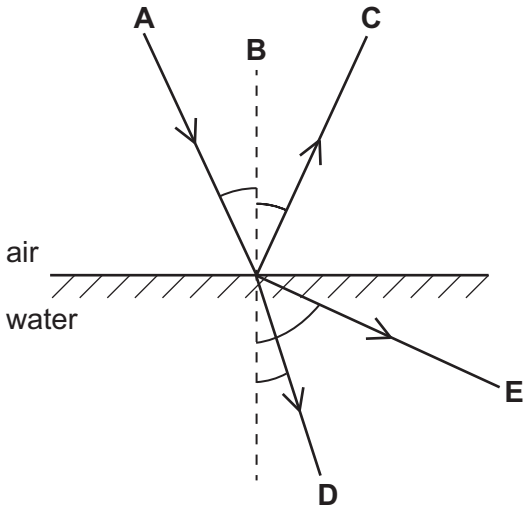
Circle the correct answer.

Darwin **Galileo** **Newton** **Rutherford**

[1]

9 Light is reflected by water.

The diagram shows some paths the ray of light may take.



(a) Which letter shows the reflected ray of light?

A **B** **C** **D** **E**

letter ..... [1]

(b) The law of reflection is about the angle of incidence (i) and the angle of reflection (r).

Circle the correct sentence.

i is always larger than r

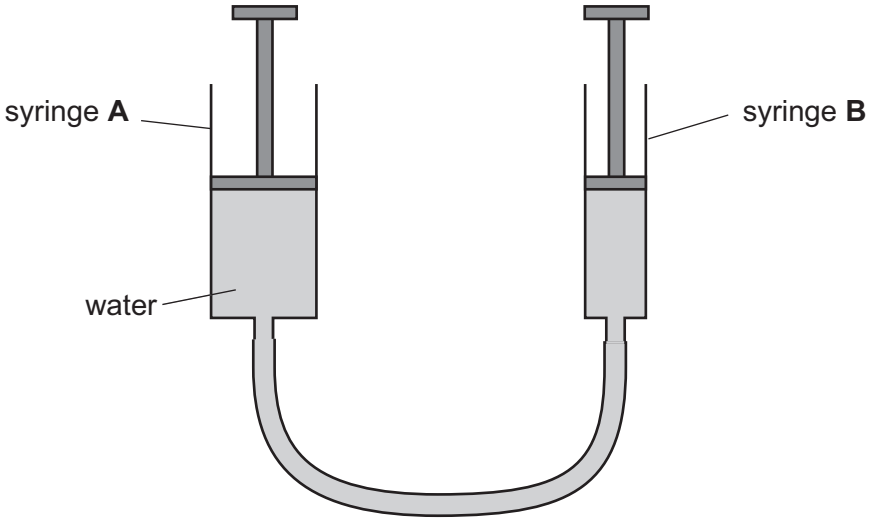
i is always the same as r

r is always larger than i

r is sometimes larger than i

[1]

10 Carlos does an experiment on pressure.



The two syringes are filled with water.

Syringe **A** has a cross-sectional area of 2 cm^2.

Carlos pushes the plunger down with a force of 10 N.

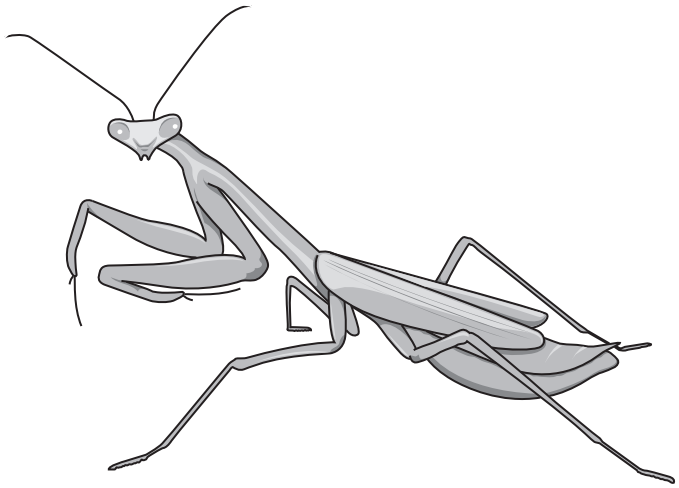
Calculate the pressure in the syringe.

You should include your working and the units.

pressure = ... unit ..... [3]

11 The diagram shows a leaf insect called a mantis.

Its body is bright green and it has two large eyes at the front of its head.



(a) A mantis is an **insect**.

Explain **two** ways you can tell this from the diagram.

1 .....

2 ..... [2]

(b) Scientists think that leaf insects evolved by a process called natural selection.

(i) Name the scientist who introduced the theory of natural selection.

..... [1]

(ii) Read these sentences about natural selection.

A Advantageous features were passed to the next generation of insects.

B Over generations some of the insects developed into a new species.

C Some insects looked more like leaves than others.

D The best adapted insects survived and reproduced.

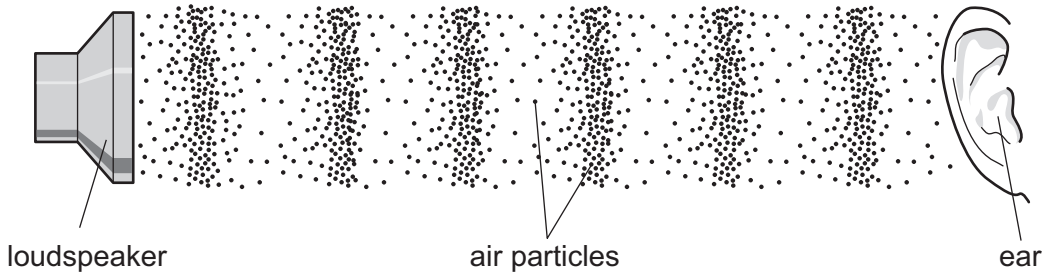
Write the letters of the sentences in order so that they describe natural selection.

One has been done for you.

		A	

[2]

12 Sound is made by a loudspeaker.



The air particles move.

(a) What does the loudspeaker do to make sound?

Complete the sentence.

Choose the **best** word from the list.

turns **twists** **vibrates** **waves**

The loudspeaker ..... . [1]

(b) The air particles move.

Complete the sentence.

Choose the **best** word from the list.

compression **reflection** **refraction** **vibration**

When air particles are close together it is called a ..... . [1]

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