

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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SCIENCE

1113/01

Paper 1

April 2018

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 **16** printed pages.



1 Different cells have different functions.

Draw lines from the **cell function** to the correct **type of cell**.

Draw **four** lines only.

cell function

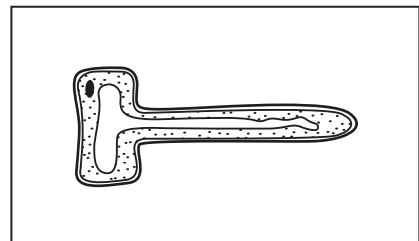
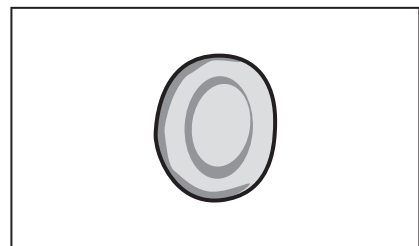
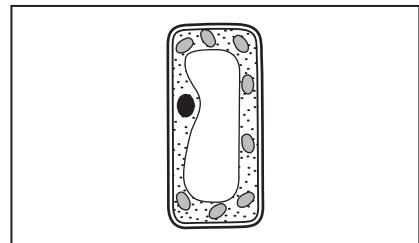
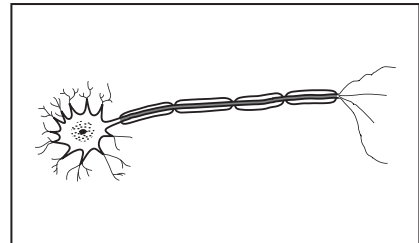
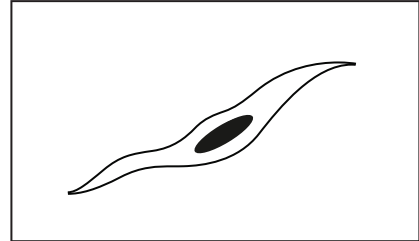
type of cell

absorbs water and mineral salts

contracts to cause movement

transports oxygen around the body

uses light energy to make food



[4]

2 Draw a line from the **type of energy** to its **description** and **example**.

One has been done for you.

description	type of energy	example
also called heat energy	chemical	a fire
also called radiant energy	kinetic	a boy talking
energy of moving objects	light	the Sun
energy released by vibrating objects	sound	a girl running
stored energy	thermal	food

```
graph LR; D1[also called heat energy] --- TE1[chemical]; D2[also called radiant energy] --- TE2[light]; D3[energy of moving objects] --- TE3[kinetic]; D4[energy released by vibrating objects] --- TE4[sound]; D5[stored energy] --- TE5[thermal]; TE1 --- E1[a fire]; TE2 --- E2[a boy talking]; TE3 --- E3[the Sun]; TE4 --- E4[a girl running]; TE5 --- E5[food];
```

[4]

3 Mike investigates different rocks.

He uses different objects to try and scratch the surface of the rocks.

Mike records his observations in a table.

rock	is the rock scratched by			
	finger nail	copper coin	knife blade	steel file
A	yes	yes	yes	yes
B	no	no	yes	yes
C	no	no	no	no
D	no	no	no	yes
E	no	yes	yes	yes

(a) A rock can only be scratched by a substance that is harder than the rock.

Which rock is the **softest**?

Choose from **A, B, C, D** or **E**.

.....

[1]

(b) Mike finds this information about the hardness of rocks.

relative hardness	scratch test
1	easily scratched by finger nail
2	scratched by finger nail
3	scratched by copper coin
4	easily scratched by knife blade
5	scratched by knife blade
6	scratched by steel file
7	scratches glass
8	scratches quartz
9	easily scratches quartz
10	cannot be scratched

Use the information to answer these questions.

(i) What is the relative hardness of rock **E**?

..... [1]

(ii) A rock can be scratched with a steel file.

This rock will not scratch glass.

What is the relative hardness of this rock?

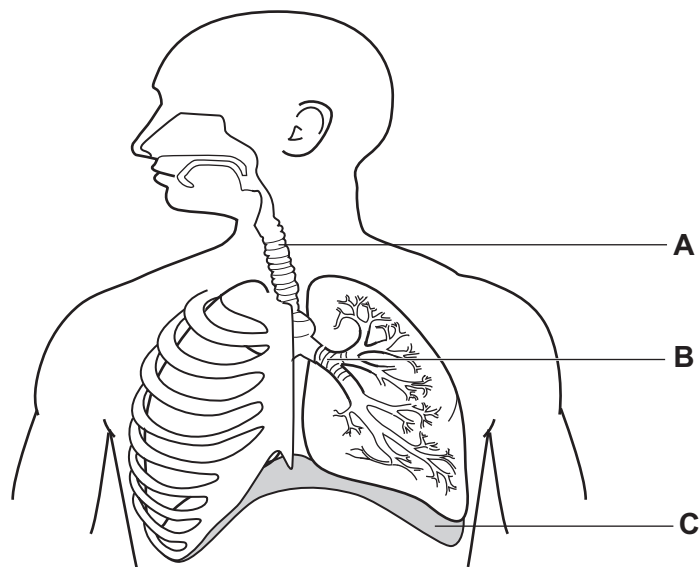
..... [1]

(c) Rocks form in different ways.

Which type of rocks form when lava from a volcano cools down?

..... [1]

4 The diagram shows part of the human respiratory system.



Name the structures labelled **A**, **B** and **C**.

Choose words from the list.

air sac bronchus diaphragm lung rib cage trachea

A

B

C

[3]

5 There are many different types of chemical reaction.

Complete the sentences about types of reaction.

Choose words from the list.

burning

displacement

endothermic

exothermic

fermentation

neutralisation

(a) The reaction between an acid and an alkali is called [1]

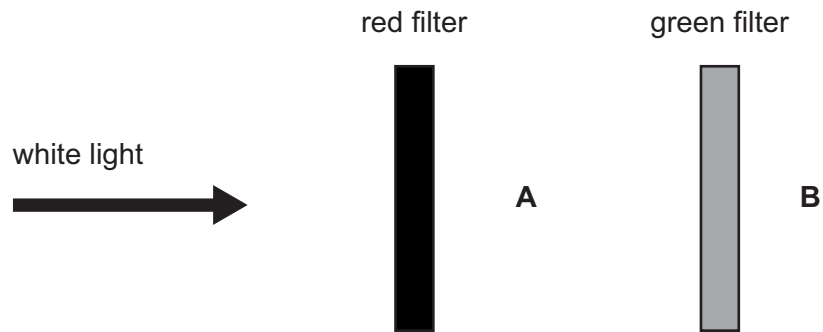
(b) The reaction between iron and copper sulfate to form iron sulfate and copper is called
..... [1]

(c) When baking powder reacts with vinegar the mixture gets colder.

This is because the reaction is [1]

6 Yuri investigates light and coloured filters.

(a) He shines white light through a red filter and then a green filter.



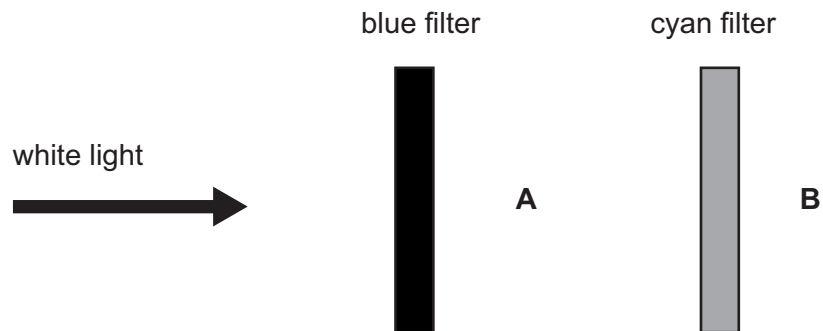
What is the colour of the light at **A** and at **B**?

A

B

[2]

(b) He shines white light through a blue filter and then a cyan filter.



What is the colour of the light at **A** and at **B**?

A

B

[2]

7 The table shows the masses and heart rates of eight mammals.

mammals	body mass in grams	heart rate in beats per minute
whale	120 000 000	20
elephant	5 000 000	30
horse	1 200 000	44
human	90 000	60
monkey	5 000	192
cat	2 000	150
rabbit	1 000	205
hamster	60	450

(a) (i) Describe the general pattern shown by these results.

.....
 [1]

(ii) Which mammal does not follow this general pattern?

Explain your answer.

.....
 [2]

(iii) Suggest a better way of presenting the data so that the pattern is more obvious.

..... [1]

(b) Jamila finds this information on the internet.

A chicken with a body mass of 1500g has a heart rate of 275 beats per minute.

The information for the chicken does not fit with the general pattern for mammals.

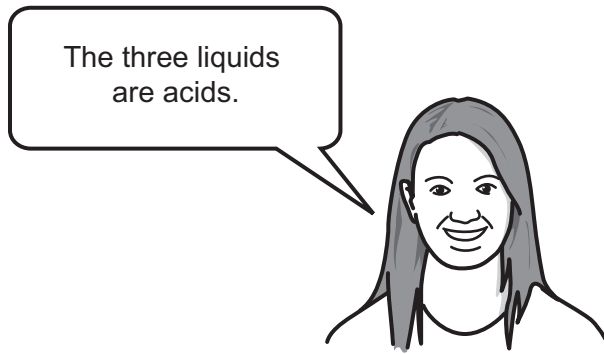
Suggest why.

.....
 [1]

8 Mia collects three liquids found in her kitchen.

- coffee
- tea
- cleaning fluid

Mia then makes this statement about the substances.



(a) Mia's friend Carlos tells her she has no evidence for her statement.

Why is it important to have evidence to back up a scientific statement?

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

(b) Describe how Mia uses an indicator to collect evidence for her statement.

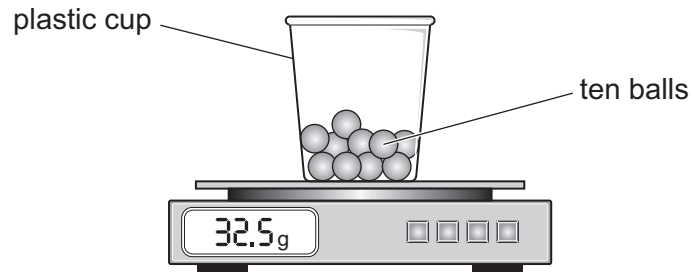
Include the

- name of the indicator
- result she gets if the liquids are acids.

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

9 Safia wants to find the density of a small ball.

(a) She measures the mass of a plastic cup containing **ten** identical balls.



(i) The plastic cup has a mass of 2.5g.

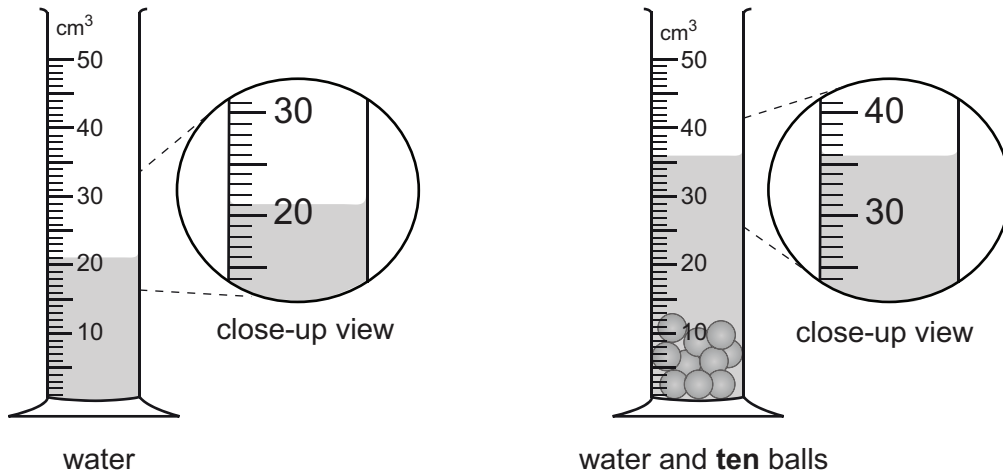
What is the mass of **one** ball?

.....g [1]

(ii) Why does Safia use **ten** identical balls?

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

(b) Safia measures the volume of the **ten** identical balls.



Complete the measurements to find the volume of **one** ball.

The volume of water in the measuring cylinder is cm³.

The volume of the water and **ten** balls in the measuring cylinder is cm³.

The difference in volume between these two readings is cm³.

The volume of **one** ball is cm³.

[2]

(c) Calculate the density of a ball.

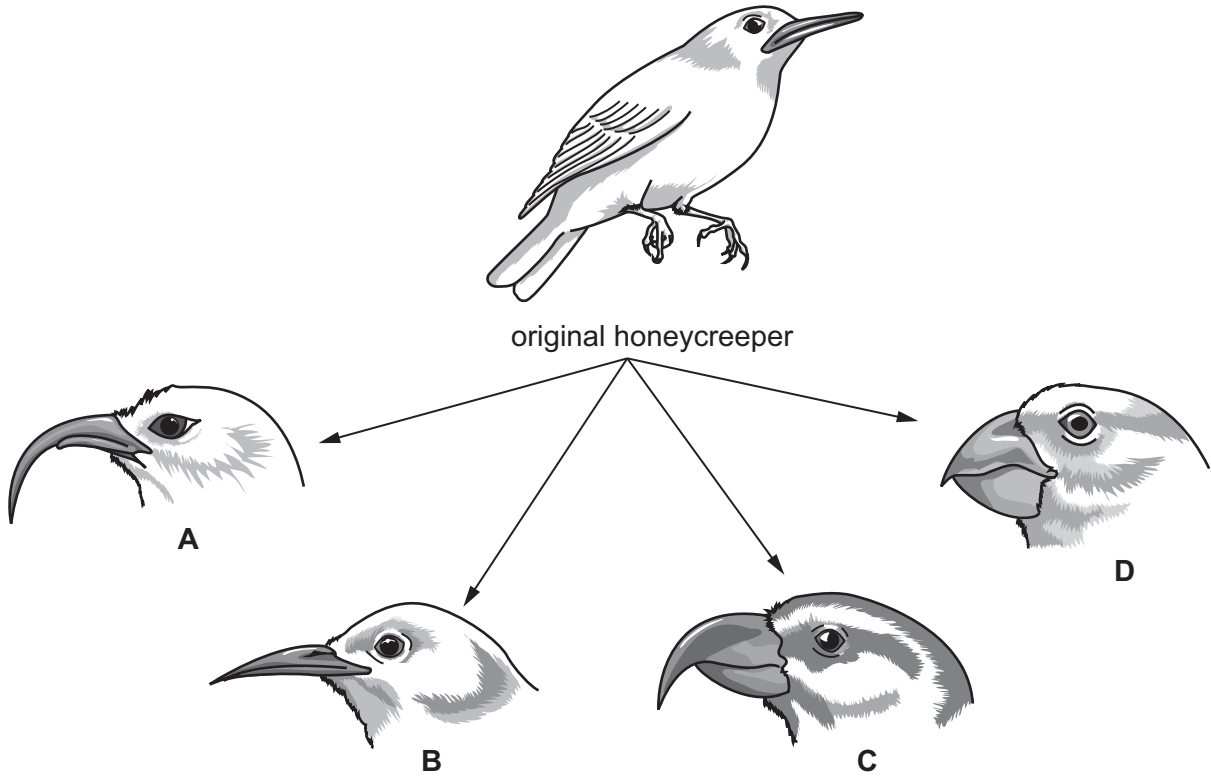
Use your answers for mass in part (a) and volume in part (b) to calculate the density.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

The density of the ball is g/cm³

[1]

10 The islands of Hawaii are home to around 40 species of birds called honeycreepers. They have descended from an original species of honeycreeper which is now extinct. Look at the diagram. It shows five species of honeycreeper.



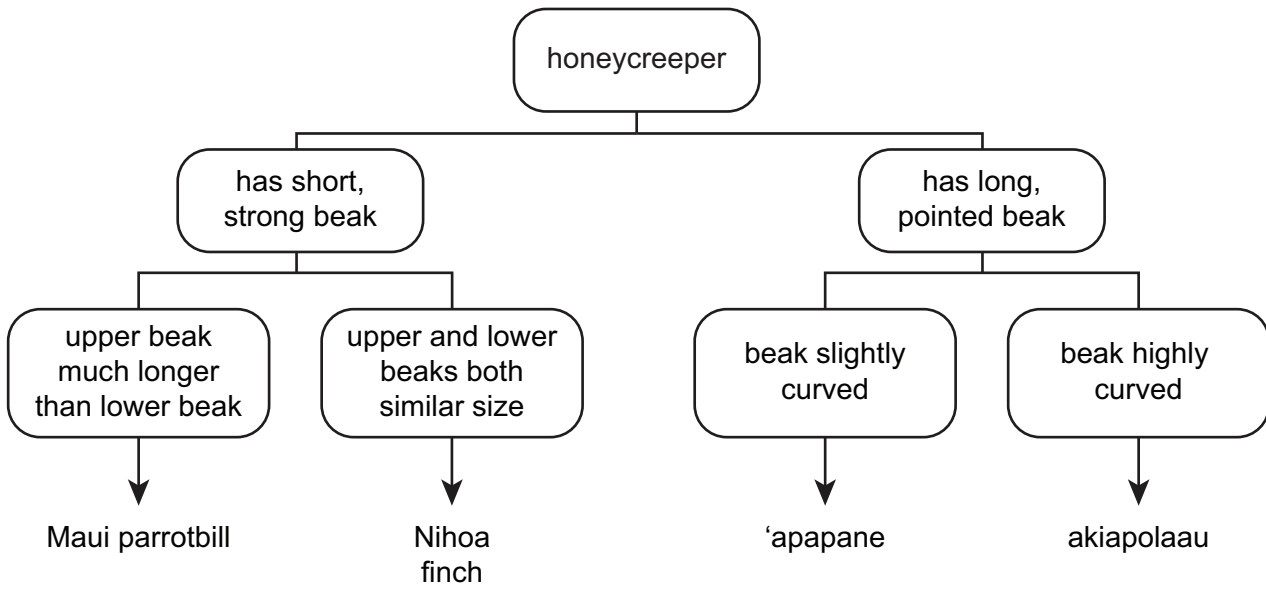
(a) (i) Which process causes the gradual change from one species to another?

..... [1]

(ii) Name the scientist who developed the theory to explain how this process could happen.

..... [1]

(b) This key can be used to identify four species of honeycreeper.



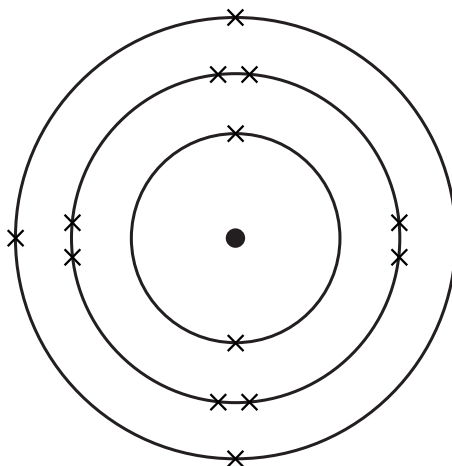
Use the key to identify species **A** and species **D**.

species **A**

species **D**

[2]

11 The diagram shows the atomic structure of aluminium.



(a) How many electrons are there in one atom of aluminium?

..... [1]

(b) Which scientist discovered the structure of the atom?

Circle the correct answer.

Darwin

Einstein

Pasteur

Rutherford

[1]

(c) In which group of the Periodic Table is aluminium found?

..... [1]

(d) Aluminium is used in the circuit boards and batteries of mobile phones.

Use ideas about properties to explain why.

.....
 [1]

(e) Aluminium burns in air to form a compound.

What is the name of this compound?

..... [1]

12 The lizard loses thermal (heat) energy and gains thermal (heat) energy.

Complete the labels to show the energy transfers taking place.

Choose from the following words.

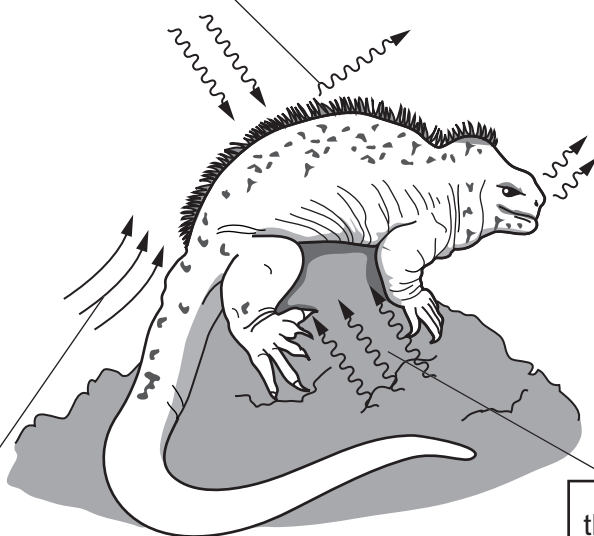
conduction

convection

radiation

[2]

thermal energy lost from surface of skin by
.....



thermal energy lost by air movements by
.....

thermal energy gained from rock by
.....

13 Metal carbonates react with acids.

A salt and two other chemicals are made.

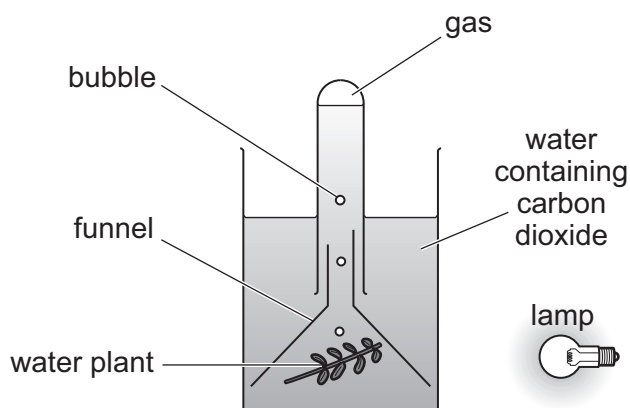
Name the two **other** chemicals made.

..... and

[2]

14 Oliver investigates the effect of light on photosynthesis.

Oliver is given the apparatus shown.



Write down two **variables** which Oliver needs to control during his investigation.

1

2

[2]

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