EXAMINATIONS COUNCIL OF ESWATINI
Eswatini Primary Certificate

CANDIDATE NAME	

CENTRE NUMBER					CANDIDATE NUMBER			

SCIENCE **513/02**

Paper 2 **October/November 2022**

1 hour 30 minutes

Candidates answer on the Question Paper.

No additional materials required

READ THESE INSTRUCTIONS FIRST

Write your name, Centre number and candidate number in the spaces provided.
Write in dark blue or black ink in the spaces provided on the Question Paper.
You may use an HB pencil for any diagrams, graphs, tables, or rough working.
Do **not** use staples, paper clips, highlighters, or correction fluid.

There are **two** sections.
Section **A**
Answer **all** questions.
Section **B**
Answer **one** question.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 60.

For Examiner's use	
Section A	
1	
2	
3	
4	
5	
Section B	
6	
7	
Total	

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

SECTION A

1 **(a)** The list below shows examples of some living things.

lion	**spinach**	**rabbit**	**grass**	**tree**	**fish**

(i) State any **two** characteristics of the organisms above that may be used to identify them as living things.

1……

2…….. [2]

(ii) Complete the table below to classify the organisms into the two groups of living things.

group		
examples		

[3]

(b) Some living things have leaves. Fig. 1.1 shows the structure of a leaf.

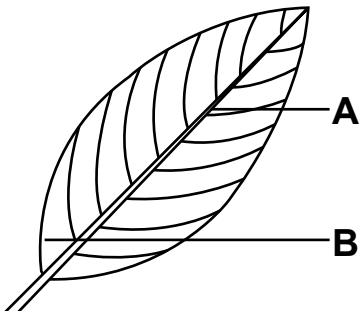


Fig. 1.1

Name the parts labelled **A** and **B** on Fig. 1.1.

A……

B……[2]

(c) Fig. 1.2 shows a leaf that is used to investigate the need for light in photosynthesis.

Part **D** is covered with aluminium foil.
The leaf is left in sunlight for six hours.

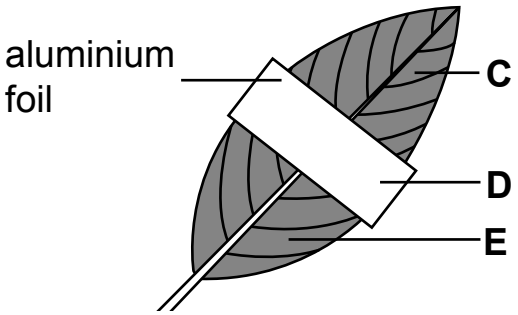


Fig. 1.2

State the colours observed in the areas **C**, **D** and **E** in Fig. 1.2 when the leaf is tested for starch.

C ……..…

……..

D ……..…

……..…

E ……..

……[3]

[Total: 10]

2 **(a)** Soap is an example of a base.

State **one** difference between an acid and a base.

……..……

…… [2]

(b) A mixture of salt, sugar and water can be used to help people suffering from a diarrhoea.

(i) Describe a mixture.

……..……

…… [2]

(ii) The salt and sugar are dissolved in the water.

Explain why this is a physical change.

……..... [1]

(c) The table below shows activities people do in their everyday life.

Fill in the table with the change of state that is involved in each activity.

activity	change of state
hanging washed clothes to dry	
making ice cubes for a party	
water droplets forming on the mirror after a hot shower	

[3]

(d) Air is a mixture of gases.

Describe the use of carbon dioxide and nitrogen in plant growth.

carbon dioxide……..…

……..……

nitrogen ……..……

……..……

[2]

[Total: 10]

3 **(a)** Fig. 3.1 shows different connections of a bulb to a cell.

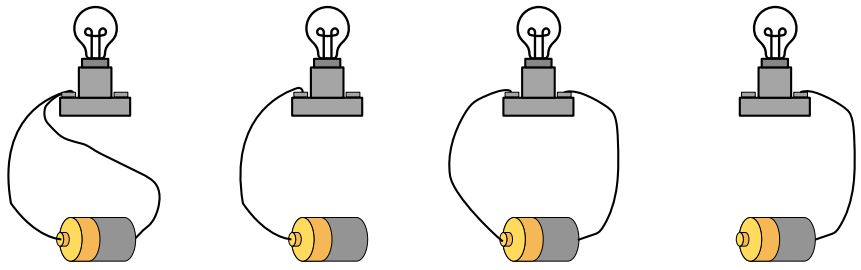


Fig. 3.1

(i) State the connection that will make the bulb light up.

…… [1]

(ii) Explain why the bulb in connection **J** will not give out light.

…… [1]

(b) Fig. 3.2 shows a learner combing her hair.

The comb is then brought near small pieces of paper.

The pieces of paper are attracted to the comb.

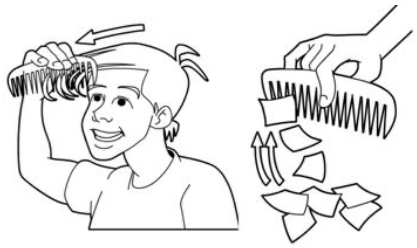


Fig. 3.2

(i) Name the type of electricity produced.

…… [1]

(ii) Explain why the pieces of paper are attracted to the plastic comb.

……..

……..……

……..... [2]

(c) Electricity can be used to heat water.

(i) State the energy conversions involved when boiling water using an electric kettle.

…….. [2]

(ii) Describe **one** way of conserving electrical energy at home.

……..…… [1]

(d) A learner investigates magnetic and non-magnetic materials.

He tests four bars **K**, **L**, **M**, and **N**.

He records his observations as shown below.

- One end of bar **K** attracts one end of bar **L**.
- The same end of bar **K** repels the other end of bar **N**.
- Both ends of bar **K** do not attract both ends of bar **M**.
- Nothing happens when bar **L** and **M** are brought closer to each other.

(i) Explain how the learner could tell which bar is a magnet from this investigation.

……

…… [1]

(iii) Name the non-magnetic bar from the investigation.

…… [1]

[Total: 10]

4 **(a)** The list shows some planets of the solar system.

Neptune	Mercury	Venus
	Uranus	
Jupiter		Earth

(i) Arrange the planets according to their distance from the sun starting with the one closest to it.

……

…… [2]

(ii) Name the largest planet from the list.

…… [1]

(b) The moon gives light at night and yet it is **not** a source of light.

Explain how the moon gives light at night.

……

…… [1]

(c) Name the movement of the earth that results in the four seasons.

…… [1]

(d) Skydiving is a sport where people jump off different heights above the earth and fall back to the ground as shown in Fig. 4.1.

Fig. 4.1

(i) Explain why skydivers fall to the ground.

…….... [1]

(ii) Name the form of energy possessed by the skydiver as he falls back to the ground.

…….... [1]

(iii) State what happens to the mass of the skydiver as he falls back to the ground.

…….... [1]

(e) A learner carries out an experiment to show that light travels in straight lines.

Fig. 4.2 shows the set-up of the experiment.

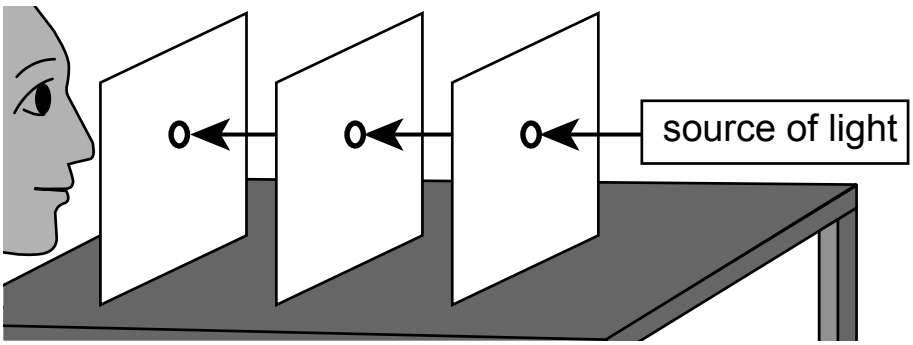


Fig. 4.2

(i) Name **one** possible source of light that the learner could use.

…….…….. [1]

(ii) Describe how the learner could ensure that the holes in the three pieces of cardboard are in line.

……..……..…… [1]

[Total: 10]

5 **(a)** Fig. 5.1 shows the human digestive system.

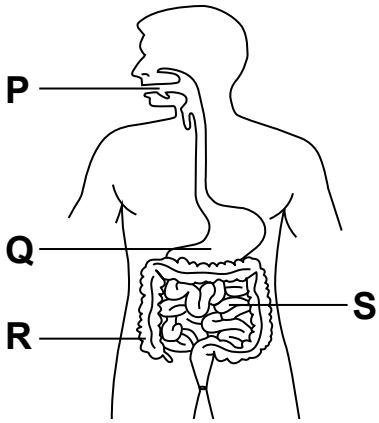


Fig. 5.1

(i) Define the term *digestion.*

……..……..…..……

……..…… [2]

(ii) State the letter which represents the stomach.

……..…..... [1]

(iii) State the letter that represents the part where mechanical digestion starts.

……..……..…… [1]

(iv) Name the end products of fat digestion found in the part labelled **S**.

……..……..…..…… [1]

(b) Technological advancements have improved different agricultural practices.

Fig. 5.2 shows an example of an irrigation system used in some sugarcane fields.

Fig. 5.2

(i) State **one** advantage of this type irrigation system.

……..…….…… [1]

(ii) State another technology used in farming and explain how it has changed people's lives.

technology……..……

explanation……..……

……..…….. [2]

(c) Cloning reproduction is the creation of a new organism which is identical to the parent.

(i) Name the type of reproduction that cloning can be classified into.

…..…….. [1]

(ii) Describe **one** disadvantage of cloning reproduction for humans.

…..…….. [1]

[Total: 10]

SECTION B

Answer **one** question in this section.

6 **(a)** Two learners set up apparatus to measure rainfall in the school garden.

Fig. 6.1 shows the instruments they used.

Fig. 6.1

(i) Name the instrument labelled **U**.

…… [1]

(ii) Name **one** precaution taken when using the instrument labelled **T**.

…… [1]

(b) While setting up the apparatus, the learners find a shiny metal ring.

- They debate whether it is made of silver or iron.
- They decide to find the density of the ring in order to find out what it is made of.
- They use a balance to measure the mass of the ring. They find it to be 16.2 g.

(i) Show by using an arrow line (→) on Fig. 6.2, the reading of 16.4 g. [1]

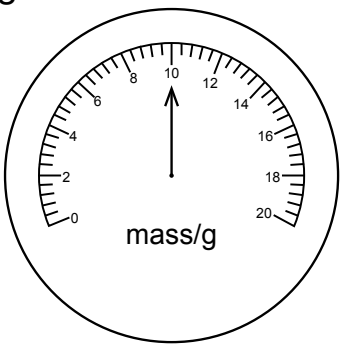


Fig. 6.2

(ii) Describe how they measure the volume of the ring.

……

……

……

…… [3]

(iii) The learners measure the volume of the ring to be 2 cm^3. Calculate the density of the ring.

…… [3]

The table below shows the density of metals of three metals taken from a science text book.

	copper	silver	iron
density (g/cm^3)	8.9	10.5	7.9

(iv) Using the table identify the name the metal used to make the ring.

…… [1]

[Total: 10]

7 **(a)** Fig. 7.1 shows a picture of a bumblebee.

Fig. 7.1

Use Fig. 7.1 to answer questions **(i)** and **(ii)**.

(i) State **one** feature that shows that bumblebees are arthropods.

……..…….... [1]

(ii) State a different feature that confirms that bumblebees are insects.

……..……. [1]

(iii) Bumblebees assist in flower pollination.

Explain **one** feature of the bumblebee in Fig. 7.1 that makes it a good agent of pollination.

……..……

……..…….... [2]

(b) Human beings breathe out air that has more carbon dioxide than inhaled air.

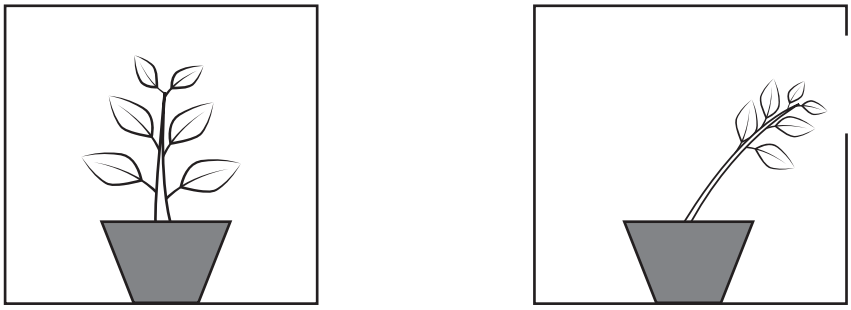
Describe how you would test exhaled air for the presence of carbon dioxide.

test……..…

result……..……..……

…… [2]

(c) Fig. 7.2 shows a plant that was placed in a box for ten days. The box had a hole on one side.



first day of investigation **ten days later**

Fig. 7.2

(i) Mark with letter **X**, on any of the boxes, to show the position of the hole. [1]

(ii) Name the stimulus that the plant is responding to during this investigation.

…… [1]

(iii) Describe how placing the plant in the box affects the rate of transpiration of the plant in Fig. 7.2.

……

……

…… [2]

[Total: 10]

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