EXAMINATIONS COUNCIL OF ESWATINI
Eswatini Primary Certificate Examination

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

SCIENCE **513/02**

Paper 2 **October/November 2023**

1 hour 30 minutes

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name in the spaces provided.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs and tables.

Do **not** use staples, paper clips, highlighter, glue or correctional fluid.

The number of marks is given in brackets [ ] at the end of each question or part question.

This paper consists of **two** sections:

Section A

Answer a**ll** 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 **16** printed pages.

For Examiner's Use

1 **(a)** A learner had a sore throat. The Science teacher made a salt solution for the learner to drink.

The teacher added 1 litre of warm water into a bowl and measured the temperature.

The teacher then added 5 grams of salt into the water.

(i) State the term used to describe the salt in the salt solution.

..... [1]

(ii) The volume of the water was 1 litre.

Define the term *volume*.

.....

..... [1]

(iii) The salt dissolved in the water to form a solution.

State **one** reason why dissolving of salt is a physical change.

.....

..... [1]

(iv) The teacher decided to add another 5 grams of salt into the solution.

Some of the salt remained undissolved.

Describe how the learner could separate all the salt from the mixture.

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.....

.....

.....

.....

..... [3]

(b) Balanced meals can be prepared using indigenous foods.

(i) State **three** indigenous foods that can be used to prepare a balanced diet.

.....

.....

..... [3]

For Examiner's Use

(ii) State why food must be digested after eating.

..... [1]

[Total marks: 10]

[Turn over

2 **(a)** Fig. 2.1 shows an electrical circuit built by two learners in the laboratory.

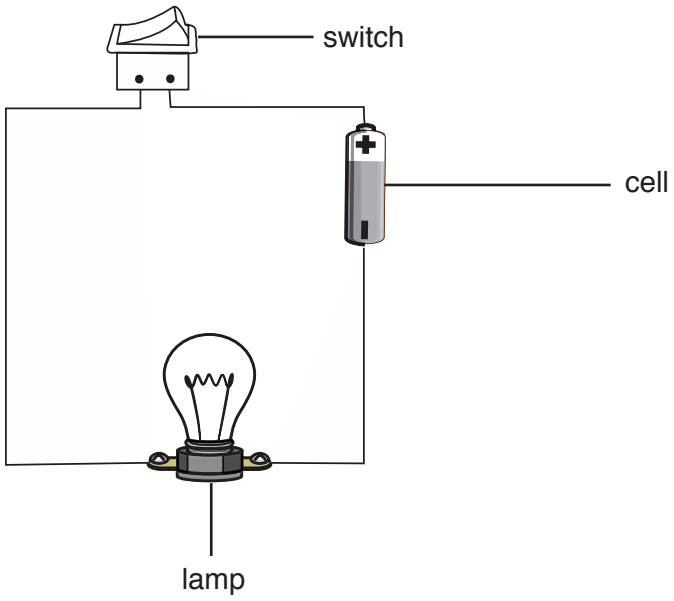

Fig. 2.1

(i) Name the form of electricity flowing in this circuit.

..... [1]

(ii) The switch in Fig. 2.1 is off.

Explain why the lamp will not give light**.**

.....

..... [1]

(iii) The lamp is an artificial source of light.

Name **one** natural source of light.

.....

..... [1]

(b) The switch in Fig. 2.1 is eventually switched on and the lamp gives white light.

Describe an experiment to show that the white light is made up of different colours.

.....

.....

.....

..... [2]

For Examiner's Use

(c) Electromagnets can be used to keep doors closed.

(i) Describe the construction of a simple electromagnet.

.....

.....

.....

.....

.....

..... [3]

(ii) Explain how an electromagnetic device can be changed to keep heavier doors closed.

.....

.....

.....

..... [2]

[Total marks: 10]

For Examiner's Use

3 **(a)** In Eswatini, we experience day and night.
Describe the causes of day and night in Eswatini**.**

.....

.....

.....

..... [2]

(b) Some weather features on Earth include temperature, rain and wind

(i) Name the instrument used to measure rainfall.

..... [1]

(ii) Explain why temperature changes seasonally.

.....

..... [2]

(iii) State why the moon is important in the solar system.

.....

..... [1]

(iv) Fig. 3.1 shows the different types of clouds.

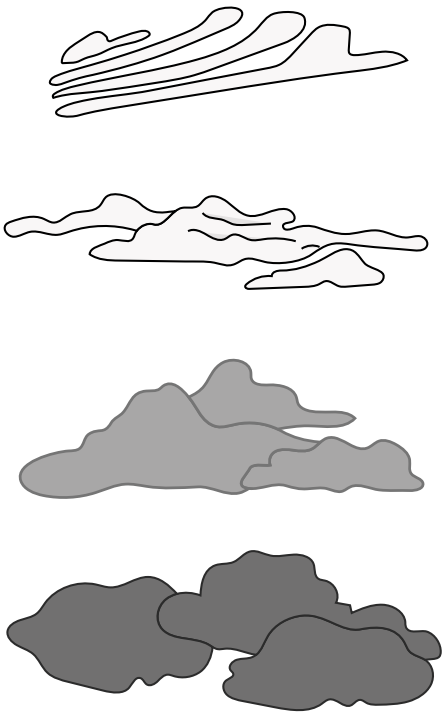

Fig. 3.1

On Fig. 3.1, use a label line and name the type of cloud that causes rainfall.

(v) The negative effects of weather include drought and floods.

Suggest how drought can affect people's lives.

.....

..... [1]

(c) Eswatini produces sugar for domestic use and export.

Suggest **one** possible common cause of land pollution in areas where sugar cane plants are grown and treated in large quantities.

..... [1]

[Total marks: 10]

4 **(a)** Fig. 4.1 shows a human skeleton.

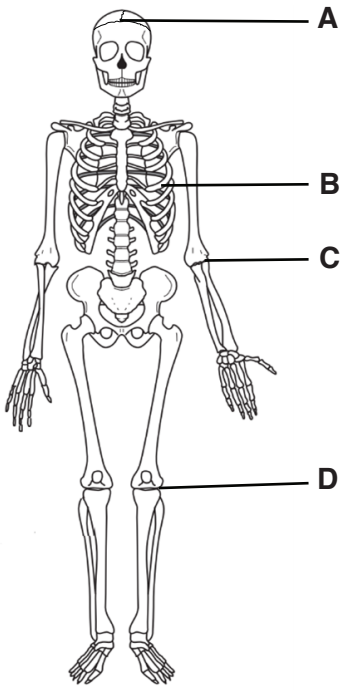

Fig. 4.1

(i) Write the letter in Fig. 4.1, that represents a fixed joint.

..... [1]

(ii) State the function of the part labelled **B** in Fig. 4.1.

..... [1]

(iii) Describe the role of muscles in upward movement of the human arm.

.....

.....

.....

..... [2]

(b) The lung is an example of an excretory organ in the human body.

(i) State **one** excretory product that is passed out through the lungs.

..... [1]

(ii) Describe the importance of excretion in the human body.

.....

.....

.....

..... [2]

(c) Fig. 4.2 shows the human alimentary canal.

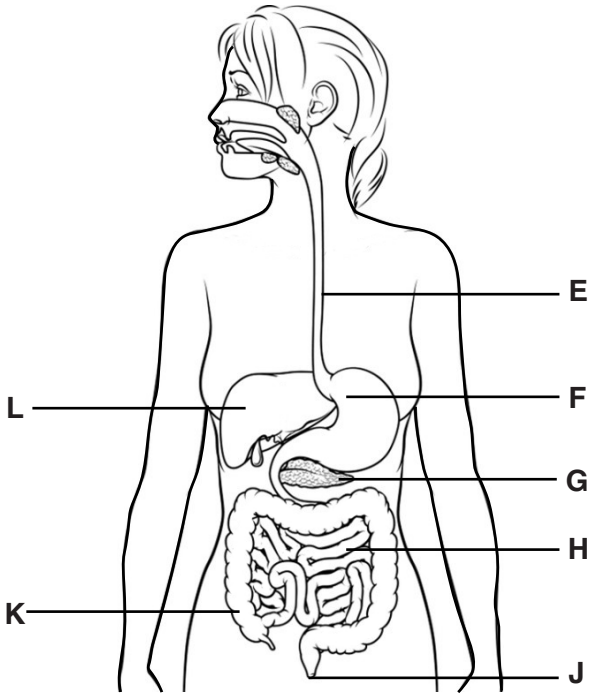

Fig. 4.2

(i) Name the part labelled **G** in Fig. 4.2

..... [1]

(ii) State the function of the part labelled **H** in Fig.4.2.

..... [1]

(d) Some of the nutrients needed by the body include calcium and iron.

State the function of iron in the body.

..... [1]

[Total marks: 10]

For Examiner's Use

5 **(a)** Fig. 5.1 shows some healthcare technologies that can be worn.

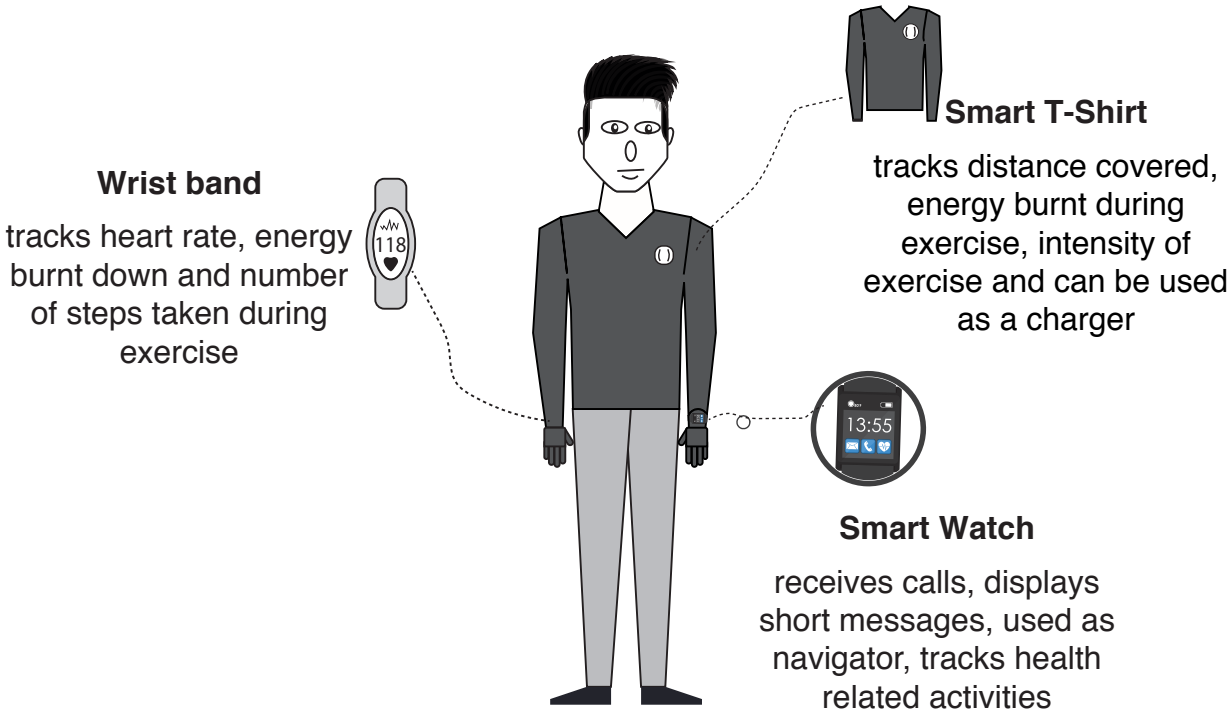

Fig. 5.1

(i) Describe *technology*.

..... [1]

(ii) Explain how the wrist band in Fig. 5.1 helps users improve their health.

..... [1]

(iii) State **one** disadvantage of using the Smart T-shirt shown in Fig. 5.1.

..... [1]

(b) Technology can also be used in entertainment and communication.

(i) Name **one** technology used in entertainment

..... [1]

(ii) Identify dangers associated with a named technology in communication.

technology..... [1]

danger..... [1]

For Examiner's Use

(c) A wind mill is a technology that can be used to pump water from underground. Fig. 5.2 shows a wind mill.

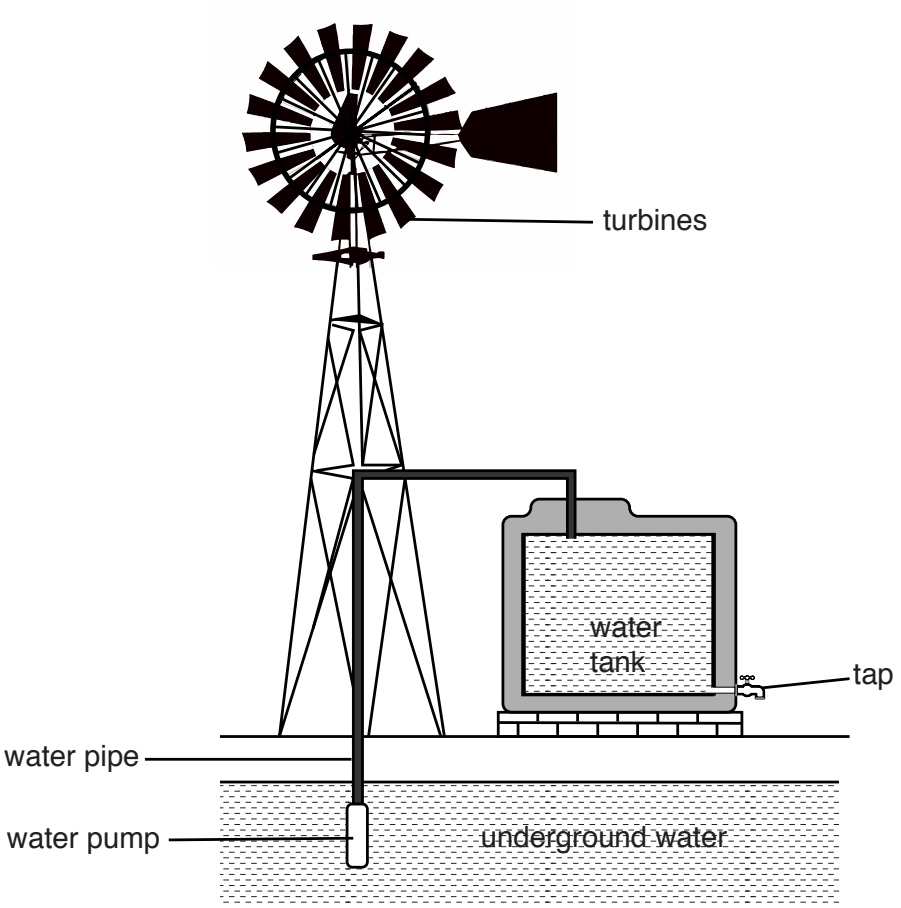

Fig. 5.2

(i) When the tap in Fig. 5.2 is open, the water in the tank flows out.

State the energy possessed by the water just before and as it moves out of the tank.

before coming out..... [1]

as water moves out..... [1]

(ii) Explain why it is better to use wind to pump out the water instead of using electricity produced from coal.

.....

.....

.....

..... [2]

[Total marks: 10]

For Examiner's Use

SECTION B

Answer **one** question in this section.

6 **(a)** A learner separated water and sugar using the equipment shown in Fig. 6.1.

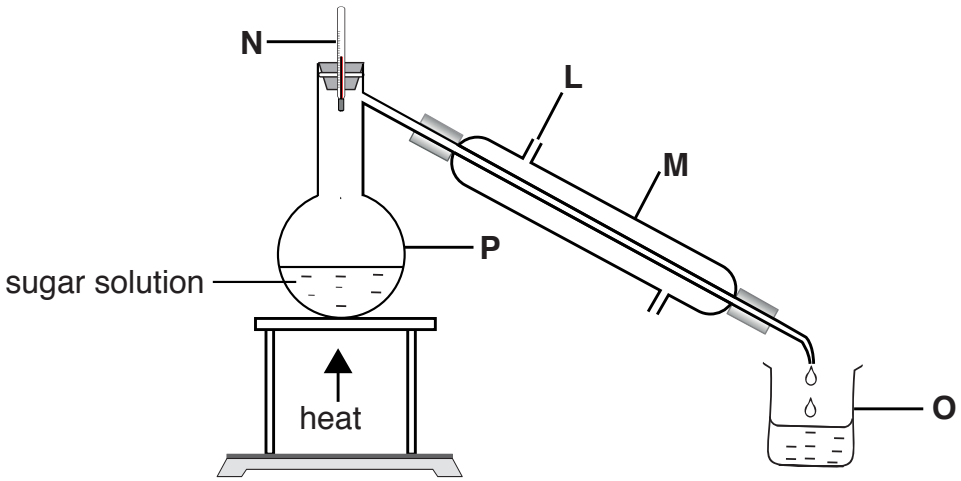

Fig. 6.1

(i) State what the letters **P** and **N** represent in Fig. 6.1.

P.....

N..... [2]

(ii) Name the substance collected at part **O** in Fig. 6.1.

..... [1]

(iii) Describe the process that takes place in the part labelled **M**.

..... [1]

(b) Two learners are conducting an experiment to investigate the effect of cooling on boiling water at room temperature.

They allow the water to cool over time and measure the temperature every minute.

Table 6.1 shows the results.

Table 6.1.

Time / minutes	0	1	2	3	4	5	6	7	8	9	10	11	12
Temperature / °C	100	74	55	42	34	28	24	23	23	23	23	23	23

State the temperature of the water at the start of the experiment.

..... [1]

(c) They use the data in Table 6.1 to draw a graph on the effect of temperature on melting ice.

Fig. 6.2 shows the temperature versus time graph.

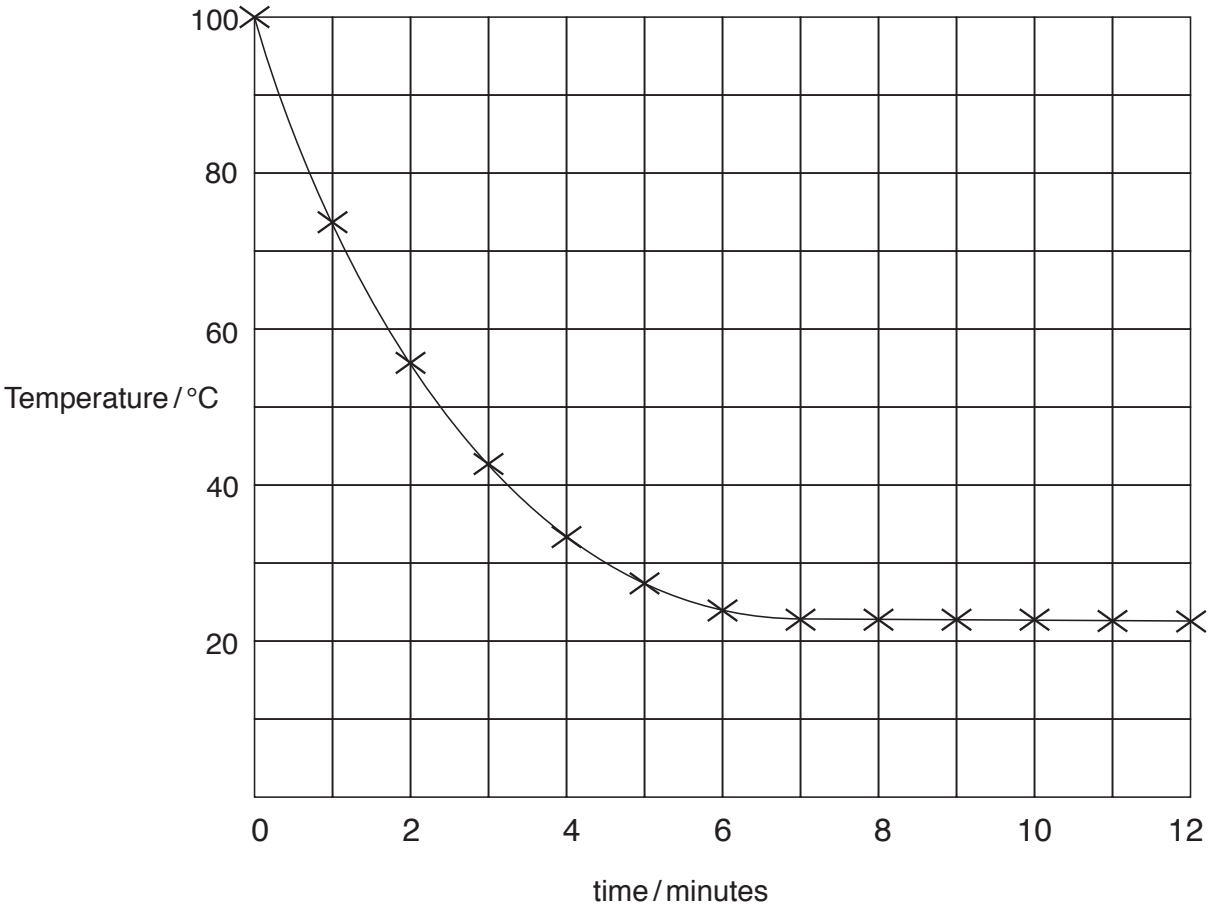

Fig. 6.2

(i) Use the graph to find the temperature at $2\frac{1}{2}$ minutes.

..... [1]

(ii) Find, using the graph, the time taken by the water to cool from 90 °C to 43 °C.

..... [2]

(iii) Suggest, using your graph, the room temperature in which the experiment was conducted.

..... [1]

(d) Name a possible mixture that can be separated using a bar magnet.

..... [1]

[Total marks: 10]

For Examiner's Use

7 **(a)** A grade 7 class is carrying out an experiment to measure the density of glass that is used to make a test-tube. The external volume, V_1, of the test-tube is 67 cm^3.

The learners fill the test tube with water and the water is carefully poured into a measuring cylinder.

Describe how the learners can accurately measure the volume of the water in the measuring cylinder

.....

.....

.....

.....

.....

..... [3]

(b) Fig. 7.1 shows part of the measuring cylinder after the water was poured from the test tube.

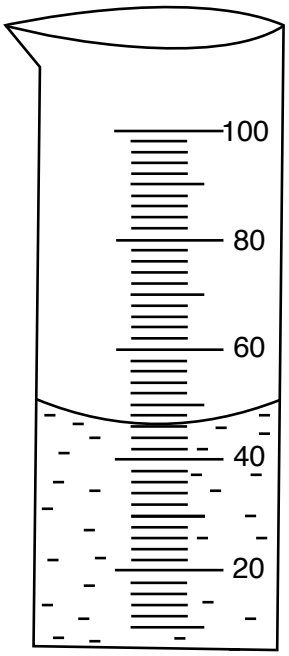

Fig. 7.1

(i) Read and record the volume of the water in Fig.7.1, as V_2.

..... [1]

(ii) Use the formula, $V_3 = V_1 - V_2$, to find the volume of the glass.

..... [1]

For Examiner's Use

(c) The learners then find the mass, m, of the test tube, as shown in Fig. 8.2.

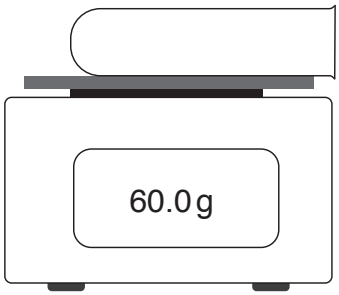

Fig. 8.2.

(i) Name the instrument used in this experiment to find the mass of the test tube.

..... [1]

The mass of the glass is 60.0 g.

(ii) State **one** difference between the mass and weight of the glass

.....

.....

.....

..... [2]

(iii) Calculate the density, D, of the glass using the formula, $D = \frac{m}{V_3}$

density..... g / cm^3 [2]

[Total marks: 10]