Cambridge Assessment International Education

Science

Stage 7

Paper 2

2023

Cambridge Lower Secondary Progression Test

Name

Class

Date

45 minutes

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Write your answer to each question in the space provided.
- You should show all your working on the question paper.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

1 There are seven characteristics of living organisms.

(a) Complete Mia's quiz.

One question has been done for you.

The characteristics of living organisms

1. What is the process of getting rid of waste?

   excretion

2. What is the process of increasing the size or mass of an organism?

   .....

3. What is the process of making more of the same type organism?

   .....

4. What is the process of detecting changes in the surroundings?

   .....

5. What is the process of getting energy from food?

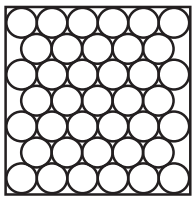
   .....

[4]

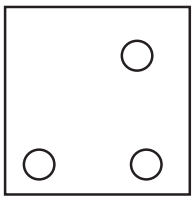
(b) Write down **one** reason why viruses could be considered non-living.

..... [1]

2 Look at the diagrams showing the particles in a solid and a gas.



a solid



a gas

(a) Gases are easily compressed (squashed) but solids are **not** easily compressed.

Explain why.

.....

.....

.....

..... [2]

(b) Solids keep their own shape but gases fill the container they are put in.

Explain why.

.....

.....

.....

..... [2]

3 Carlos tests some gases.

The table shows the tests Carlos uses and his results.

test	**result for**		
	gas A	**gas B**	**gas C**
put a lighted splint into the gas	splint burns brighter	burns with a squeaky pop	splint goes out
pass the gas through limewater	limewater stays colourless	limewater stays colourless	limewater turns cloudy
put a glowing splint into the gas	splint relights	splint goes out	splint goes out

Identify gases **A**, **B** and **C**.

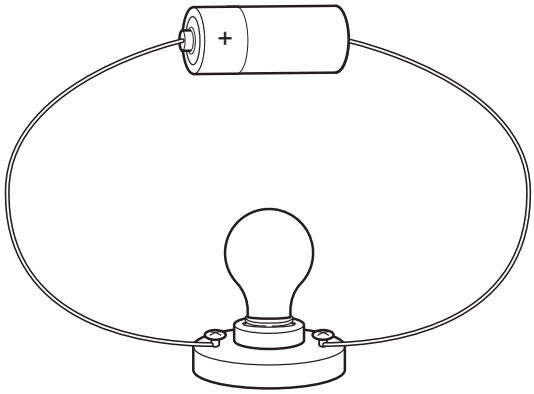
Gas **A** is .....

Gas **B** is .....

Gas **C** is ..... [3]

4 Pierre investigates current in a series circuit.

He uses the electrical circuit shown in the diagram.



(a) Draw the circuit diagram for Pierre's circuit.

Use the correct symbols for each component.

[2]

(b) Pierre adds a component to the circuit to measure current.

Write down the name of this component.

.....

[1]

(c) Pierre adds lamps to the circuit and records the current each time.

Look at the table of his results.

number of lamps	current in .....
1	12
2	9
3	7
4	5
5	2

Write down the unit for current in the table. [1]

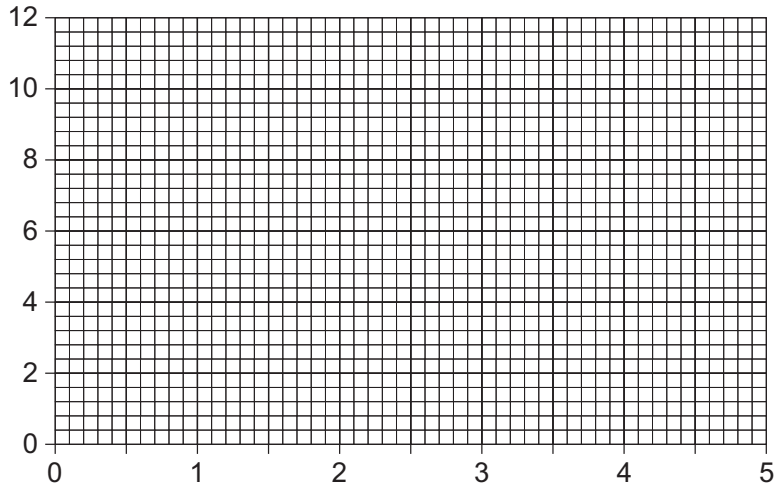
(d) Draw a line graph of his results.

You should:

- label the axes
- plot the results
- draw a straight line of best fit.

.....

.....



.....

.....

[3]

(e) Describe the relationship between the number of lamps and the current in the circuit.

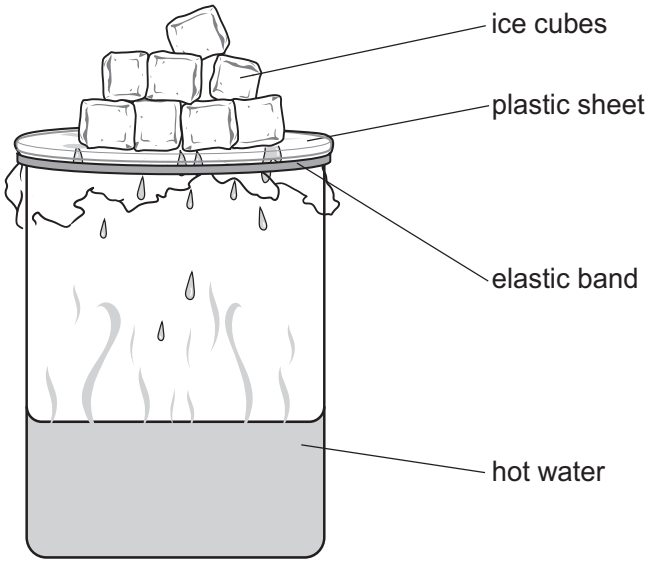
.....

..... [1]

5 Hassan makes a model to show the water cycle.

Hassan:

- pours hot water into a beaker
- covers the top of the beaker with a plastic sheet
- places some ice cubes on top of the plastic sheet
- observes for five minutes.



(a) (i) Droplets of water form on the underside of the plastic sheet.

Name the process that forms these droplets of water.

..... [1]

(ii) Hassan repeats the experiment.

He replaces the hot water with cold water.

Fewer water droplets are formed on the underside of the plastic sheet.

Write down **two** reasons why fewer water droplets are formed.

1 .....

.....

2 .....

..... [2]

(b) Write down **two** ways Hassan's model does **not** show the complete water cycle.

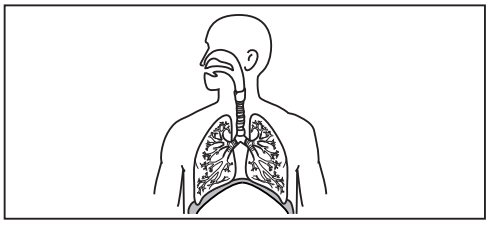
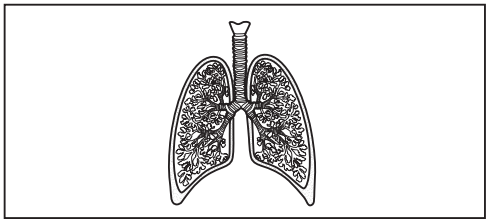
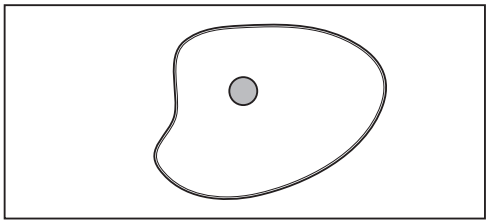
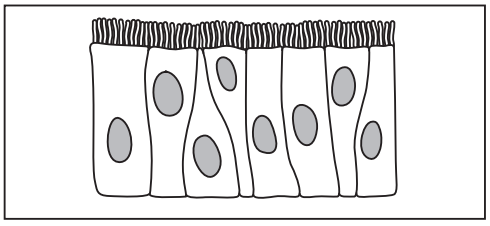
1 .....

2 .....

[2]

6 This question is about the human respiratory system.

Draw a straight line to match each **description** to its correct **diagram**.

description	diagram
group of cells working together to do the same function	
group of tissues working together to do the same function	
group of organs working together	
	

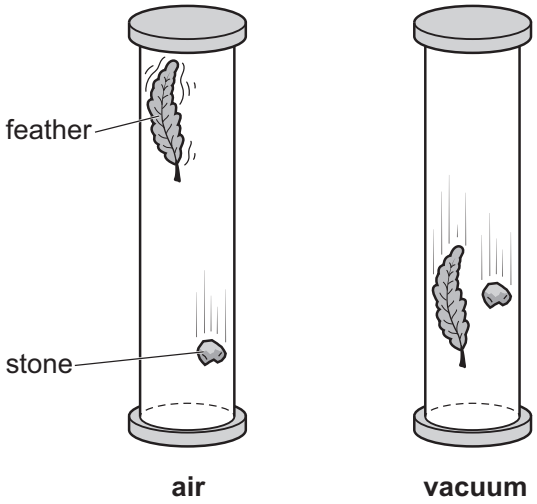
NOT TO SCALE

[2]

7 Lily investigates forces.

Lily:

- drops a stone and a feather at the same time in a tube of air
- drops the same stone and feather at the same time in a vacuum.



Write down what Lily observes.

.....

.....

Explain her observations.

Use ideas about forces.

.....

.....

.....

[3]

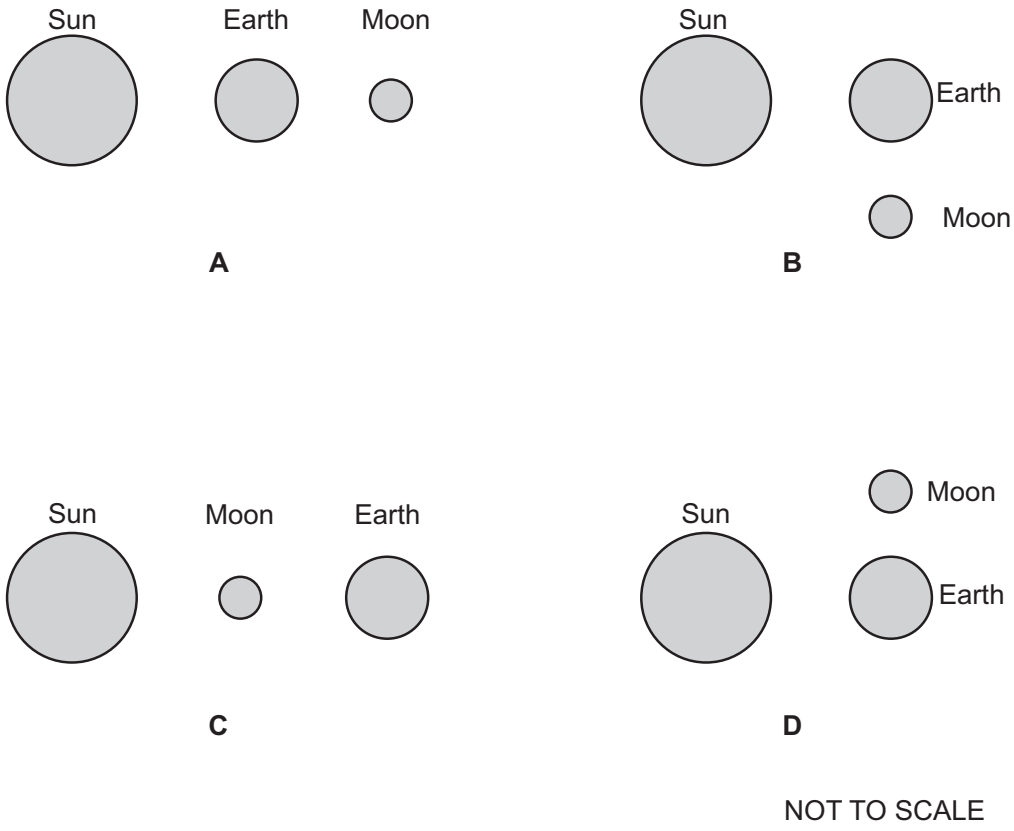
8 The Earth and the Moon are held in orbit in the Solar System.

(a) Name the force that holds the Earth in orbit around the Sun.

.....[1]

(b) Tidal forces occur on Earth because of the positions of the Sun, Earth and Moon.

Look at diagrams **A**, **B**, **C** and **D** showing four different positions of the Sun, Earth and Moon.



NOT TO SCALE

Which diagram shows the positions of the Sun, Earth and Moon that gives the **greatest** tidal force?

Explain your answer.

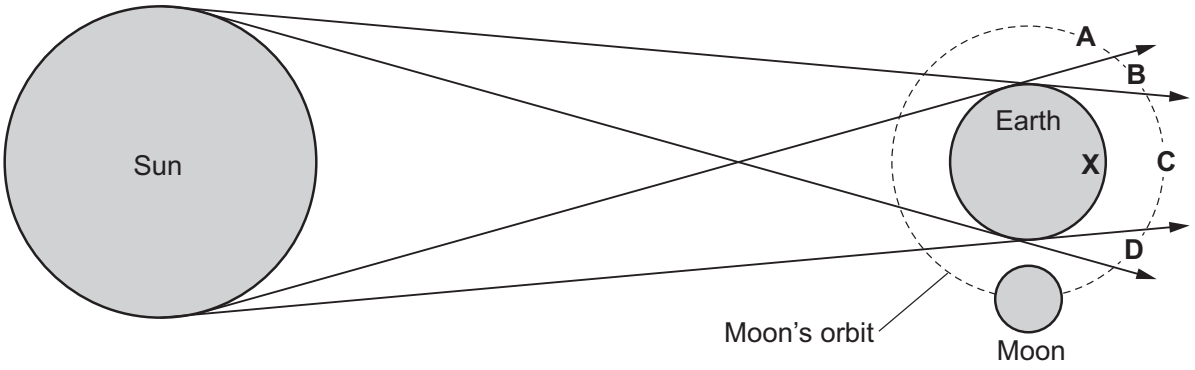
diagram .....

explanation .....

.....

[2]

(c) Look at the diagram showing the Moon orbiting the Earth and light rays from the Sun.



NOT TO SCALE

A person stands at point **X** on the Earth.

At which position on the Moon's orbit would the person see a total lunar eclipse?

Circle the correct position.

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

Explain your answer.

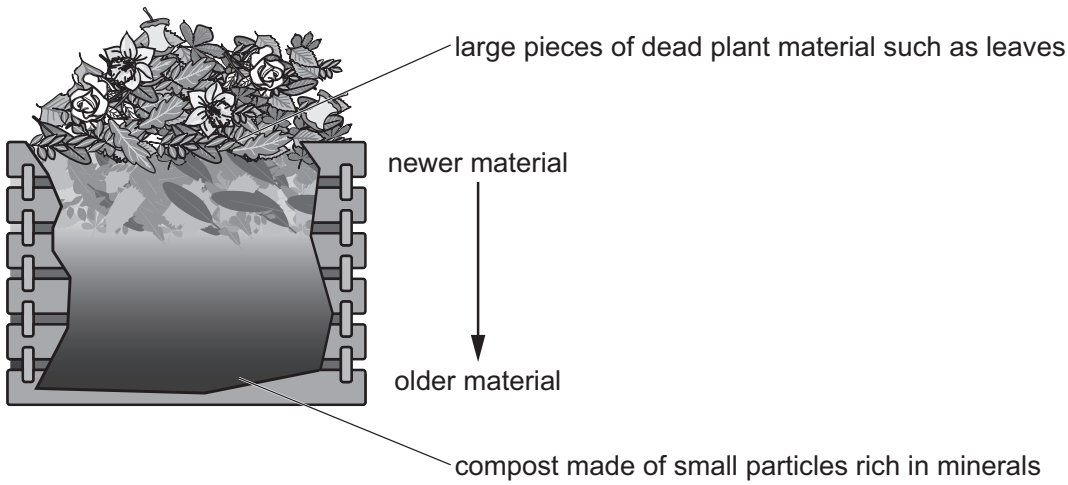
.....

.....

[2]

9 Organisms have important jobs in ecology.

Look at the section through a composter.



(a) (i) What process causes the change from the newer material to the older material inside the composter?

.....[1]

(ii) Write down the type of organism that causes this change.

.....[1]

(b) Jamila investigates how temperature changes inside two different composters.

Jamila:

- uses one pile of dead plant material
- divides the pile into two equal masses of dead plant material
- places one sample into composter **A** and the other sample into composter **B**
- measures the temperature in each composter every 10 days.

(i) Write down the piece of equipment Jamila uses to measure the temperature.

.....[1]

(ii) Here is Jamila's results table.

	temperature inside the composter in °C	
time in days	**composter A**	**composter B**
0	25	25
10	69	29
20	52	35
30	41	42
40	31	50

Explain why Jamila is **not** able to conclude which composter has the higher maximum temperature.

.....

.....[1]

(iii) Suggest how Jamila changes the investigation to be certain which composter has the higher maximum temperature.

.....

.....

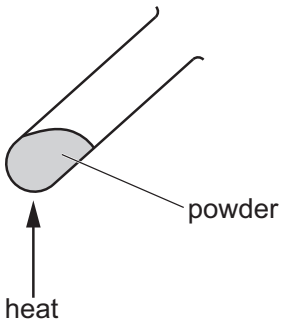
..... [1]

(iv) Explain why it is a good idea for Jamila to repeat her investigation.

.....

..... [1]

10 Angelique investigates what happens when some powders are heated.



Look at her results.

powder	colour before heating	colour after heating	other observations
D	pink	black	none
E	white	white	none
F	white	white	gas given off

Which powder or powders react when heated?

.....

Explain how you know.

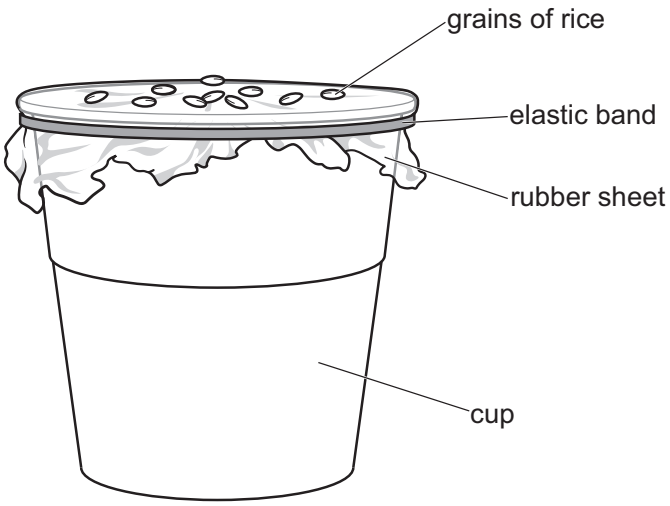
.....

.....

.....

[3]

11 Rajiv makes a model to show how we hear sounds.



Rajiv:

- places a rubber sheet over a cup
- holds the rubber sheet in place using an elastic band
- places grains of uncooked rice on the top of the rubber sheet
- claps his hands near to the cup.

Describe what Rajiv sees when he claps his hands.

Explain why this happens.

description .....

explanation .....

.....

[2]

12 Chen and Aiko investigate the properties of metals and non-metals.

They look at some data about element **X**.

property	property of element X
appearance	dull
density	low
ductility	poor
electrical conductivity	good
malleability	brittle
melting point	high
solubility in water	insoluble
state at room temperature	solid

(a) Chen makes this hypothesis,

'Element X is a metal because it has the properties of a metal.'

Write down **two** pieces of evidence that support his hypothesis.

1 .....

2 .....

[2]

(b) Aiko makes this hypothesis,

'Element X is a non-metal because it has the properties of a non-metal.'

Write down **two** pieces of evidence that support her hypothesis.

1 .....

2 .....

[2]