Cambridge Lower Secondary Checkpoint

CANDIDATE NAME

SCIENCE **1113/01**

Paper 1 **October 2021**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Pen, Pencil, Ruler, Calculator

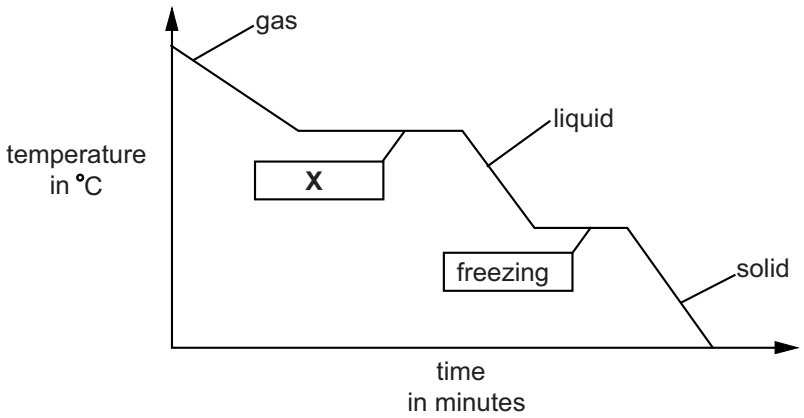
1 The table describes some parts of the circulatory system.

Complete the table.

part	function
artery	carries blood from the heart
heart	carries blood around the body
capillary	allows exchange of substances between blood and organs
vein	carries blood to the heart

[3]

2 The diagram shows a cooling curve for a pure substance.



(a) Which word describes the process **X** on the cooling curve?

Circle the correct answer.

boiling **condensing** **evaporating** **melting** [1]

(b) Describe **two** things that happen to the particles of the substance during freezing.

1 Particles lose heat and slow down

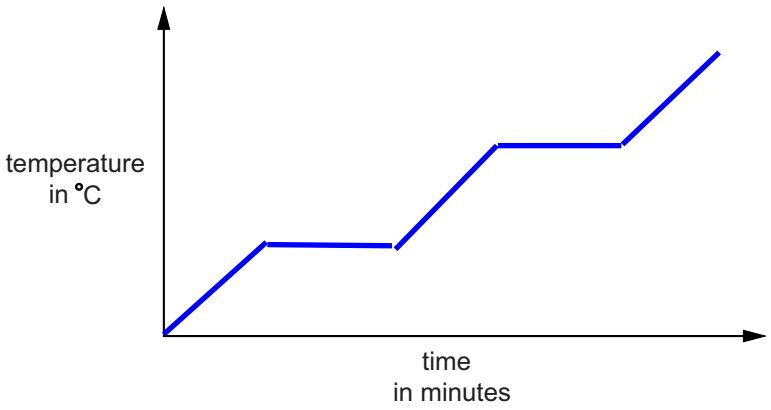
2 The particles are arranged in a regular pattern

[2]

(c) A solid is heated until it becomes a gas.

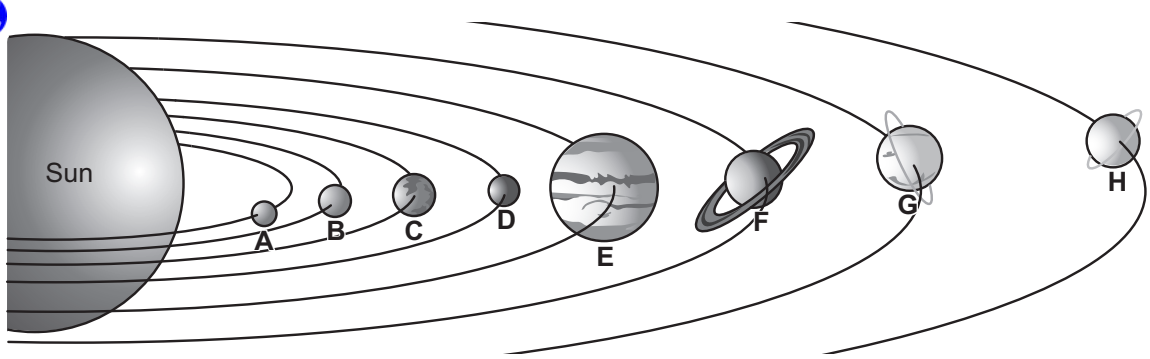
Sketch a graph to show how the temperature changes during this process.

Use the axes provided.



[2]

3 Look at the diagram of the Sun and eight planets.



NOT TO SCALE

(a) Which letter represents the Earth? C [1]

(b) Which letter represents the planet that takes the **longest** time to orbit the Sun? H

[1]

(c) Which letter represents the **largest** planet in the Solar System? E [1]

(d) Write down the names of planets **B**, **F** and **H**.

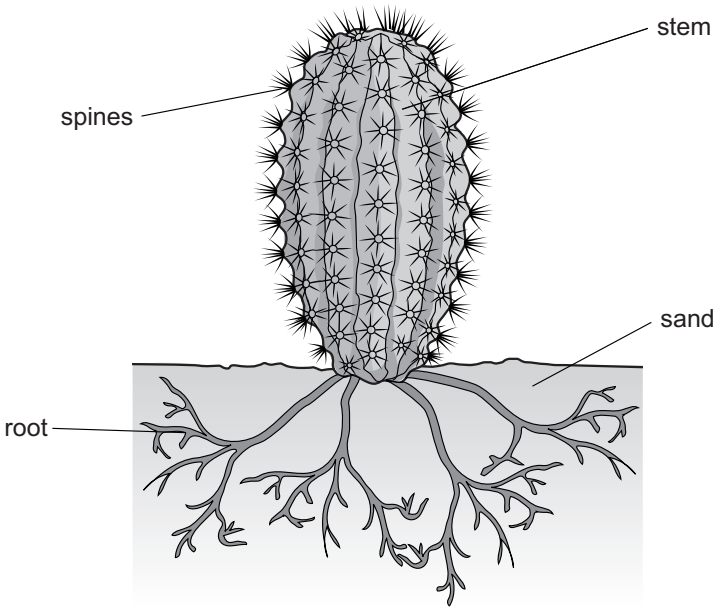
B Venus

F Saturn

H Neptune

[1]

4 This cactus lives in a hot and dry desert.



(a) The cactus has long roots that spread out in the sand.

(i) Suggest how the roots help the cactus survive in the hot and dry desert.

Long roots help to take in water and minerals deep under the ground [1]

(ii) Explain **one other** way the cactus is adapted to living in the hot and dry desert.

It has spines to stop evaporation

[1]

(b) The cactus is eaten by kangaroo rats.

The kangaroo rats are eaten by snakes.

Desert foxes feed on snakes.

Complete the food chain for these organisms.

Cactus → Kangaroo rats → Snakes → Desert foxes

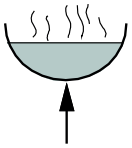
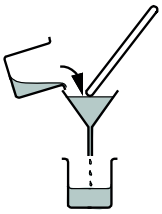
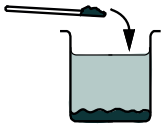
[2]

5 Jamila makes zinc sulfate.

She uses an acid and zinc metal.

The diagram shows the stages Jamila uses to make zinc sulfate.

The stages are **not** in the correct order.

A	 heat heat the filtrate to concentrate the solution
B	 filter the reaction mixture
C	 add excess zinc to the acid then gently heat
D	 dry the zinc sulfate crystals with filter paper
E	 leave the filtrate to evaporate slowly

(a) Put the stages in order to show the correct method.

One has been done for you.

C	B	A	E	D

[2]

(b) Write down the name of the acid Jamila uses to make zinc sulfate.

Sulfuric acid [1]

(c) When Jamila adds zinc to the acid a gas is made.

Write down the name of this gas.

Hydrogen [1]

6 Oliver investigates how the number of lamps in a circuit affects the current.

He connects the lamps in series.

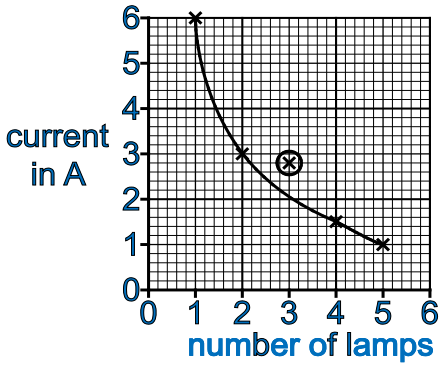
He uses identical lamps.

Oliver writes his results in a table.

number of lamps	current in A
1	6.0
2	3.0
3	2.8
4	1.5
5	1.0

(a) Draw a graph of the results by:

- labelling the number of lamps on the x-axis
- labelling the current on the y-axis
- plotting all the points.



[3]

(b) Complete the graph by:

- putting a circle around the anomalous result
- joining the other points with a smooth curve. [2]

(c) Describe **two** patterns in his results.

1 As the number of lamps increases, the current decreases

2 The number of lamps and the current are inversely proportional

[2]

7 This question is about growing tomato plants.

(a) **(i)** Write down the name of the **process** in tomato plants which uses carbon dioxide.

Photosynthesis [1]

(ii) Write down the name of the **two** products of this process.

Oxygen and Glucose [2]

(iii) State **one** reason why this process is important for animals.

This process produces oxygen which is important in respiration [1]

(b) Tomato plants need to absorb mineral salts.

(i) Write down the name of the part of a plant that absorbs mineral salts.

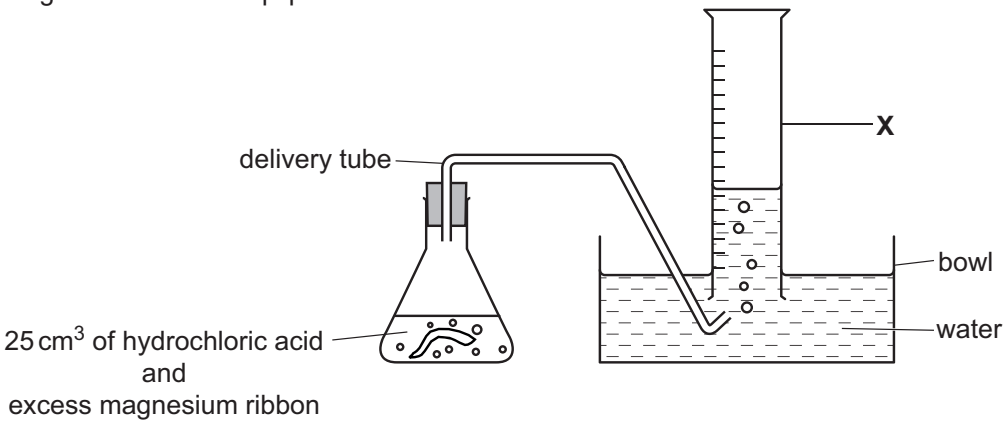
Roots [1]

(ii) Describe how mineral salts are transported in plants.

Mineral salts are absorbed by roots and transported by xylem [1]

8 Aiko investigates the reaction of magnesium with hydrochloric acid.

The diagram shows her equipment.



(a) Aiko uses the equipment labelled **X** to measure the volume of gas made in the reaction.

Write down the name of equipment **X**.

measuring cylinder [1]

(b) Aiko collects 35 cm^3 of gas in 5 minutes.

Aiko wants to find out what happens when the concentration of acid is increased.

Aiko **doubles** the concentration of acid she uses and repeats the experiment.

(i) Predict the volume of gas she collects in 5 minutes.

70 cm^3

Explain your answer.

More concentration means more collisions ➡ reaction happens faster

[1]

(ii) Write down **two** variables she controls.

1 Temperature of acid

2 The mass of magnesium ribbon

[2]

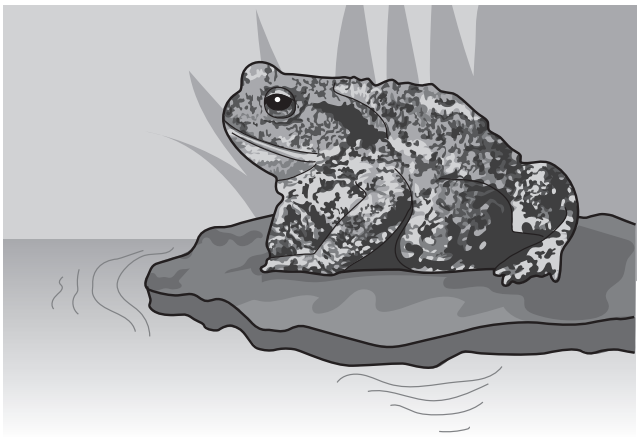
(c) Aiko wants to do a similar investigation with sodium and hydrochloric acid.

Explain why it would **not** be safe to use sodium.

Sodium reacts vigorously with acid so it is not safe

[1]

9 Look at the picture of a toad near a pond where it lives.



Humans also live near the pond.

(a) Toads reproduce by laying their eggs in water.

Suggest **two** ways human activities reduce the population of toads in the pond.

1 Destroy the habitat

2 Pollute the pond

[2]

(b) Toads are vertebrates.

They have lungs and a moist skin.

Complete this sentence about toads.

Choose from the list.

amphibians **birds** **fish** **mammals** **reptiles**

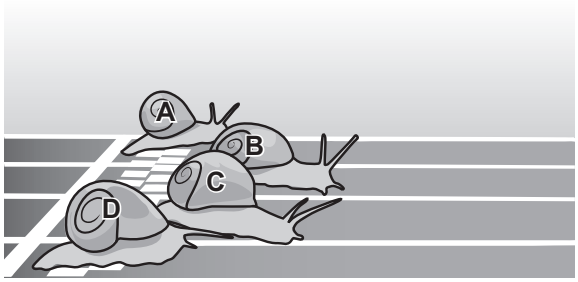
Toads belong to a group of vertebrates called amphibians. [1]

(c) Complete this sentence about toads.

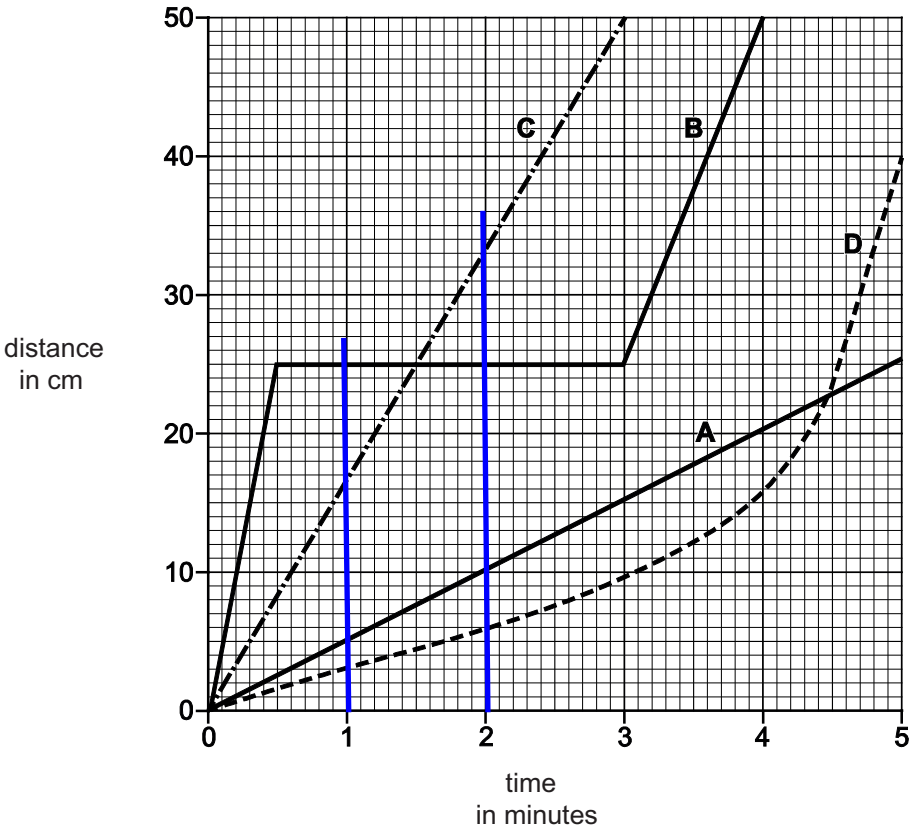
All the toads in the pond reproduce together to produce fertile offspring.

This means the toads in the pond all belong to the same species. [1]

10 Blessy races four snails, **A**, **B**, **C** and **D**.



She draws a distance/time graph for each of the four snails.



(a) The distance of the race is 50 cm.

Which snail wins the race?

Circle the correct answer.

A **B** **C** **D** [1]

(b) Which snail does **not** move for part of the race?

Circle the correct answer.

A **B** **C** **D** [1]

(c) Which snail moves the **fastest** between 1 minute and 2 minutes?

Circle the correct answer.

A **B** **C** **D** [1]

(d) What is the average speed of snail **D** over 5 minutes?

Circle the correct answer. 40/5 = 8

4 cm / minute **5 cm / minute** **8 cm / minute** **40 cm / minute** [1]

11 Complete these sentences about the structure of the Earth.

K

At the very centre of the Earth is the core .

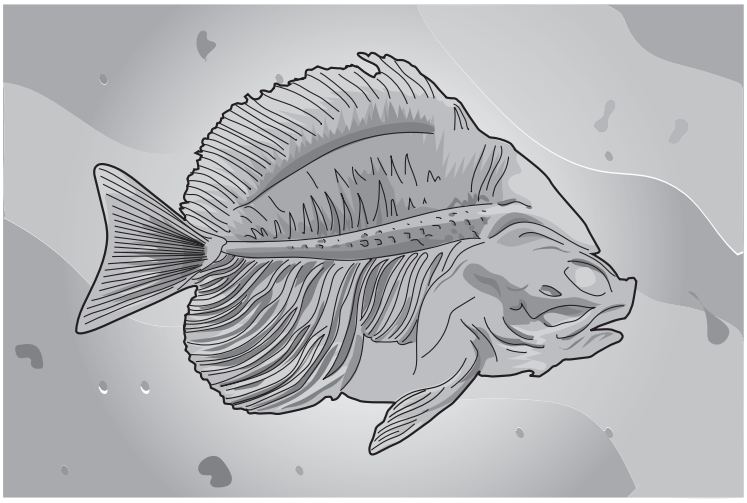
This is surrounded by a layer of magma called the mantle .

On top of the magma is the Earth's outer layer called the crust .

[3]

12 The picture shows a fossil of a fish.

K



Fossils are often destroyed when metamorphic rock forms.

Explain why.

Because metamorphic rock forms under high pressure and high temperature so fossils will be destroyed [1]