



Science

Stage 7

Paper 2

2025

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 [].

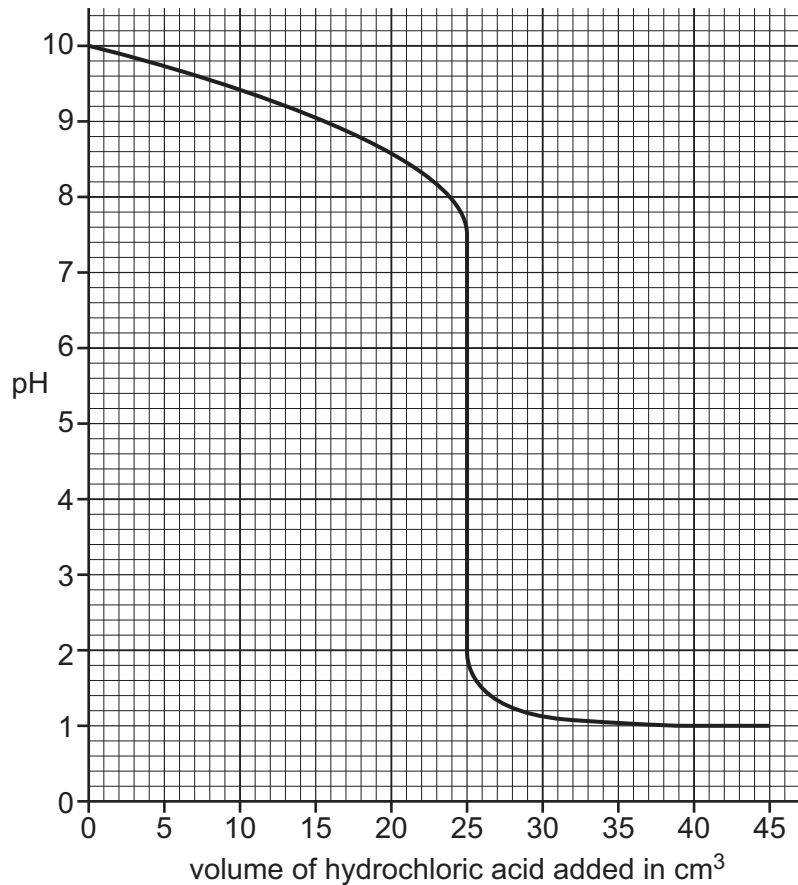
1 Rajiv investigates what happens when ammonia solution is added to other solutions.



(a) In his first experiment, Rajiv:

- step 1 - adds 25 cm^3 of ammonia solution to a beaker
- step 2 - measures the pH of the ammonia solution
- step 3 - adds 5 cm^3 portions of dilute hydrochloric acid to the beaker
- step 4 - measures the pH of the solution in the beaker after each addition
- step 5 - repeats step 3 and step 4 eight more times.

Look at the graph of his results.



(i) What is the pH of the ammonia solution at the start of the experiment?

pH = [1]

(ii) Describe the relationship between the volume of dilute hydrochloric acid added and the pH.

.....
 [1]

(iii) What type of chemical reaction happens between ammonia solution and dilute hydrochloric acid.

..... [1]

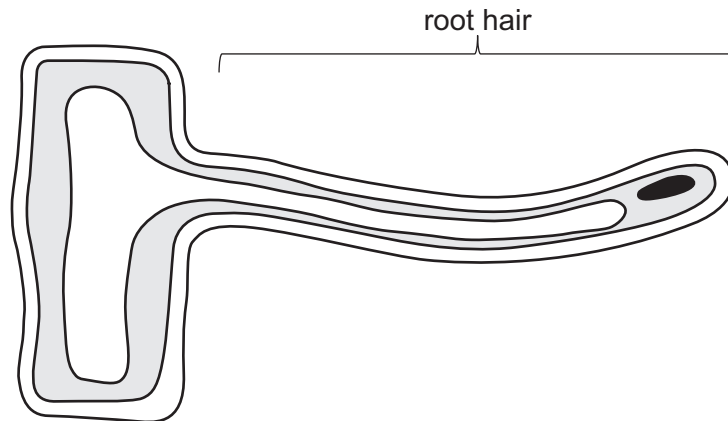
(b) In his second experiment, Rajiv adds ammonia solution to copper sulfate solution.

He observes a pale blue precipitate in the test-tube.

Explain why a precipitate forms.

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

2 Look at the diagram of a root hair cell.



Root hair cell features include:

- a large surface area
- a long and thin shape.

Explain how these features are related to the **function** of a root hair cell.

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

3 A teacher writes some statements about forces.



Tick (✓) the **two** correct statements.

statement	true
The force of attraction between two objects is called gravity.	
The size of the force of gravity between two objects depends on the volume of each object.	
The particles in a vacuum move quickly.	
Air resistance does not act on an object in a vacuum.	

[1]

4 Scientists predict that a solar eclipse will happen on 12 August 2026.



(a) Explain how a solar eclipse happens.

You may draw a diagram to help you answer the question.

.....

.....

.....

..... [2]

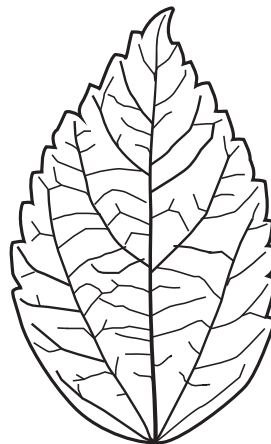
(b) Describe **one** way that a lunar eclipse is different to a solar eclipse.

You may draw a diagram to help you answer the question.

.....

..... [1]

5 The diagram shows an organ of a plant.



Circle the tissue that is in this organ.

chloroplast

muscle

neurone

palisade layer

stem

[1]

6 Hydrogen and nitrogen react to make ammonia.

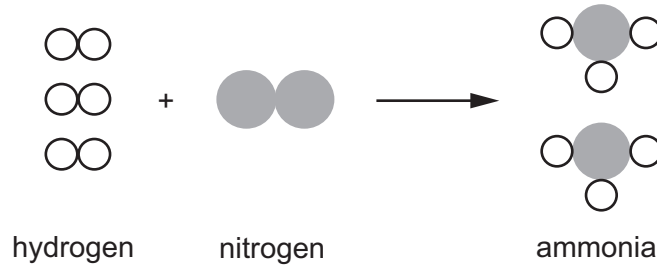


Look at a model of this reaction.

key

○ hydrogen atom

● nitrogen atom



The reactants and product are shown by particle models.

(a) Complete the table to show the total number of atoms of:

- hydrogen and nitrogen in the reactants
- hydrogen and nitrogen in the products.

	total number of atoms of hydrogen	total number of atoms of nitrogen
reactants		
product		

[2]

(b) Describe **one limitation** of the model for this chemical reaction.

.....

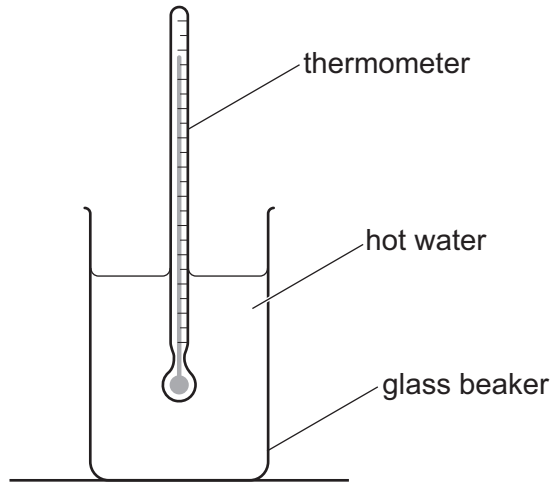
[1]

7 Lily investigates the transfer of thermal energy from three identical glass beakers of water.



The hot water in each beaker has a different starting temperature.

Look at the diagram of the equipment she uses.



Look at the table of results.

time in seconds	temperature of water		
	beaker 1 in °C	beaker 2 in °C	beaker 3 in °C
0	81	90	85
60	72	80	75
120	66	73	69
180	63	69	66
240	61	66	64
300	60	63	62

(a) Look at the results for beaker 2.

Calculate the percentage decrease in temperature between 0 seconds and 300 seconds for beaker 2.

Show your working.

percentage decrease = [2]

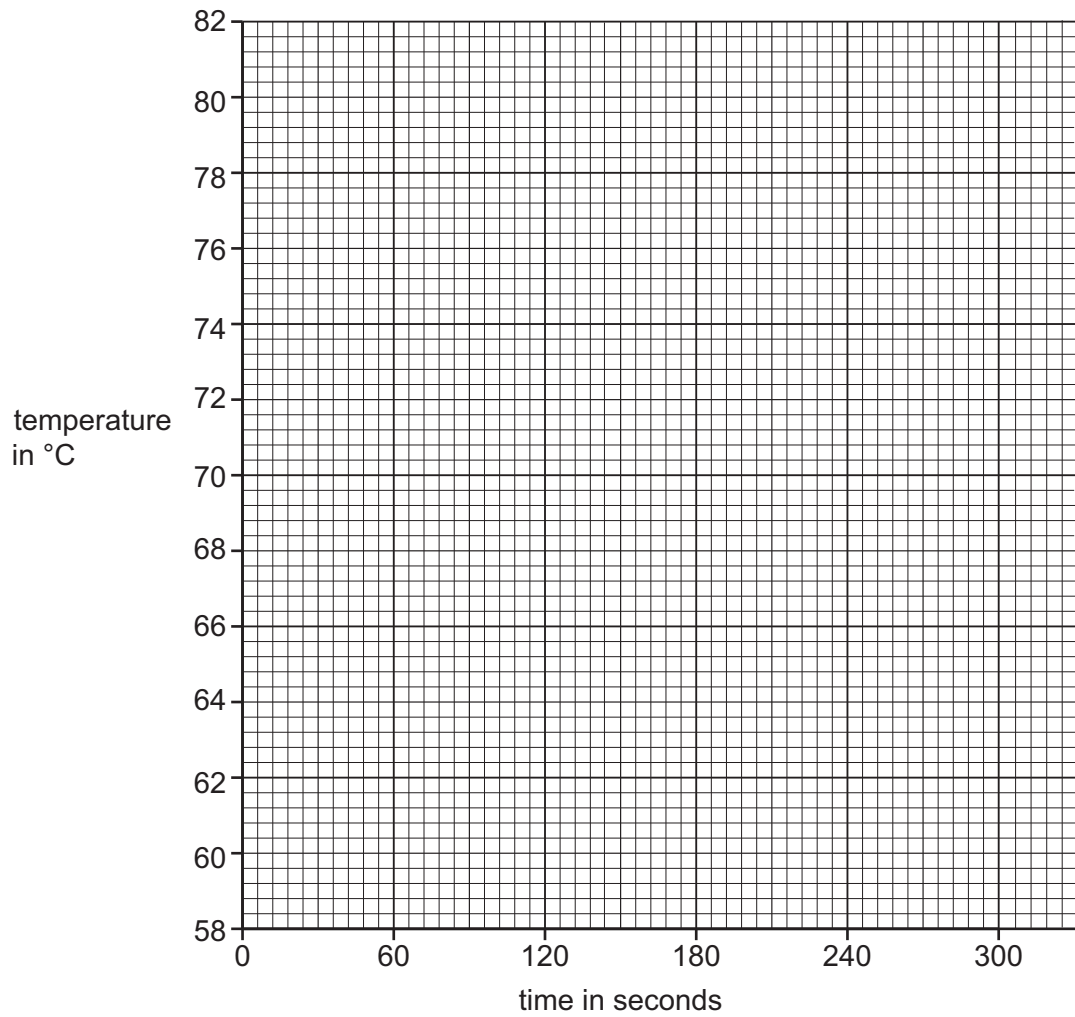
(b) Suggest **one** variable that Lily must control in her investigation.

..... [1]

(c) Lily plots a graph of her results for beaker 1.

Complete the graph by:

- plotting all the points for beaker 1
- drawing a smooth curve of best fit.

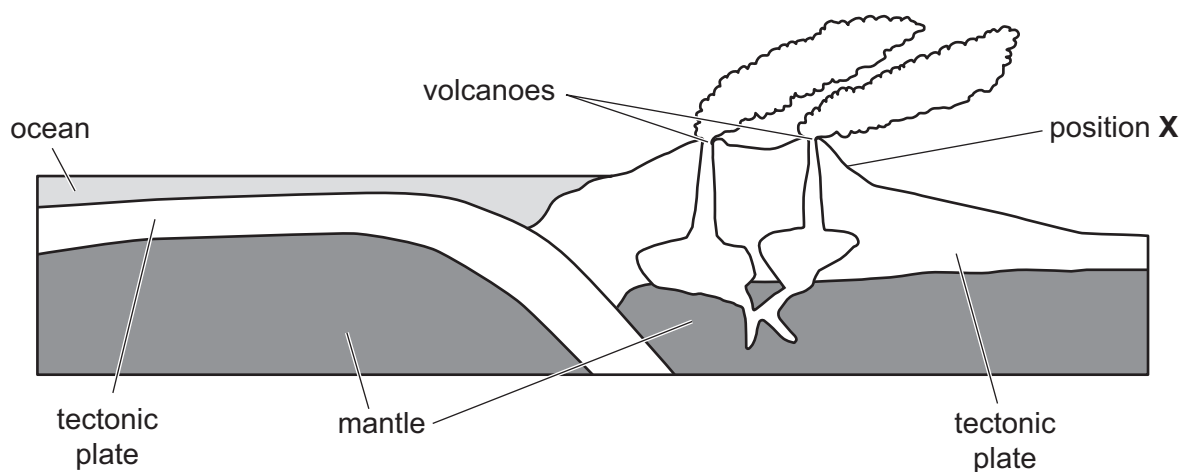


[2]

8 Volcanoes form at the boundaries of tectonic plates.



Look at the diagram.



(a) Describe why tectonic plates move.

.....

.....

..... [2]

(b) Volcanoes erupt and release gases.

The table shows the percentages of different gases in the air at position **X**, on the side of a volcano.

The percentages are measured just before, during and after a volcanic eruption.

name of gas	percentages of gas in the air		
	just before eruption	during eruption	after eruption
nitrogen	75	3	78
oxygen	18	0	20
argon	1	0	1
carbon dioxide	6	97	1

(i) The percentages of gases in the air **just before** and **after** an eruption are different.

Describe **two** of these differences.

1

2

[2]

(ii) A scientist makes a prediction,

‘It is possible to tell when a volcano is just about to erupt when the percentage of carbon dioxide in the air on the side of the volcano increases.’

Does the data in the table support this prediction?

Tick (✓) the correct answer.

yes no

Explain why.

Use information from the table.

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

(c) Write down **one** other reason for an increase in the percentage of carbon dioxide in air.

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

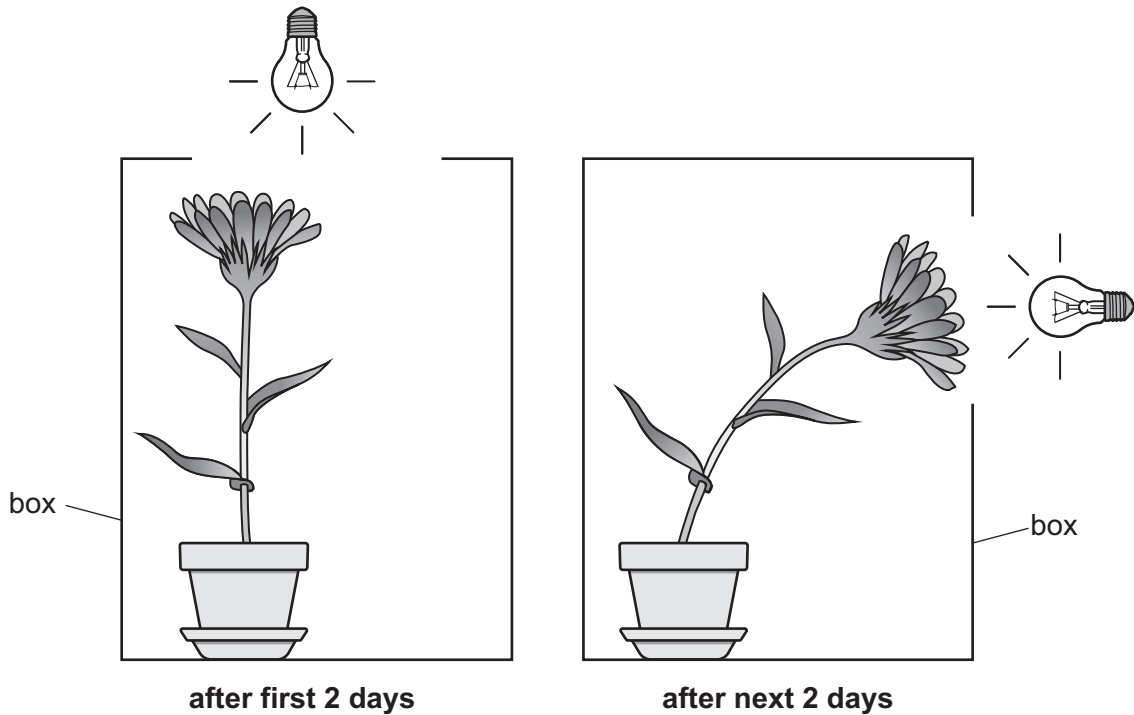
9 This question is about living organisms.



(a) A plant is put into a box with a light source for 2 days.

The position of the light source is changed and the plant is left for 2 more days.

The diagram shows the plant after the first 2 days and after the next 2 days.



Explain how the diagram shows the plant is a living organism.

Give **two** reasons.

1

.....

2

.....

[2]

(b) Write down **one** reason for classifying viruses as living organisms.

.....

..... [1]

10 This question is about elements and the Periodic Table.



(a) Sulfur has the atomic symbol S.

Sodium has the atomic symbol Na.

Suggest why the atomic symbols of some elements do **not** match the letters in the name of the element.

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

(b) Metals and non-metals are the two main groupings of elements.

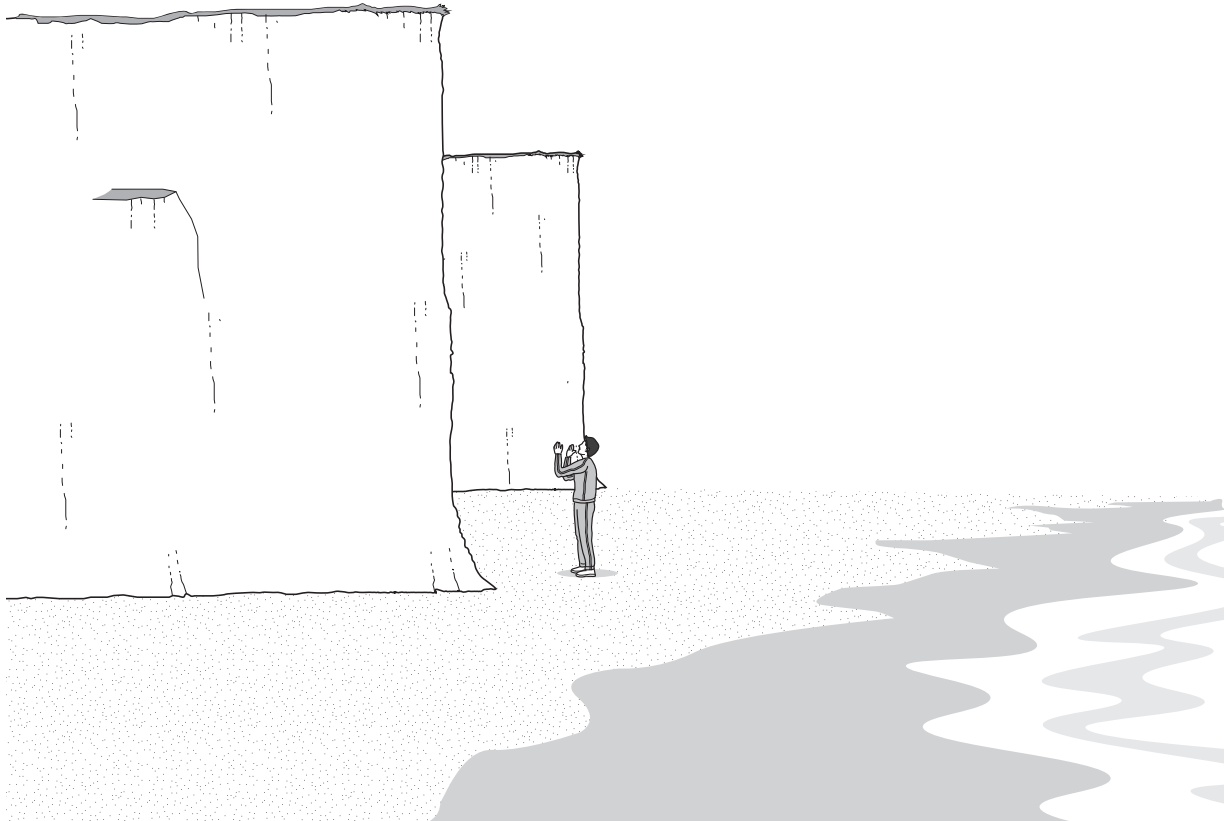
Write down **three** physical properties of metals that are different from non-metals.

1
2
3
[3]

(c) Describe **one** difference between an element and a compound.

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

11 Yuri stands next to a cliff.



He claps his hands **once**.

He hears a sound.

A short time later, he hears another sound.

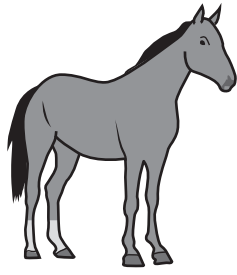
Explain why Yuri hears another sound a short time after hearing the first sound.

.....

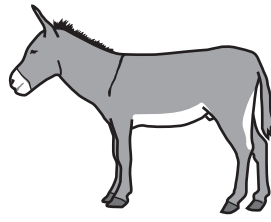
.....

..... [2]

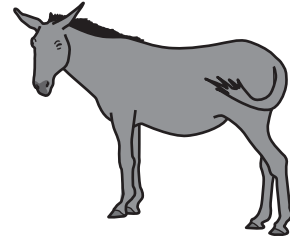
12 Look at the diagram of a horse, a donkey and a mule.



horse



donkey



mule

A horse and a donkey reproduce.

Their offspring is a mule.

Mules cannot reproduce.

Tick (✓) the **two** correct sentences about horses, donkeys and mules.

Horses, donkeys and mules are the same species.

Horses and donkeys are different species.

Horses and donkeys are infertile.

Mules are infertile.

Donkeys and mules are the same species.

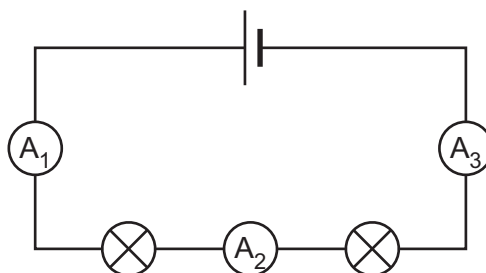
Horses and mules are the same species.

[2]

13 Jamila makes an electrical circuit using two identical lamps.



She puts ammeters in three different positions in the circuit.



(a) What is the name given to this type of electrical circuit?

..... [1]

(b) Jamila measures the current reading on each ammeter.

Look at the table.

	current reading on ammeter A_1 in amps	current reading on ammeter A_2 in amps	current reading on ammeter A_3 in amps
A	0.6	0.6	0.6
B	0.6	1.2	0.6
C	0.6	1.2	1.8
D	1.8	1.2	0.6

Which row of the table shows the correct current readings for **all three** ammeters?

Circle the correct letter.

A

B

C

D

[1]

(c) Jamila adds a component to her circuit to turn the current on and off.

Draw the standard conventional electrical symbol for this component.

..... [1]

(d) Jamila wants to increase the current in her circuit.

She has these **extra** components:

- 1 cell
- 1 lamp.

Jamila makes **two** changes to her circuit.

Both changes increase the current in the circuit.

Draw a circuit diagram to show her circuit after the **two** changes.

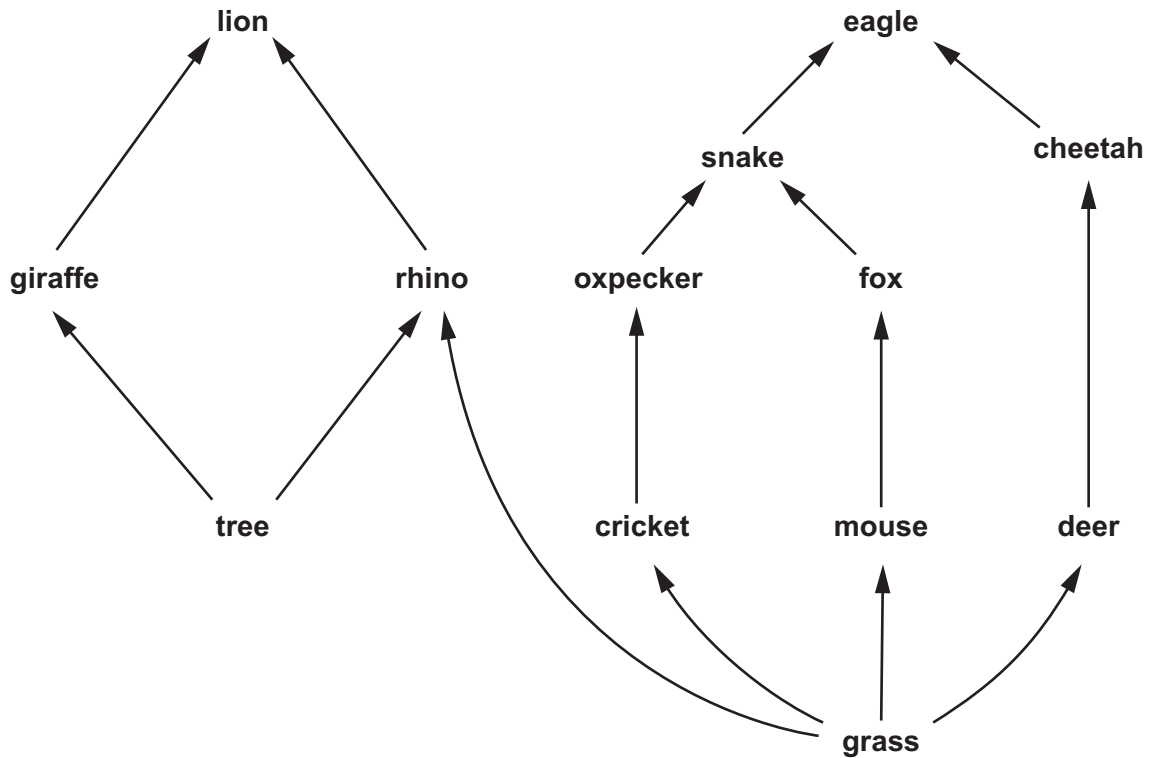
Do **not** include ammeters in your diagram.

[3]

14 This question is about food chains and food webs.



(a) Look at the diagram of a food web



(i) Write down **one** food chain from this food web that contains **four or more** organisms.

..... [1]

(ii) The food web does **not** include a decomposer.

Explain how decomposers allow healthy growth of plants.

.....

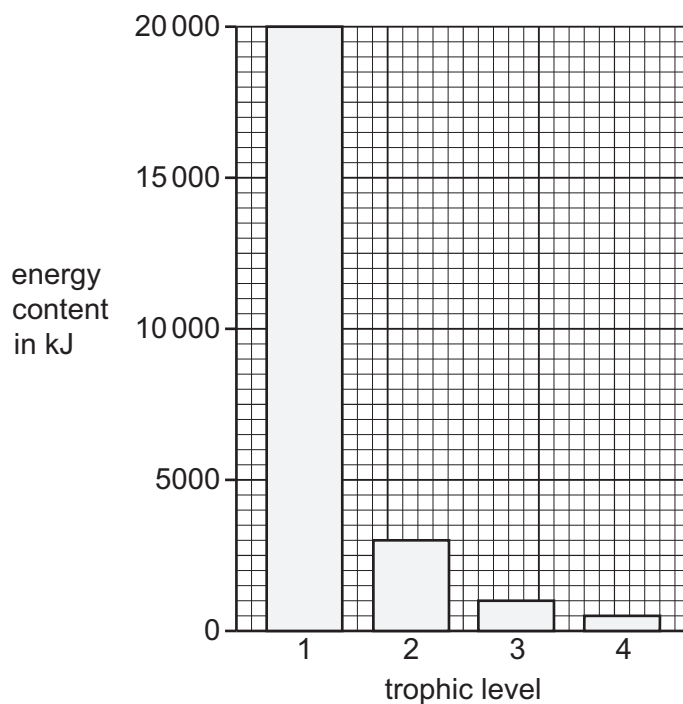
 [2]

(iii) A farmer cuts down many of the trees for wood.

Suggest how this affects the organisms in the food web.

..... [1]

(b) Mia finds this data on the internet about a food chain.



The data shows the energy content at each trophic level in a food chain.

Mia writes a conclusion using the data.

Complete her conclusion.

The difference in energy content between trophic level 1 and trophic level 4 is

..... kJ.

The higher the trophic level, the the energy content.

[2]