Science
Mastery

Year 8 Summer Assessment 2023

PAPER 1

Time allowed: 50 minutes

Materials

For this paper you must have:

- blue or black pen.
- A pencil.
- a ruler.
- a calculator.

Q	Mark	Score
1		
2		
3		
4		
5		
T	**45**	

Instructions

- Answer all questions in the spaces provided.
- Do all rough work on this exam paper. Cross through any work you do not want to be marked.

Information

- There are 45 marks available on this paper.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

Advice

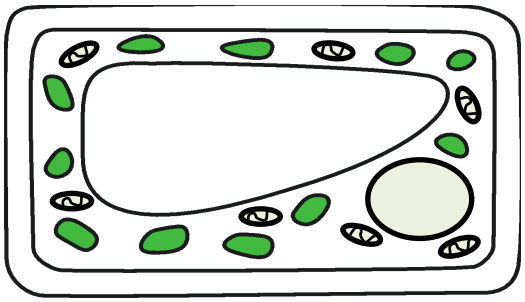
- In all calculations, show clearly how you work out your answer.

Surname: _____

Forename(s): _____

Class and teacher: _____

Q1. The diagram below shows a cell.



(a) Give one piece of evidence from the diagram that indicates this cell comes from a plant. **[1]**

_____

(b) Name the organelle that is the site of photosynthesis. **[1]**

_____

(c) Complete the word equation for photosynthesis. **[1]**

Water + _____ → glucose + _____

(d) Root cells may contain different organelles than leaf cells. Explain why. **[2]**

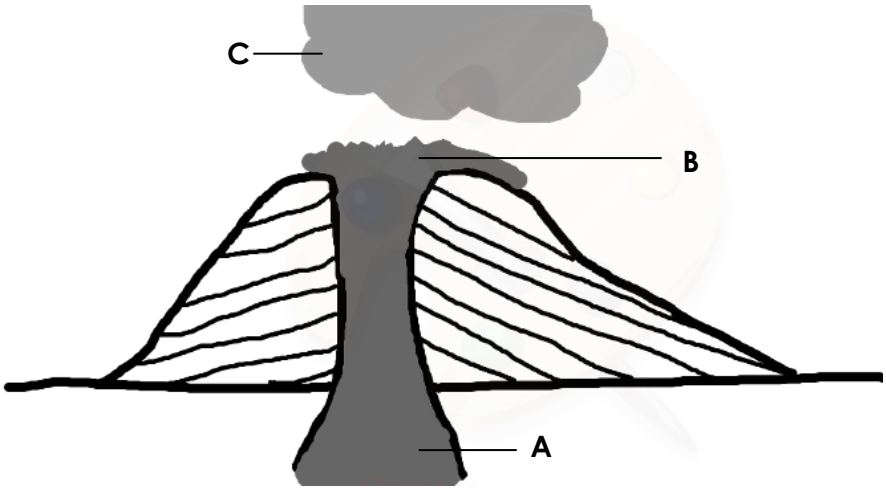
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_____

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[Total 5 marks]

Q2. The diagram below shows a volcano erupting.



(a) Which letter on the diagram shows lava? **[1]**

_____

(b) Name the type of rock formed when lava cools. **[1]**

_____

(c) Each of the processes below happens when a volcano erupts. Choose the process that is a chemical reaction. **[1]**

A. Sulfur burns and produces sulfur dioxide ☐

B. Water is heated and produces steam ☐

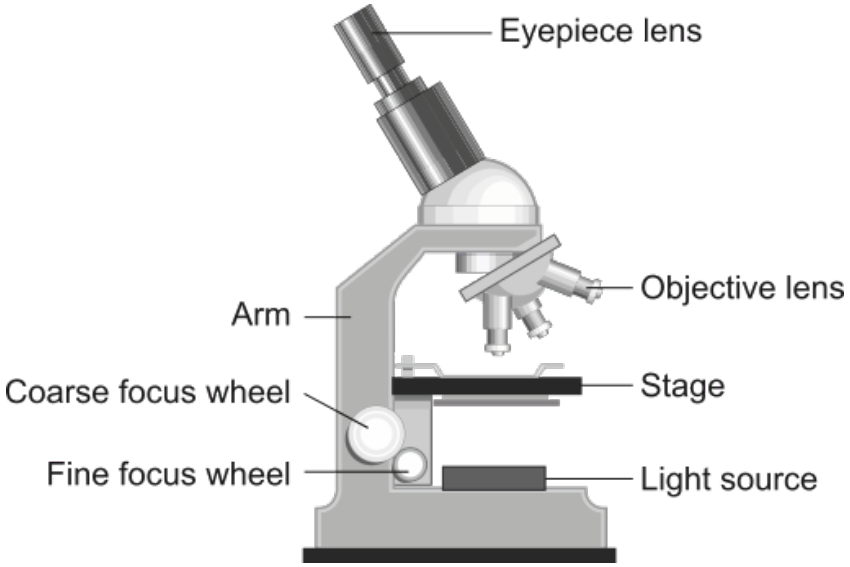
C. Clouds of ash spread through the sky ☐

(d) Describe an environmental problem that is caused by the production of sulfur dioxide. **[1]**

_____

_____

Rock samples can be viewed under a microscope to look at their structure in more detail.



(e) Name the part of the microscope that is used to change the magnification. **[1]**

_____

A scientist looks at a rock sample using a microscope. The eyepiece lens has a magnification of X10 and the objective lens has a magnification of X10.

(f) Calculate the total magnification. **[2]**

_____

_____

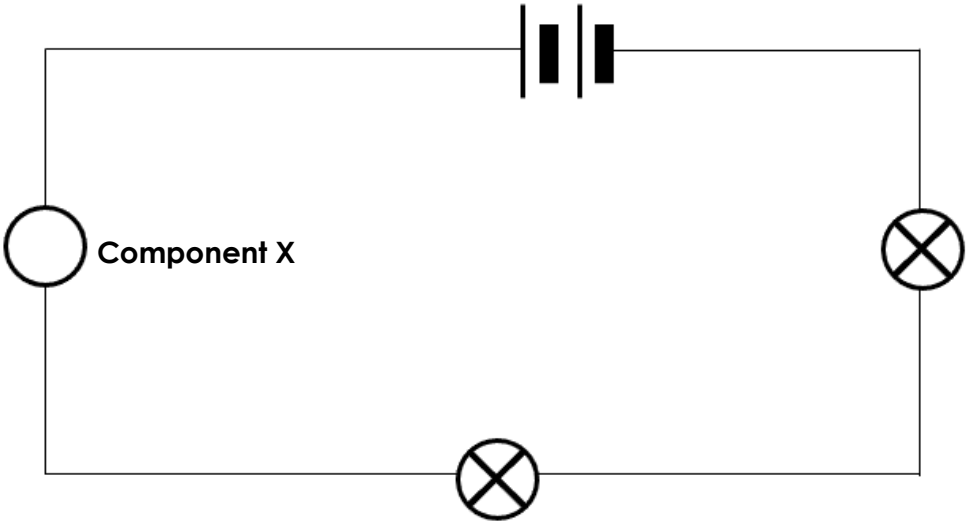
(g) When the scientist looks at the rock sample, they see that it is made of very small crystals. Suggest where this rock is likely to have been formed. **[2]**

_____

_____

[Total 9 marks]

Q3. This question is about electrical circuits.



(a) Explain whether this is a series or parallel circuit. **[2]**

_____

_____

(b) Component X can be used to measure the current through the circuit.
On the diagram, complete the circuit symbol for component X. **[1]**

(c) Define current. **[1]**

_____

_____

Component X measures a current of 0.75 A.

(d) Calculate how much charge flows through the circuit in 30 seconds. **[3]**

Use the equation:

$$\text{Charge} = \text{Current} \times \text{Time}$$

Give the unit.

_____

_____

Charge = _____

Both the bulbs are identical. The voltage across each bulb is 2.5 V.

(e) On the circuit diagram above add the component that would be used to measure the voltage across each bulb. You should show how it is connected. **[1]**

(f) Calculate the resistance of each bulb to two decimal places. **[3]**

Use the equation:

$$\text{Voltage} = \text{Current} \times \text{Resistance}$$

Give the unit.

_____

_____

Resistance = _____

Another bulb is added to the circuit in series.

(g) Describe what will happen to:

(i) the overall resistance of the circuit. **[1]**

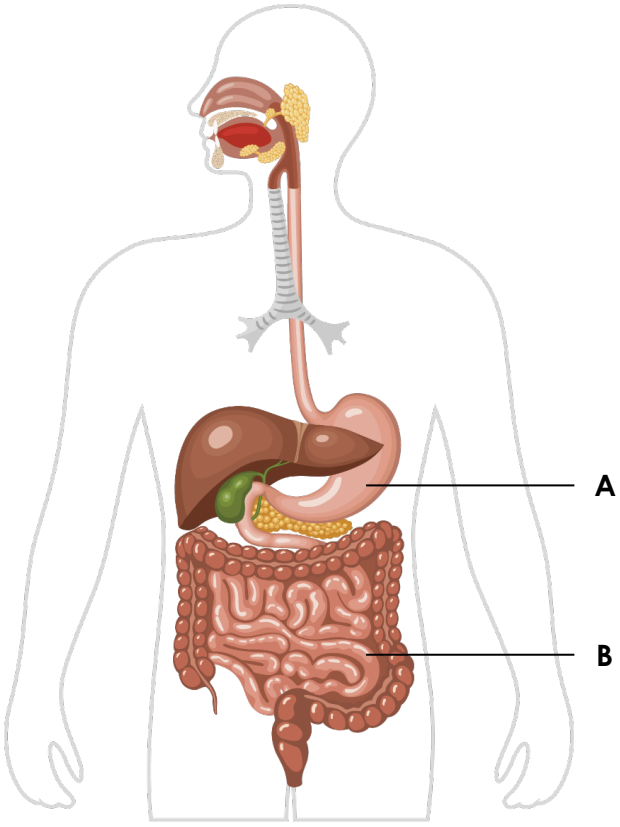
_____

(ii) the brightness of the bulbs. **[1]**

_____

[Total 12 marks]

Q4. The diagram below shows the human digestive system.



(a) State the name of the organ labelled A. **[1]**

_____

(b) Describe the function of the organ labelled B. **[2]**

_____

_____

Mango juice contains a chemical that helps to speed up the digestion of protein.

(c) Name the type of substances that speed up digestion. **[1]**

_____

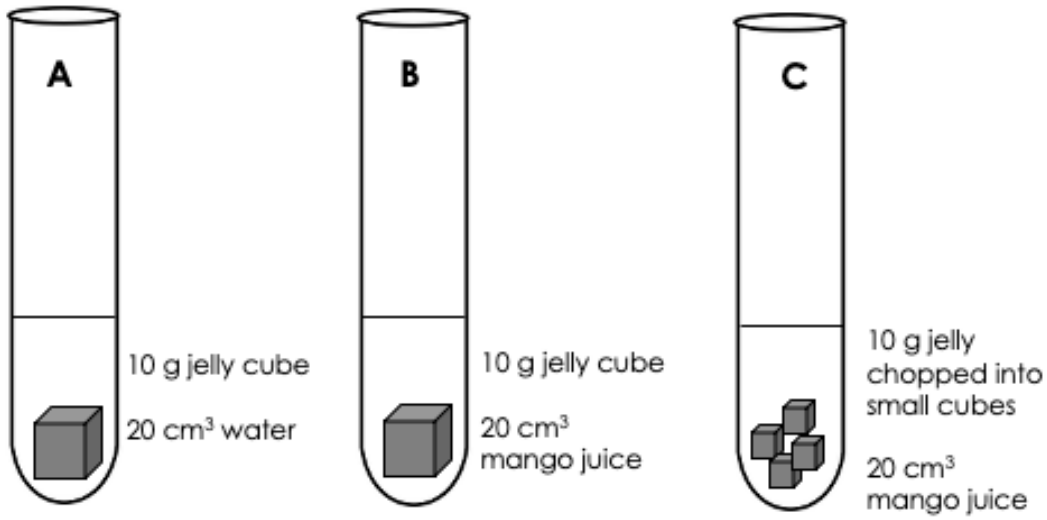
(d) Describe a function of protein in a balanced diet. **[1]**

_____

_____

Leo investigated the digestion of a protein called gelatin, which is present in many gummy sweets.

The images below show the experimental set up that Leo used.



He measured how long it took for the jelly to be digested in each test tube and presented his results in the table below.

Test tube	**Time taken for jelly to be digested**
A	Not digested
B	4 hours
C	2 hours

(e) Identify one control variable that Leo used. **[1]**

_____

(f) Explain the purpose of test tube A. **[1]**

_____

_____

(g) Leo says this investigation shows that it is helpful to chew your food. Explain how the results support this conclusion. **[1]**

_____

_____

[Total 8 marks]

Q5. Methane (CH_4) is a gas that comes from fossil fuels. It can be burned to release energy so is used in power stations and gas boilers in home heating systems.

(a) State the number of each type of atom present in a molecule of methane. **[1]**

_____

_____

Methane can be burned in air, where it reacts with oxygen.

(b) Name the type of reaction when methane burns. **[1]**

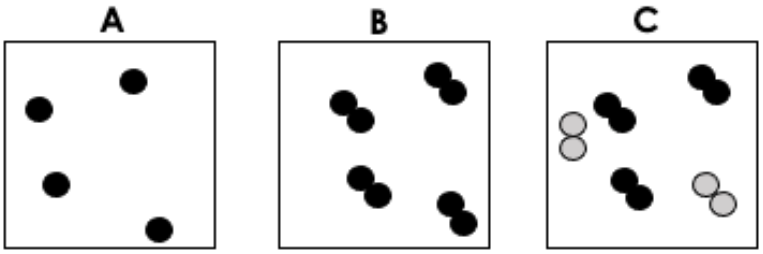
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The chemical reaction between methane and oxygen can be represented by the following equation:

$$CH_4 \quad + \quad ___ O_2 \quad \rightarrow \quad _____ H_2O \quad + \quad CO_2$$

(c) Balance the equation above. **[1]**

(d) Which of the particle diagrams below best represents the particles in air? **[1]**



_____

(e) Describe the movement of particles in air. **[1]**

_____

_____

(f) Burning methane is not considered environmentally friendly. Use the chemical equation for the reaction to explain why. **[2]**

(g) Burning wood can be an alternative to burning methane. Suggest how this process would compare in terms of environmental friendliness. **[3]**

[Total 10 marks]

END OF ASSESSMENT