

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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SECONDARY 2

12/08/24

SCIENCE

August 2024

Paper 1

45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use the black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided
- Do **not** use an erasable pen or correction fluid.
- You should show all your working in the booklet.
- You are **not** allowed to use a calculator.

INFORMATION

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

For Teacher's Use	
Question No	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total	/ 50

Invigilator's Name:.....

Invigilator's Sign:.....

1. Use the paragraph below to answer the following questions. Encircle the letter of your answer.

Two closely related populations of butterflies inhabit the same forest community. One population is light colored and the other is dark colored. Biologists suspect that the color of the butterflies somehow determines their population sizes. He concludes that the light color butterflies are more easily preyed upon by birds because they stand out against the dark tree trunks. To test his conclusions, he marks an equal number of dark and light-colored butterflies, releases them, and later traps the survivors. When he counts the trapped butterflies, he finds more dark colored ones than light colored ones.

- i. That both dark colored and light-colored butterflies are found is a(n)
 - a. fact
 - b. hypothesis
 - c. interpretation
 - d. conclusion
- ii. The biologist's idea that color influences the size of the butterfly population is a(n)
 - a. observation
 - b. fact
 - c. hypothesis
 - d. conclusion
- iii. The marking, trapping, and counting of butterflies is a(n)
 - a. experiment
 - b. theory
 - c. hypothesis
 - d. variable
- iv. The numbers of each color of butterfly he counts are
 - a. hypotheses
 - b. interpretations
 - c. data
 - d. experiments
- v. The results of counting the trapped butterflies
 - a. proved his conclusion about color
 - b. did not support his conclusion about color
 - c. supported his conclusion about color
 - d. showed no relationship between color and the population size of butterflies

[5]

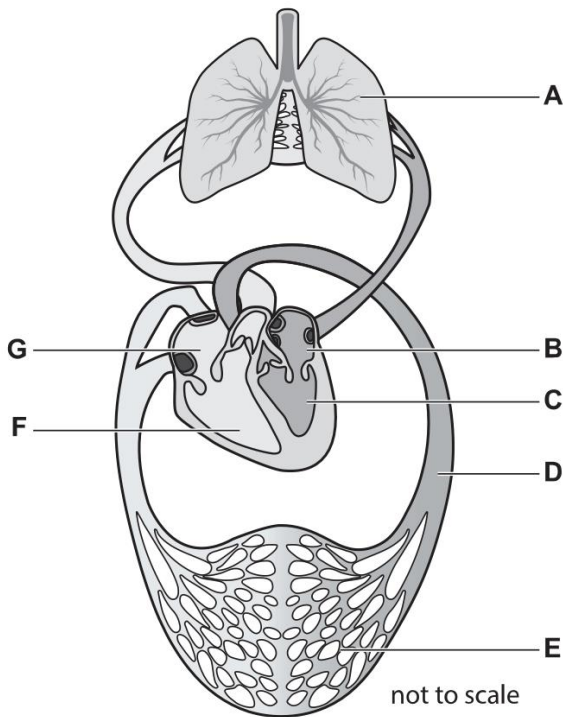
[Total: 5]



2.

The diagram shows the human circulatory system.

Parts of the system are labelled with the letters **A** to **G**.



Use the diagram to identify parts of the circulatory system from their descriptions.

Write your answers in the table.

description	letter
the part that pumps blood to the lungs	
the part where oxygen leaves the blood	
the part where the blood is at its greatest pressure	
an artery that takes blood to the body	

[4]

[Total: 4]

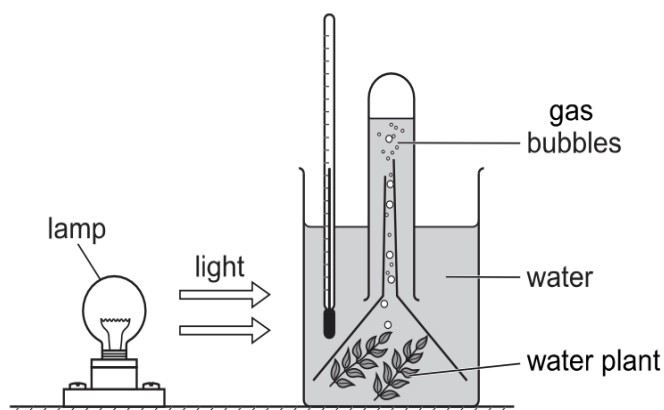


3.

Safia and Jamila investigate photosynthesis.

They use water plants.

Here is the apparatus they use.



(a) In their first experiment they measure the number of gas bubbles made in one minute.

(i) What is the name of the gas made in photosynthesis?

Circle the correct answer.

carbon dioxide methane nitrogen oxygen water [1]

(ii) What equipment does Safia use to measure one minute?

..... [1]



(b) Safia and Jamila do two more experiments.

They move the lamp further away from the plant for each experiment.

Here are their results.

distance between light and water plant in cm	number of gas bubbles in one minute
10	98
20	54
40	26

(i) Why do they use one minute for each experiment?

..... [1]

(ii) Complete the sentence describing the pattern of results.

As the distance between the light and the water plant increases,

..... [1]

(c) **Predict** the results for:

a distance of 30 cm = gas bubbles

a distance of 50 cm = gas bubbles

[1]

(d) Circle the correct word or phrase that completes the conclusion.

increases

The rate of photosynthesis **does not change** as light decreases.

decreases

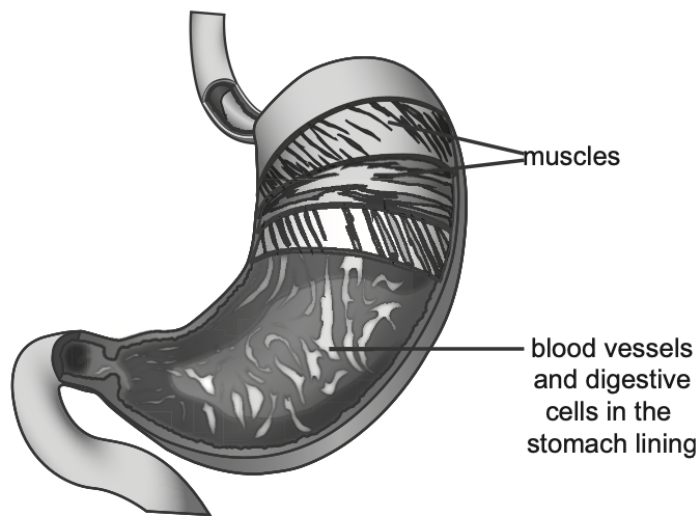
[1]

[Total: 6]



4.

The diagram shows a human stomach.



(a) Which term best describes the stomach?

Circle the correct answer.

cell

organ

organism

system

tissue

Use information from the diagram to explain your answer.

.....

.....

[2]

(b) Red blood cells and muscle cells are found in the wall of the stomach.

(i) Explain how the structure of a red blood cell is related to its function.

.....

.....

[2]

(ii) Explain how the structure of a muscle cell is related to its function.

.....

.....

[2]

[Total: 6]



5.

The diagram shows the process of photosynthesis in a leaf of a plant.

Complete the diagram.

Choose words from the list.

carbon dioxide

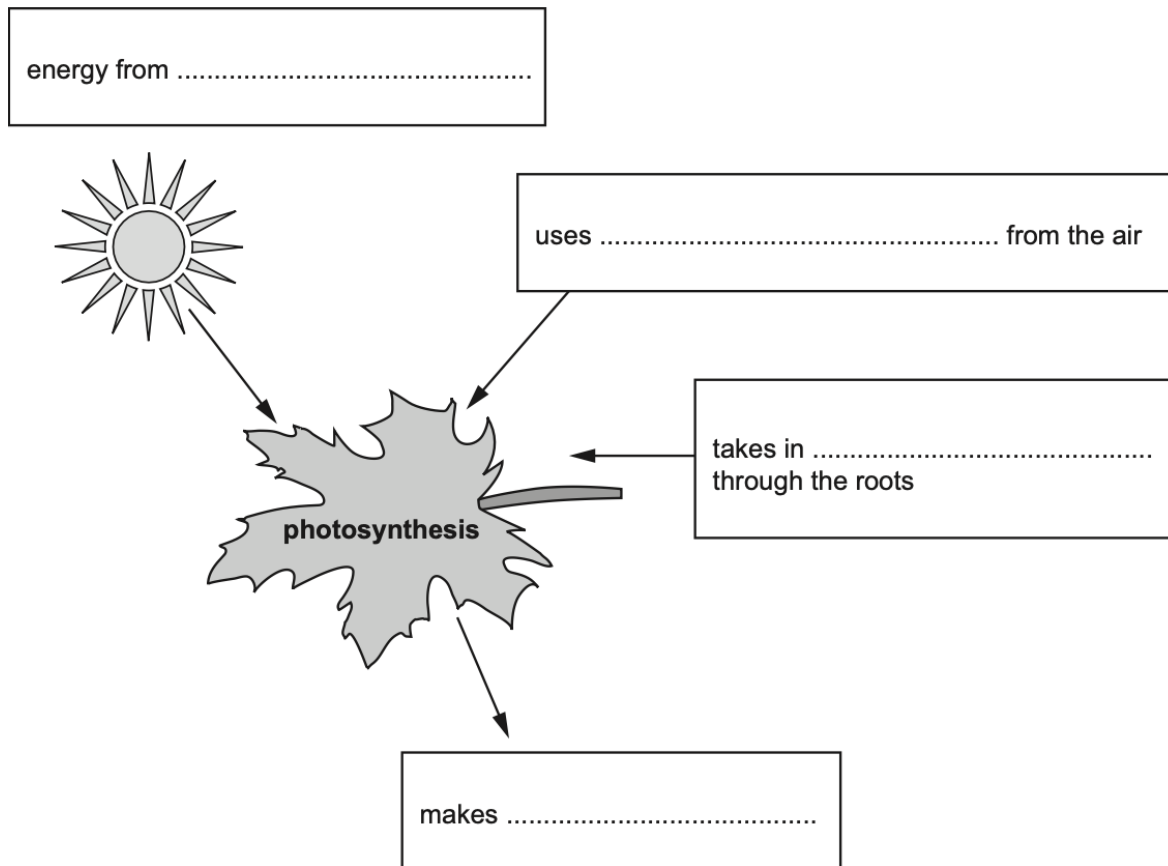
glucose

minerals

nitrogen

sunlight

water



[2]

[Total: 2]

6.

Different cells have different functions.

Draw lines from the **cell function** to the correct **type of cell**.

Draw **four** lines only.

cell function

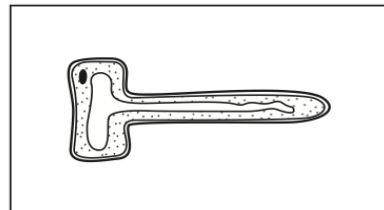
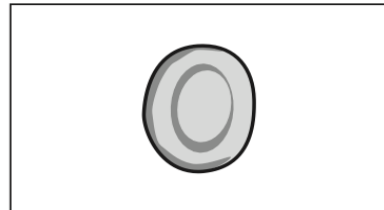
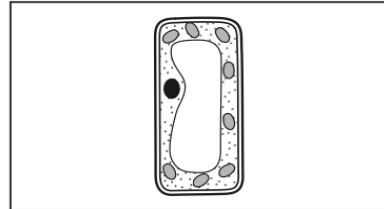
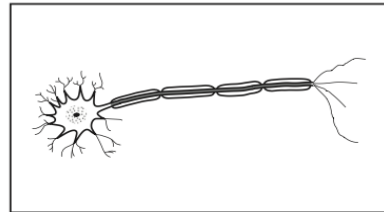
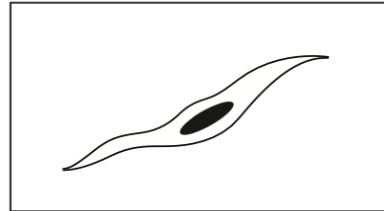
type of cell

absorbs water and
mineral salts

contracts to cause
movement

transports oxygen
around the body

uses light energy
to make food



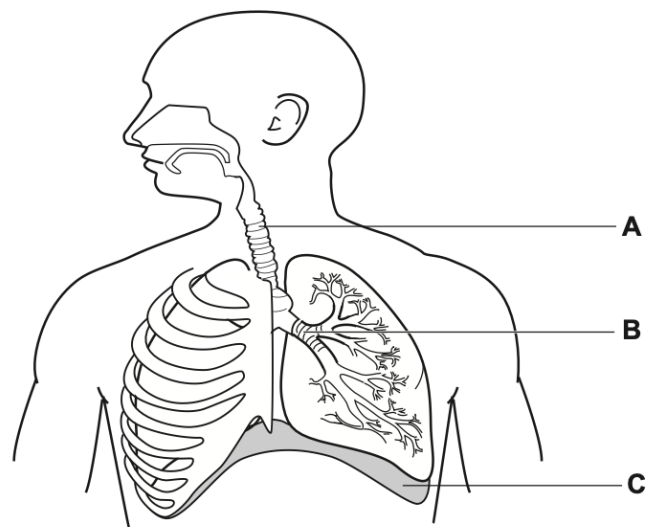
[4]

[Total: 4]



7.

The diagram shows part of the human respiratory system.



Name the structures labelled **A**, **B** and **C**.

Choose words from the list.

air sac**bronchus****diaphragm****lung****rib cage****trachea**

A

B

C

[3]

[Total: 3]

8.

(a) (i) Name the process that plants use to make their own food.

..... [1]

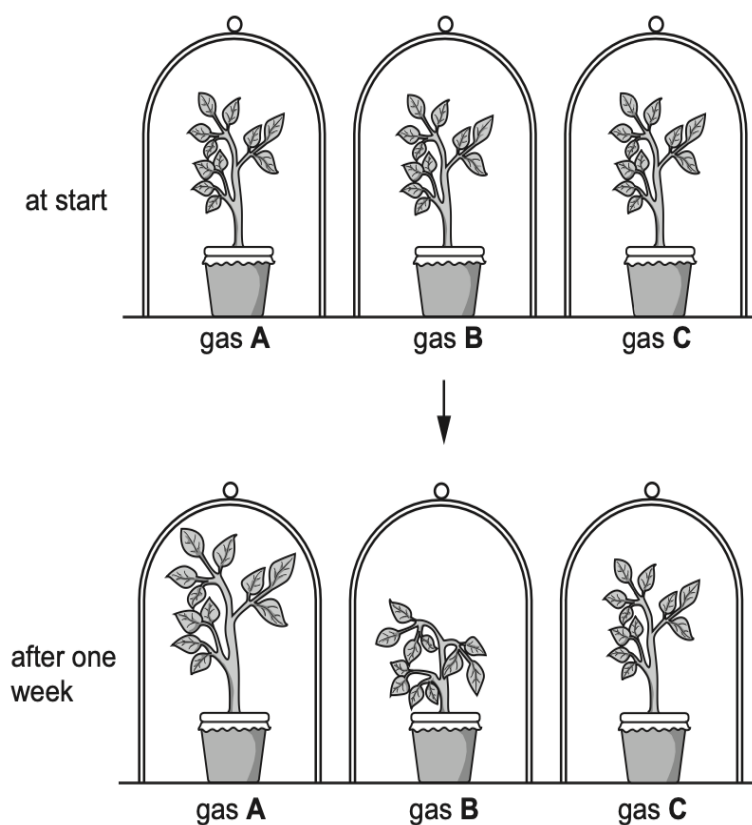
(ii) Name one **other** product of this process.

..... [1]

(b) In an investigation, identical plants are placed in three different gases.

- Each plant is given constant light.
- The plants are kept in the same conditions for one week.

The diagram shows the results of this investigation.



Describe the results of this investigation.

plant kept in gas **A**

.....

plant kept in gas **B**

.....

plant kept in gas **C**

.....

[3]

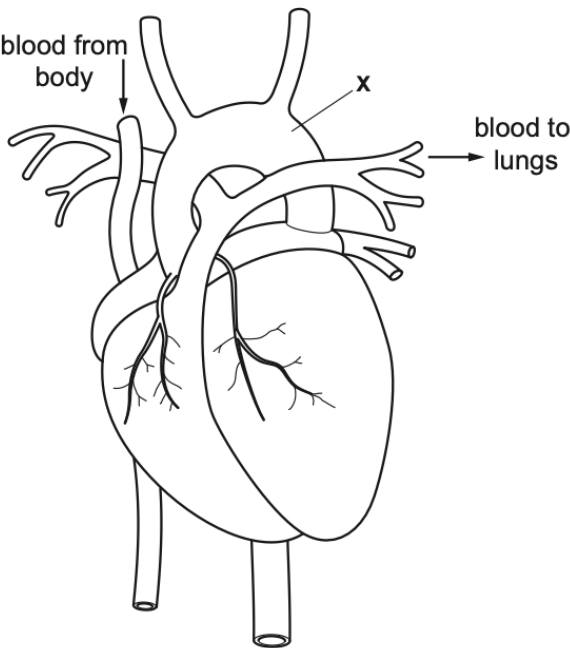
[Total: 5]

For
Examiner's
Use



9.

The diagram shows a model of the human heart.



- (a) Complete the table about the composition of the blood **going to the lungs**.
- Tick (✓) the **two** boxes that describe the correct composition of this blood.

concentration of carbon dioxide		concentration of oxygen	
high	low	high	low
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[1]

- (b) The blood vessel labelled **X** carries blood away from the heart.
- (i) What name is given to this **type** of blood vessel?

..... [1]

- (ii) The blood vessel labelled **X** has very thick walls.
- Explain why this is necessary.

.....

..... [1]

[Total: 3]



10.

Plants absorb mineral salts from the soil.

(a) Circle the cell that plants use to absorb mineral salts.

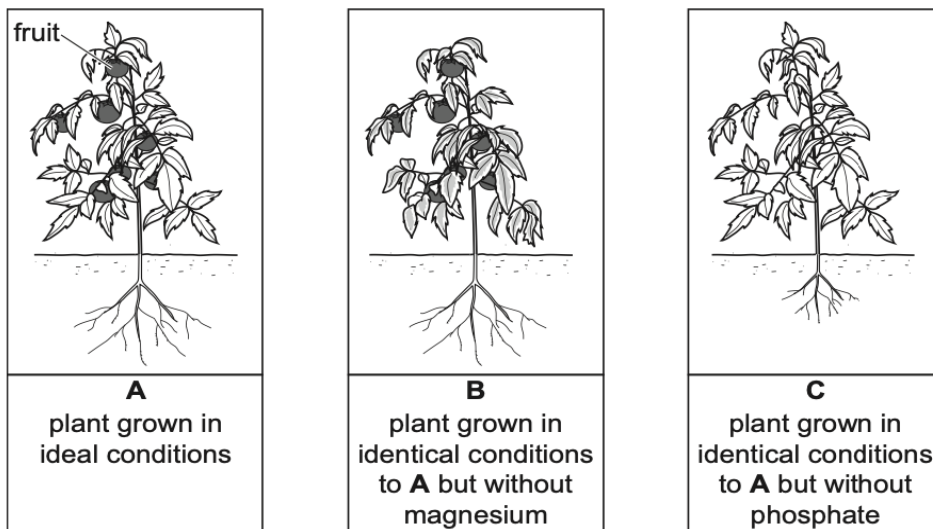


[1]

(b) Which other substance **must** plants absorb from the soil?

[1]

(c) Three identical plants **A**, **B** and **C** are grown in different conditions.



(i) Describe the effects of phosphate on plant growth.

.....

.....

Explain how you can tell from the diagrams.

.....

.....

.....

[3]

(ii) The plant grown without magnesium has yellow leaves.

Suggest why.

.....

[1]

[Total: 6]



11.

Hassan is a farmer.

The soil on his fields is too acidic to grow some crops.

(a) Hassan wants to find out the pH of the soil.

He uses litmus.

(i) How does litmus tell Hassan that the soil is acidic?

..... [1]

(ii) Hassan's friend suggests that he uses Universal Indicator instead of litmus.

Explain why.

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

(b) Hassan adds an alkali to the field.

The acid in the soil reacts with the alkali.

What is the name of this type of reaction?

Circle the correct answer.

evaporation

fertilisation

fossilisation

neutralisation

respiration

[1]

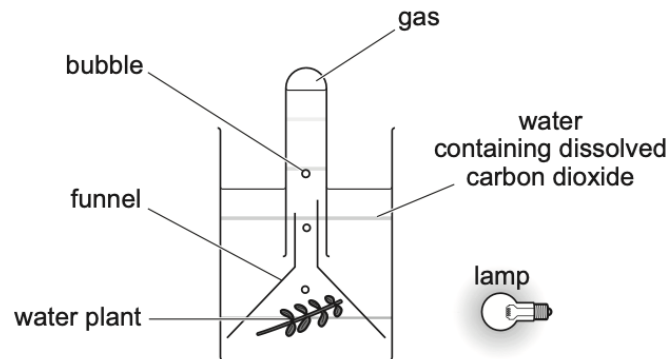
[Total: 3]



12.

Rajiv and Jamila investigate photosynthesis.

They set up their apparatus as shown.



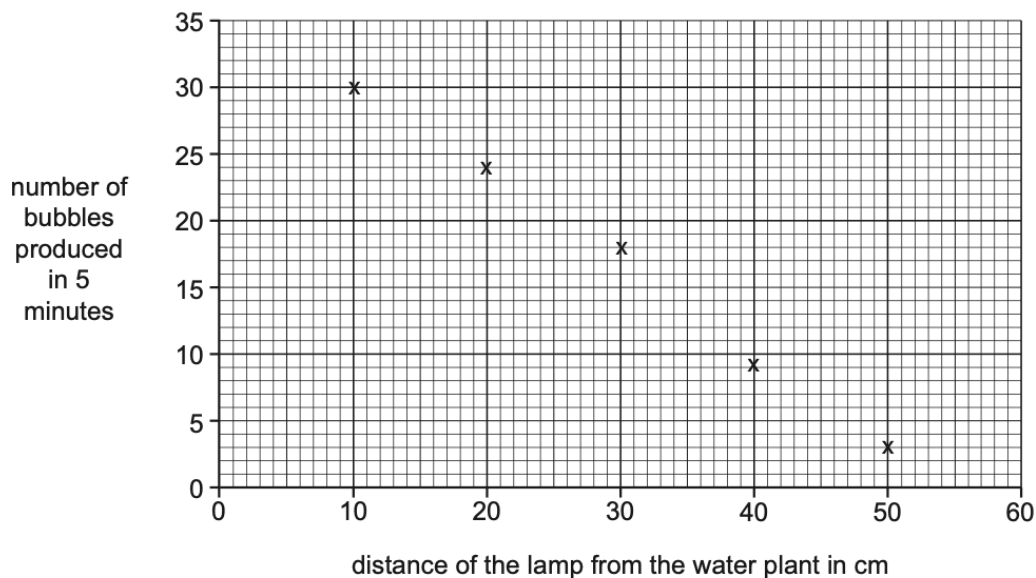
They want to find out how changing the distance of the lamp from the water plant affects the rate of photosynthesis.

(a) Write down two **variables** that they measure.

- 1
- 2 [2]

(b) Rajiv and Jamila do their experiment.

Here are their results.



Describe the pattern shown by the results.

.....

..... [1]

[Total: 3]

