Let the mind manage the body
Que l'esprit gère le corps

Index Number: .....

NATIONAL CERTIFICATE OF EDUCATION

2023

BIOLOGY (N530)

TIME: 45 MINUTES

Candidates answer on the Question Paper.
Additional Material: Ruler, Calculator

READ THESE INSTRUCTIONS FIRST

1. Write your index number in the space provided above.
2. Write in dark blue or black ink. Do not use correction fluid.
3. You may use a soft pencil for any diagram, graph or rough working.
4. Diagrams are not drawn to scale unless otherwise specified.
5. Any rough working should be done in this booklet.
6. Answer **ALL** questions.
7. This document consists of **6** questions printed on **14** pages, numbered **2** to **15**.
8. The number of marks is given at the end of each question or part question.
9. The total number of marks for this paper is **50**.

For Examiners' use								
Question No.	**1**	**2**	**3**	**4**	**5**	**6**	**Total**	**Signature**
Examiner								
Team Leader								
CE/ACE								

Marks

Question 1 (10 marks)

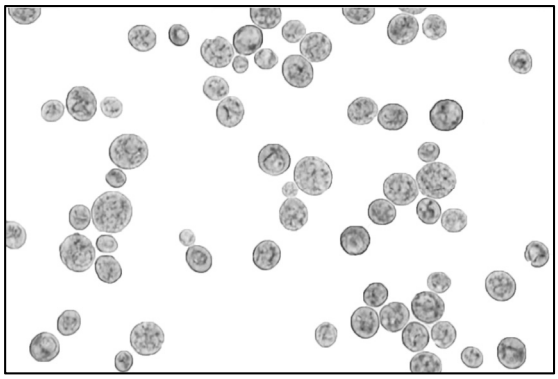
Circle the correct answer. Each item carries one mark.

1. Which organism reproduces **asexually**?

A Cat

B Dog

C Human



D Yeast

2. Which cells are shown in **Fig. 1.1**?

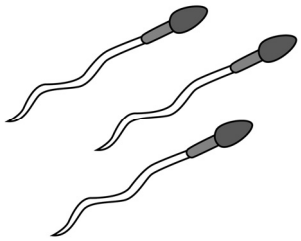


Fig. 1.1: Cells

A Epidermal cells

B Muscle cells

C Ovum

D Sperm cells

3. Which measure helps in the prevention of the spread of AIDS?

A Using condoms

B Exercising regularly

C Having a diet low in salt

D Avoiding smoking cigarettes

4. Which part of plants **absorbs** water from the soil?

A Flower

B Stem

C Branch

D Root

5. **Fig. 1.2** shows a leaf.

What is structure **X**?

A Leaf margin

B Lamina

C Midrib

D Leaf apex

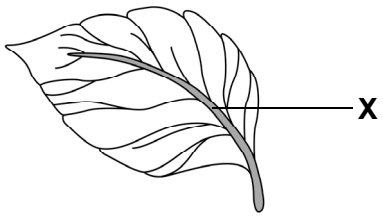


Fig. 1.2: A leaf

6. Which organ pumps **blood** around the body?

A The brain

B The heart

C The lung

D The kidney

7. Which one is a **cardiovascular** disease?

A Covid-19

B HIV

C Stroke

D Syphilis

8. Which pigment is responsible for the **red** colour of blood?

A Chlorophyll

B Calcium

C Haemoglobin

D Plasma

9. Which one of the following is an example of a **human activity** that affects the environment?

A Cyclones

B Deforestation

C Tsunamis

D Volcanic eruptions

10. Which one of the following is an **endemic** species of Mauritius?

A Mongoose

B Monkey

C Pink pigeon

D Rat

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Marks

Question 2 (8 marks)

(a) **Fig. 2.1** shows the different parts of a blood sample.

Label parts **A**, **B** and **C**. Choose from the words given below.

White blood cell **Red blood cell** **Plasma** **Platelets**

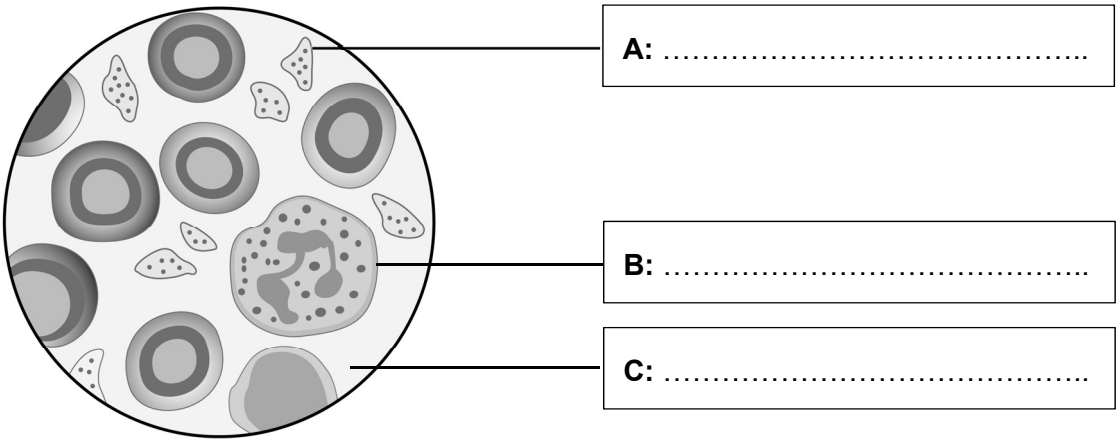
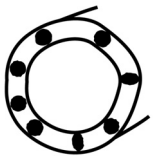


Fig. 2.1: Blood sample

[3]

(b) Match each type of blood vessel to its corresponding function.

Type of blood vessel	Function
 Artery	Carries blood to the heart.
 Vein	Allows exchange of substances between blood and cells.
 Capillary	Allows the clotting of blood.
	Carries blood under high pressure.

[3]

Marks

(c) (i) **Fig. 2.2** shows a vein.

Name structure **P**.

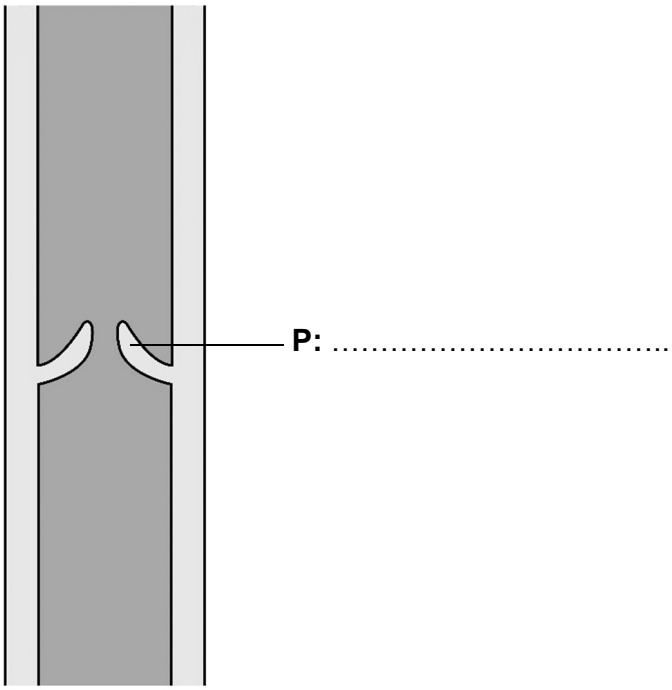


Fig. 2.2: A vein

[1]

(ii) Which one is the function of structure **P** ?

Tick (✓) the correct answer.

☐	It prevents the passage of nutrients.
☐	It prevents blood from flowing backward.
☐	It prevents the entry of germs in a wound.

[1]

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Marks

Question 3 (10 marks)

(a) **Fig. 3.1** shows the female reproductive system.

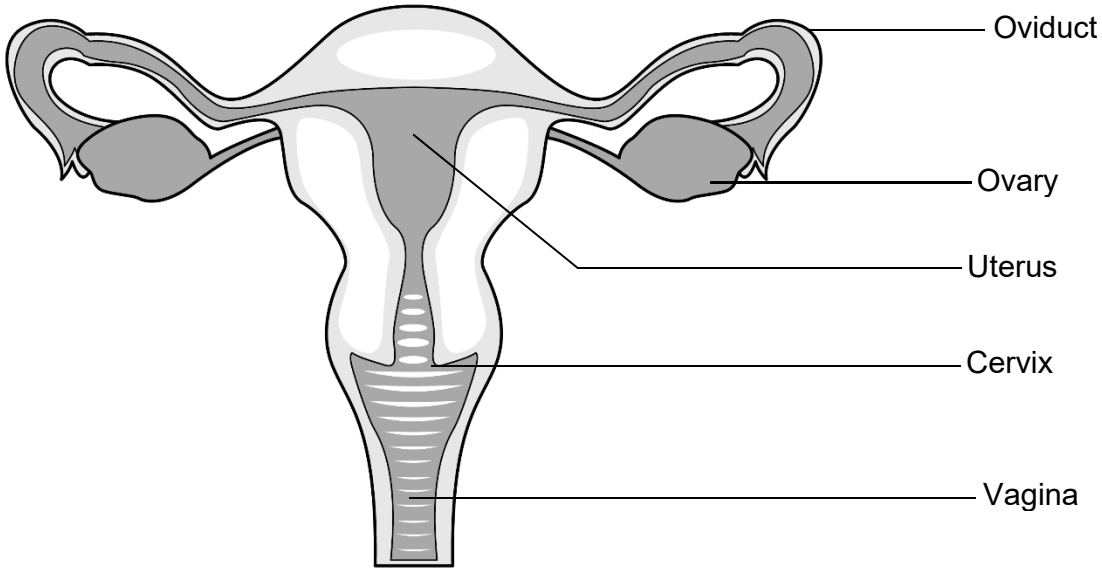

Fig. 3.1: Female reproductive system

Using **Fig 3.1**, fill in the blanks in sentences (i) to (v).

(i) The _____ produces eggs.

(ii) Fertilisation takes place in the _____ .

(iii) The _____ is also known as the birth canal.

(iv) The foetus grows inside the _____ .

(v) The _____ separates the uterus from the vagina.

[5]

Marks

(b) **Fig. 3.2** shows part of the male reproductive system.

Using the words given below, label parts **M – Q** on **Fig. 3.2**.

Urethra **Scrotum** **Testis**

Prostate gland **Sperm duct**

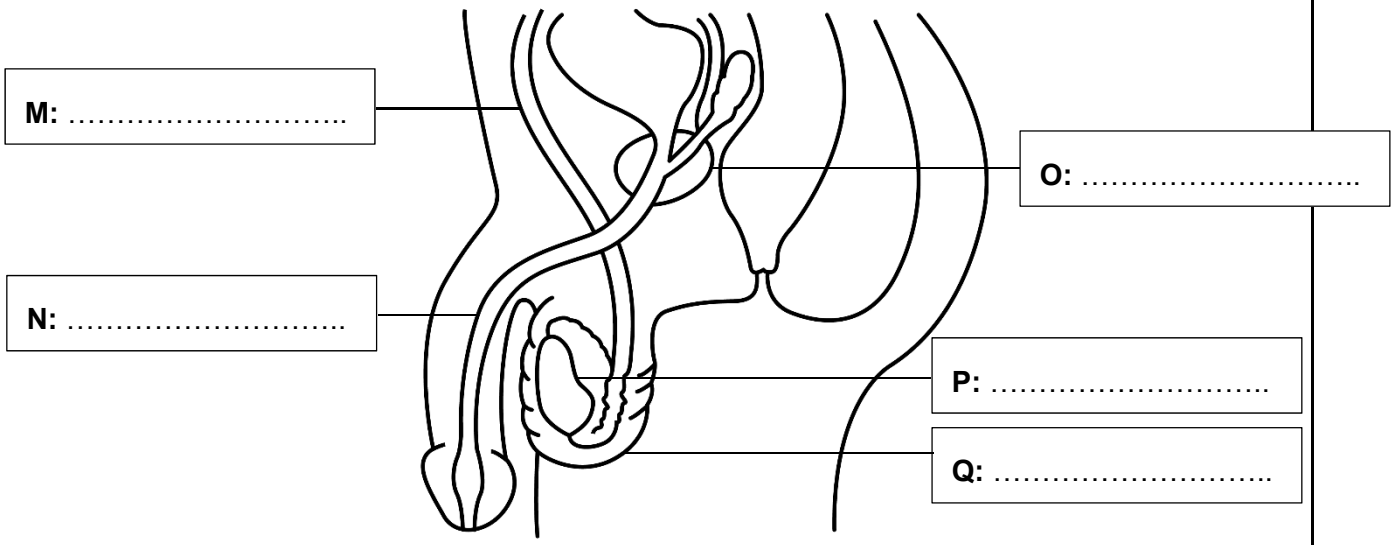

Fig. 3.2: Part of the male reproductive system

[5]

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Question 4 (5 marks)

Fig. 4.1 shows several features and activities close to a river.

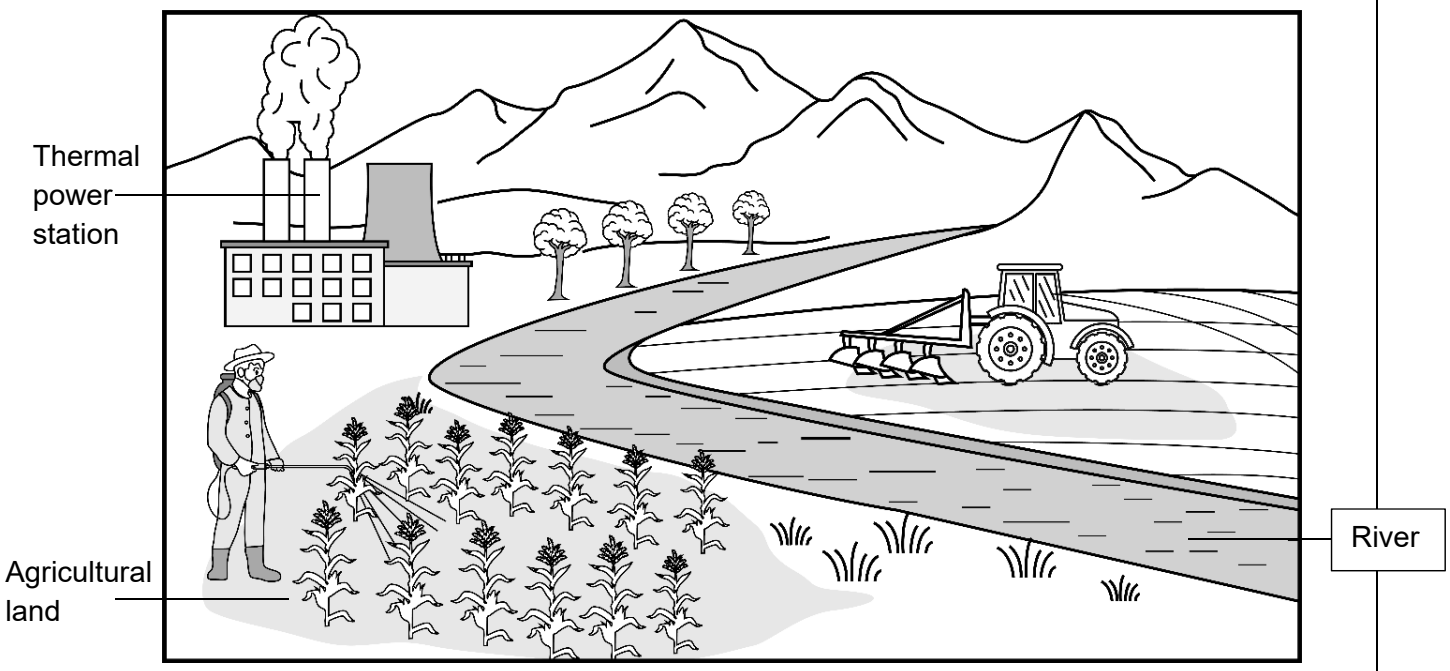

Fig. 4.1: An area close to a river

(a) The biodiversity of this area is being affected by human activities.

Describe biodiversity.

_____

_____ [1]

(b) Give one harmful effect of air pollution on the environment caused by the thermal power station.

_____

_____ [1]

Marks

(c) Explain how the use of excess fertilisers in the agricultural land affects aquatic life in the river.

_____

_____ [2]

(d) Suggest one measure that can be taken to protect the biodiversity of this area.

_____

_____ [1]

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Question 5 (10 marks)

Fig. 5.1 shows a red blood cell with a magnification of x15000.

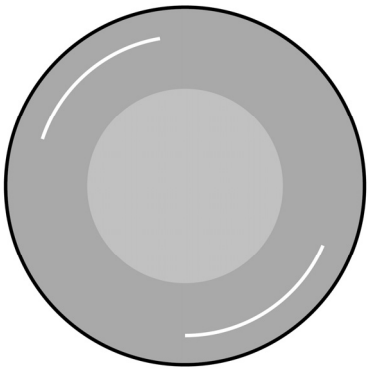


Fig. 5.1: Red blood cell

Magnification: x15000

(a) Calculate the actual size in mm of the red blood cell shown in **Fig. 5.1**.
Show your working.

Answer: _____ mm [3]

(b) Red blood cells distribute oxygen throughout the body. Give two ways how they are adapted to carry out this function.

1. _____

2. _____ [2]

(c) Define a pulse.

_____

_____ [1]

(d) Kevin investigates the effect of exercising on his pulse rate.

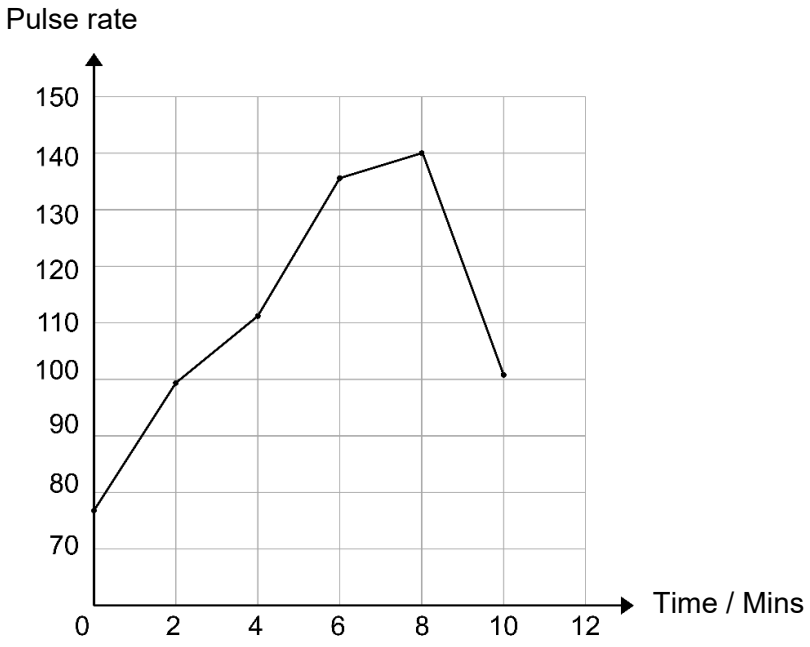
He takes his pulse rate at minute 0, that is, before starting to exercise.

(i) Give one reason why he should take his pulse rate before he starts exercising.

_____

_____ [1]

(ii) He then monitors his pulse rate for 8 minutes while exercising and 2 minutes after exercising. The results are given in the graph below.



Describe the trend shown on the graph. (Use appropriate figures from the graph).

_____

_____ [2]

(iii) Give one reason why his pulse rate changes while exercising.

_____

_____ [1]

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Question 6 (7 marks)

Sara carries out an experiment to investigate the rate at which the leaves of a pond plant produce bubbles of oxygen when exposed to different intensities of light.

The apparatus used is shown in **Fig. 6.1**.

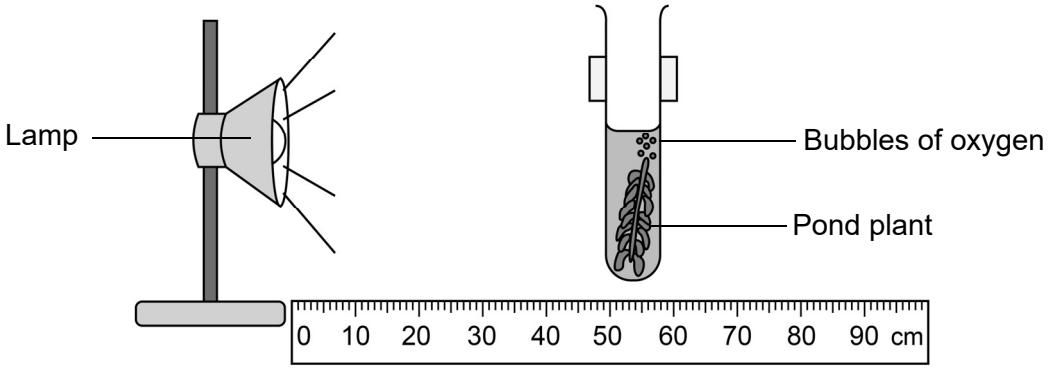


Fig. 6.1: Experimental set up

The investigation is carried out in a dark laboratory. The only source of light is the lamp.

Sara changes the light intensity by placing the lamp at different distances from the plant each time.

She records the number of bubbles of oxygen produced by the plant at each distance.

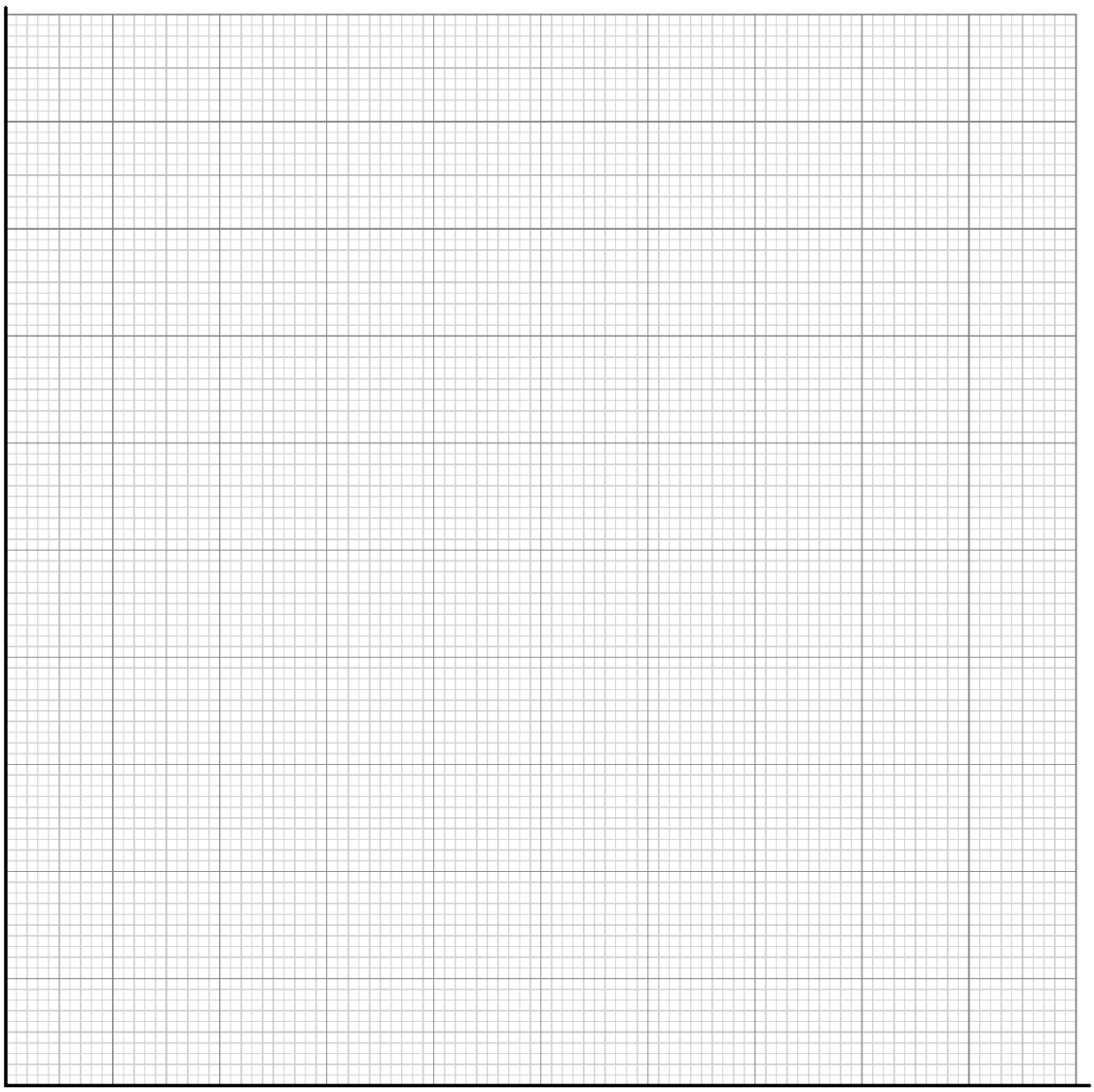
The results are shown in **Table 6.1**.

Table 6.1

Distance of lamp from plant / cm	No. of bubbles of oxygen produced per minute
20	29
40	16
60	8
80	3
100	1

Marks

(a) Use the data in **Table 6.1** to draw a line graph.



[4]

(b) Use your graph to estimate the distance of the lamp from the plant when 12 bubbles of oxygen are produced per minute.

1. Show on the graph how you obtained your answer. [1]

2. Distance of the lamp: _____ [1]

(c) Briefly describe the relationship between light intensity and the rate at which oxygen is produced by the plant.

_____

_____ [1]

E

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