Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2023

Double Award Science: Biology

Unit 7 Practical Skills
Booklet B
Foundation Tier

[GDW72]

GDW72

FRIDAY 9 JUNE, AFTERNOON

TIME

30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page or on blank pages.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 35.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **4**.

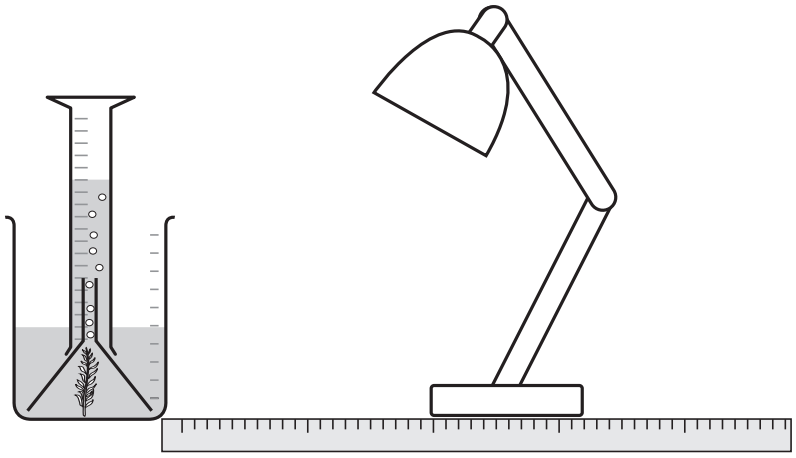
13732.06**R**

1 **(a)** A student carried out an investigation into the number of bubbles of gas produced by pondweed.

He placed a lamp at different distances from the pondweed and switched the lamp on.

He recorded the number of bubbles of gas produced in one minute at each distance.

The diagram shows the apparatus he used.



(i) Name the process carried out by the pondweed which produces the bubbles of gas.

_____ [1]

(ii) What gas is produced by the pondweed?

Circle the correct answer in the list.

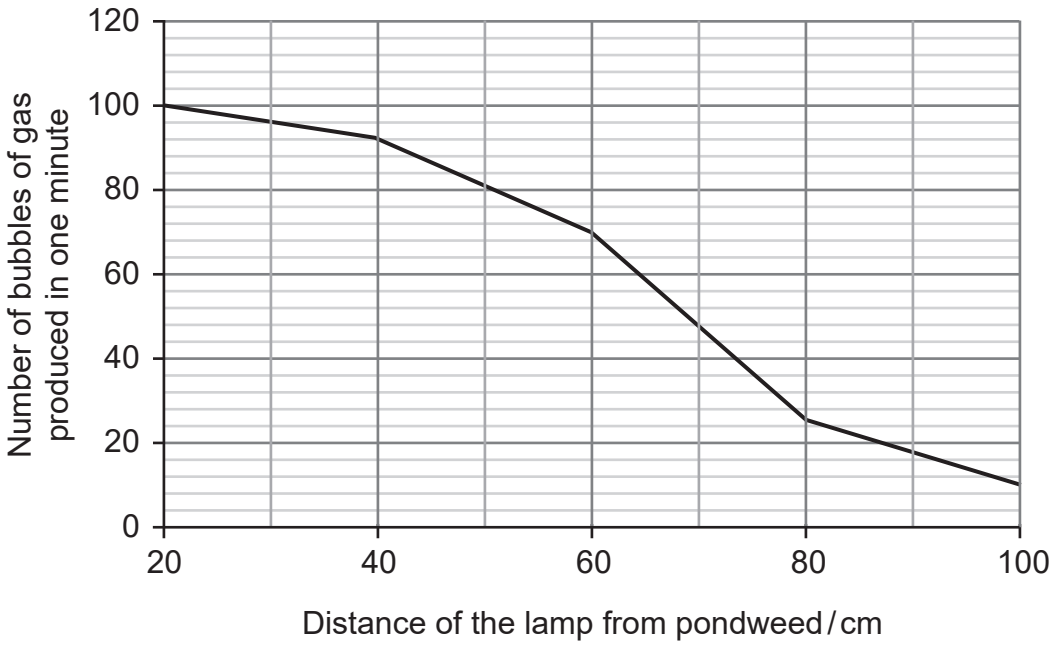
carbon dioxide	oxygen	nitrogen

[1]

(iii) Name the **pigment** in the pondweed that absorbs light energy.

_____ [1]

The graph shows the results of the student's investigation.



(b) Describe and explain the trend in the student's results.

Description _____

_____

Explanation _____

_____

_____

_____ [3]

[Turn over

(c) In this investigation there were a number of variables.

(i) What type of variable was:

- distance of the lamp from the pondweed? _____
- time? _____ [2]

In this investigation, the student counted the number of bubbles of gas produced by the pondweed in one minute.

(ii) Suggest how he could have measured the amount of gas produced more accurately.

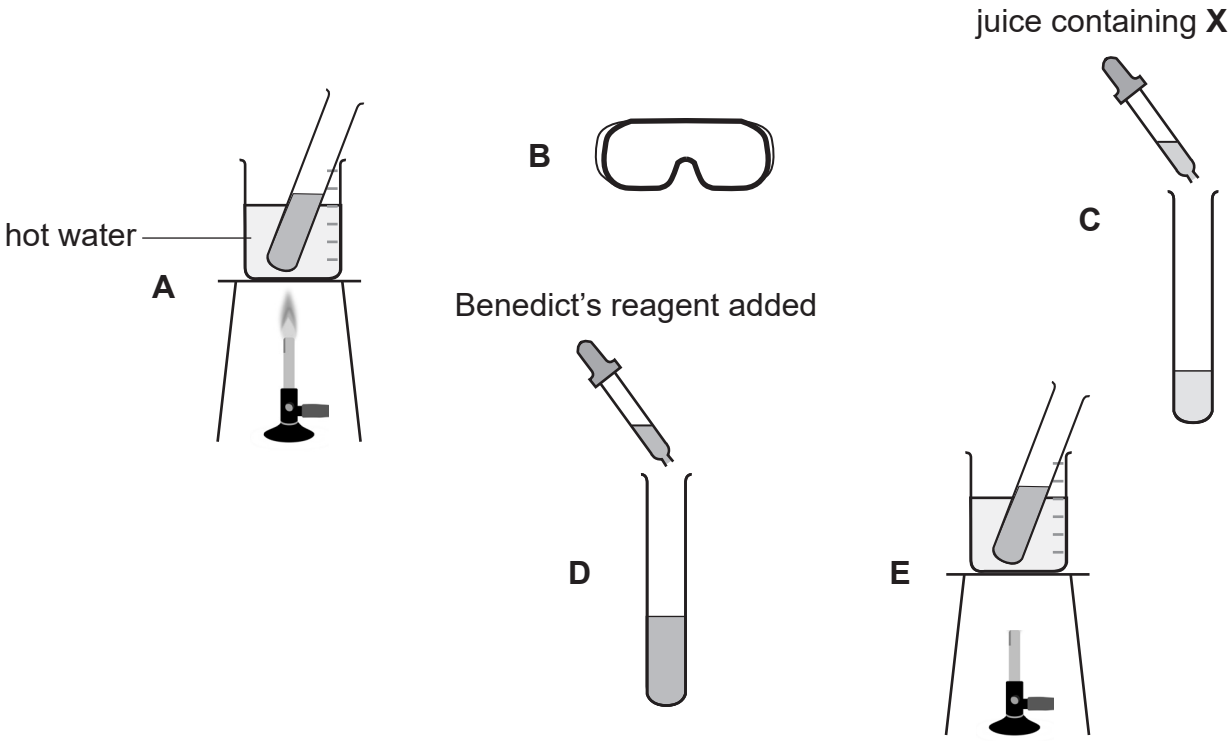
_____

_____ [1]

2 **(a)** The diagram shows the steps carried out when testing a juice with Benedict's reagent.

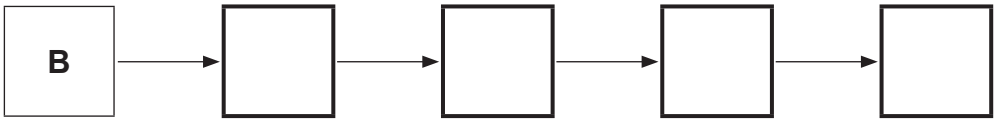
Benedict's reagent is used to test for biological molecule **X**.

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



(i) Use the diagram to put the steps in the correct order by writing the letters in the empty boxes.

The first box has been completed for you.



[2]

[Turn over

(ii) Complete the table to give the initial colour of Benedict's reagent and the end colour for a positive result for biological molecule X.

Initial colour	End colour

[2]

(iii) Identify biological molecule X that Benedict's reagent tests for.

Circle the correct answer in the list below.

starch	protein	glucose	glycogen

[1]

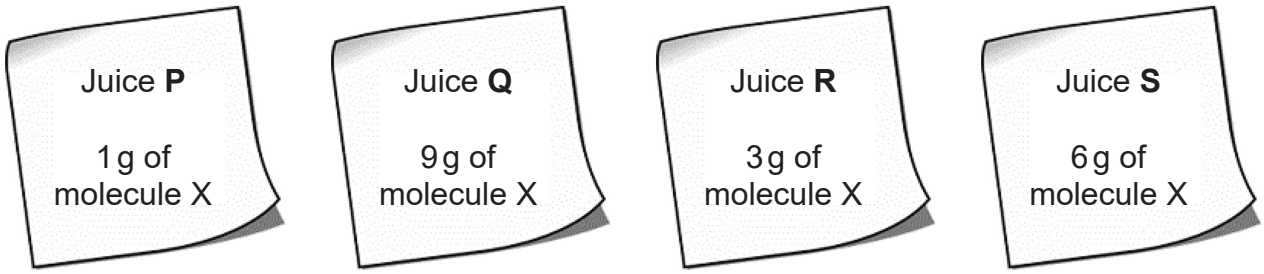
(b) A student investigated four different juices, **P**, **Q**, **R** and **S**.

The four juices contained **different concentrations** of molecule X.

She tested the same volume of each juice using Benedict's reagent.

She recorded the time taken for the colour change to occur for each juice.

The labels below show the mass of X in each juice.



The table shows the time taken for the colour change to occur when juice **P** was tested.

(i) Use the information in the labels opposite to match the three remaining juices, **Q**, **R** and **S**, with the time taken for the colour change to occur.

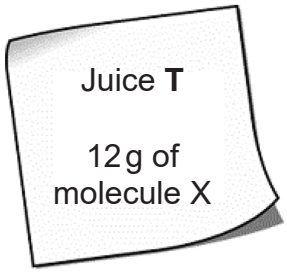
Write your answers in the empty boxes in the table.

Juice	Time taken for colour change / min
P	**15.5**
	9.4
	6.1
	12.6

[2]

The student then completed the same experiment on a **different juice**, **T**.

The label for juice **T** is shown below.



The result for juice **T** is shown in the table.

Juice	Time taken for colour change / min
T	17

[Turn over

The student thought that the **time taken** for the colour change to occur for juice **T** was anomalous.

(ii) Place a tick [✓] in the empty box in the table that explains why the student thought this result was anomalous.

Statement	Explanation
The colour change should take the **same** time as one of the other juices.	
The colour change should take a **shorter** time than any of the other juices.	
The colour change should take a **longer** time than any of the other juices.	

[1]

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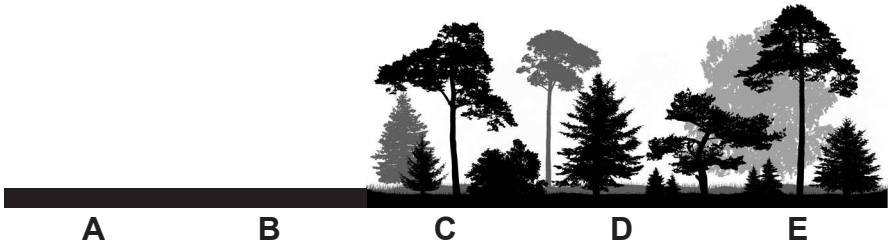
(Questions continue overleaf)

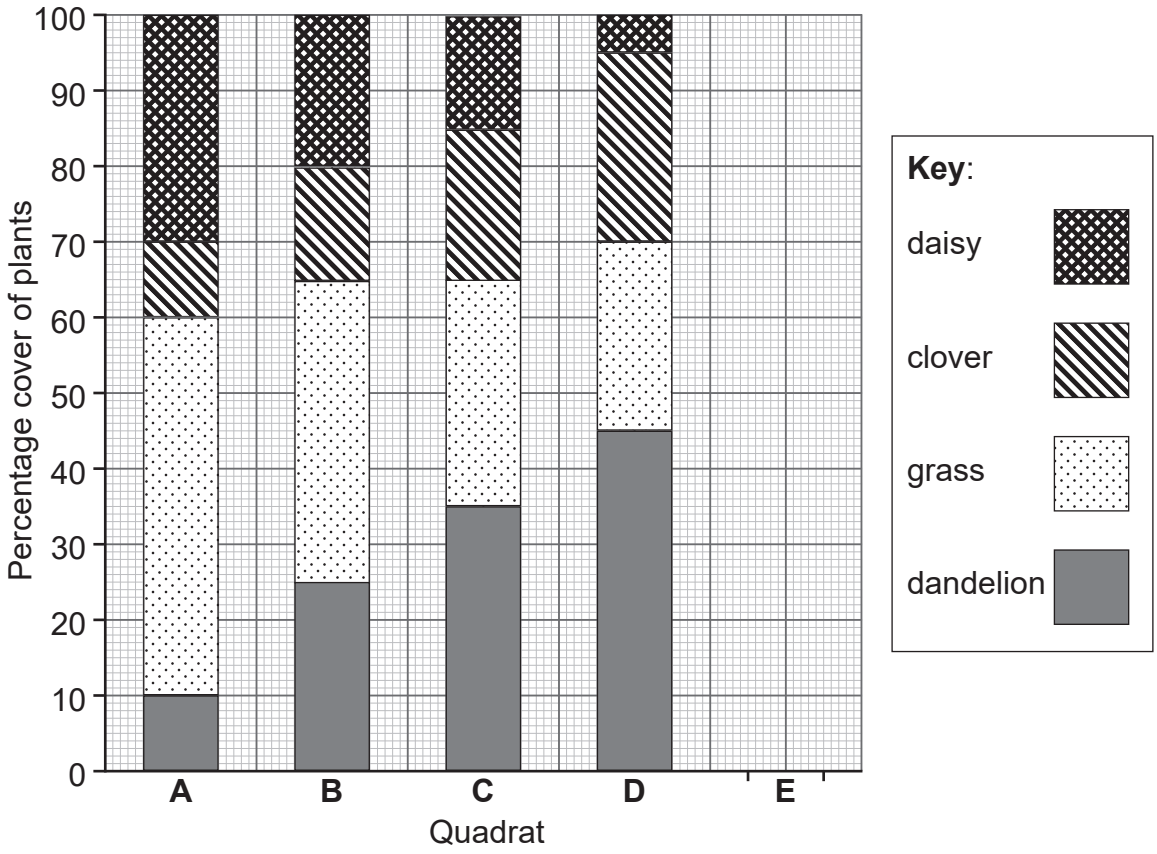
[Turn over

3 **(a)** A group of students investigated the percentage cover of four different types of plant, daisy, clover, grass and dandelion, along a line transect.

The students recorded the percentage cover of each type of plant present in five quadrats, **A**, **B**, **C**, **D** and **E**, at the positions shown in the diagram.



Some of the results of their investigation are shown in the bar chart.



(i) In which quadrat was the percentage cover of grass plants highest?

Circle the correct answer from the list.

A	B	C	D

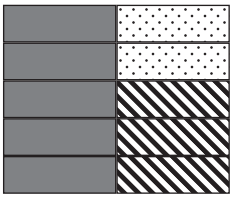
[1]

(ii) Give the trend in the percentage cover of daisy plants from quadrats **A** to **D**.

_____

_____ [1]

(b) The percentage cover of plants present in quadrat **E** is represented in the diagram below.



(i) Use the diagram above to complete the table for the percentage cover of the different types of plants present in quadrat **E**.

The percentage cover of clover plants has been completed for you.

Type of plant	Percentage cover of plants
daisy	
clover	30
grass	
dandelion	

[2]

(ii) Use your answers in the table above to add a bar for quadrat **E** to the bar chart opposite. Use the **key** to correctly shade the bar you have drawn. [3]

(c) The percentage cover of dandelion plants increased between quadrats **A** and **D**.

(i) Use the bar chart to calculate the increase in percentage cover of dandelion plants between quadrats **A** and **D**.

Show your working.

_____ [2]

[Turn over

The students also measured three abiotic factors at each quadrat.

The table shows their results.

Quadrat	Light levels	Soil pH	Temperature / °C
A	very high	6.7	17
B	very high	6.8	14
C	medium	6.7	13
D	low	6.7	11
E	low	6.7	10

(ii) Use the results in the table to suggest **two** reasons for the increase in percentage cover of the dandelion plants between quadrats **A** and **D**.

1. _____

_____

2. _____

_____ [2]

(iii) Name **one other** abiotic factor that plants compete for.

_____ [1]

4 Students prepared a slide of onion epidermis.

Describe the steps the students would take to prepare a slide of onion epidermis and view it at low power with a microscope.

In this question you will be assessed on your written communication skills, including the use of specialist scientific terms.

[6]

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SOURCES

Fig.1(a): Principal Examiner
Fig.2(a): Principal Examiner
Fig. 3(a): © Getty Images

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Question Number	Marks
1	
2	
3	
4	
Total Marks	

Examiner Number

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