Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2019

Double Award Science: Biology

Unit 7 Practical Skills
Booklet B
Foundation Tier

[GDW72]

GDW72

FRIDAY 7 JUNE 2019, MORNING

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 **3**.

12267

1 **(a)** The photograph below shows three onion bulbs.

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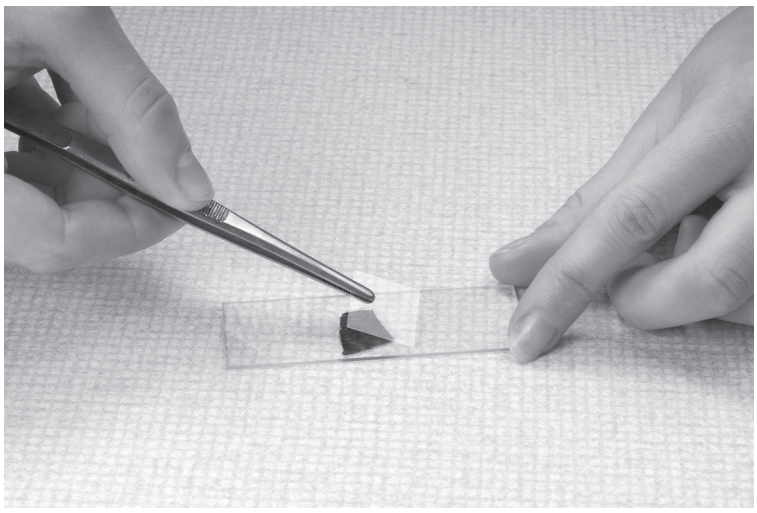
A student prepared a slide of onion cells from an onion bulb, to view under a microscope.
The photographs below show two steps in this process.



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The student used forceps to slowly lower the coverslip onto the slide.
If this is not done carefully, thick black rings may be seen on the slide when it is viewed under the microscope.

(i) Suggest what these thick black rings are.

_____ [1]

(ii) Iodine solution is a stain that can be added to the onion cells.
What is the advantage of adding a stain?

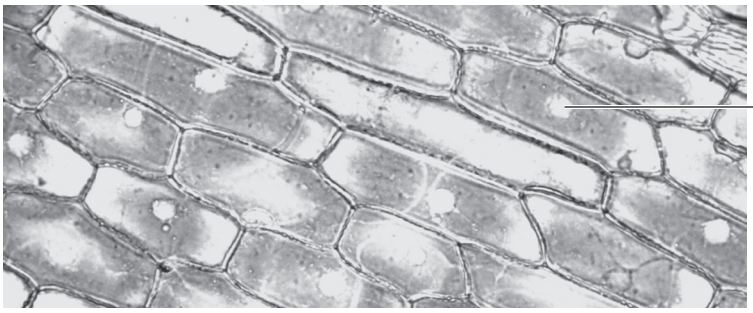
_____

_____ [1]

(iii) Which objective lens is used first to view the onion cells?

_____ [1]

(b) The photograph below shows a slide of onion cells viewed under the microscope.



© M.I. Walker / Science Photo Library

(i) Name part **A**.

_____ [1]

Onion bulbs grow underground.

(ii) Structures that trap light are absent from these onion cells taken from the onion bulb.
Name these structures.

_____ [1]

(iii) Suggest why these structures are absent from the onion cells.

_____

_____

_____

_____ [2]

[Turn over

2 **(a)** A student used three different reagents to carry out food tests on a biscuit.

The table below shows her results.

Reagent	Colour of reagent before test	Colour of reagent after test
Benedict's		Brick red precipitate
Biuret		Blue
Ethanol		White emulsion

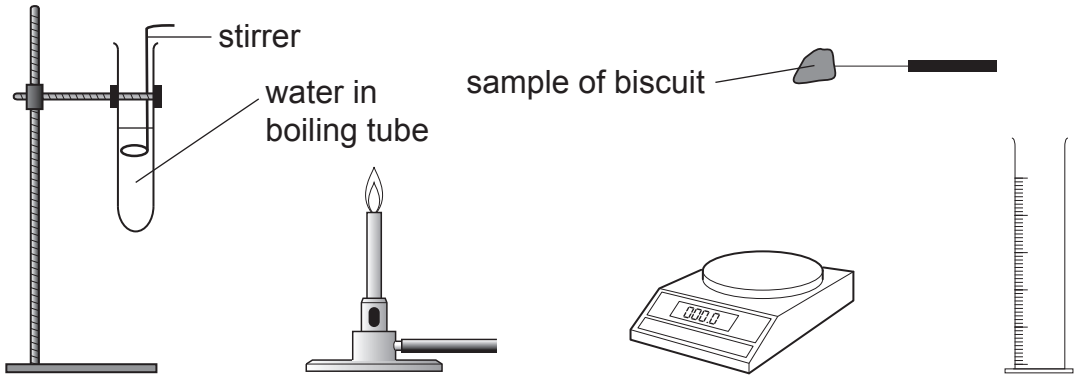
(i) Complete the table to give the colour of the reagents before the test by writing in the empty boxes. [3]

(ii) Use the results in the table to give the food types that **this biscuit** contained.

_____

_____ [2]

(b) The student then carried out another experiment to find the energy content of a sample of this biscuit.
The diagram below shows some of the apparatus she used.



Source: Principal Examiner

(i) What other piece of apparatus is needed in the boiling tube to carry out this experiment?

_____ [1]

The student weighed the sample of biscuit and placed it on a mounted needle.

(ii) What should the student then do to the sample of biscuit before holding it under the boiling tube?

_____

_____ [1]

(iii) Why is it important that the sample of biscuit is completely burned?

_____

_____ [1]

(iv) The result would not be accurate if the student did not keep the sample of biscuit close to the bottom of the boiling tube during the experiment.
Explain why.

_____

_____ [1]

[Turn over

The student repeated the experiment with the same mass of a **second** type of biscuit.
There was a greater temperature rise in the water.
The student concluded that the second biscuit contained more energy.

(c) Suggest how the contents of the second biscuit differed from the contents of the first biscuit.

_____

_____

_____

_____ [2]

3 Students investigated the distribution of five plant species from a woodland area out into a grassland area.

Describe how the students carried out this investigation.

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

[6]

[Turn over

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4 Students carried out an investigation into the numbers of earthworms in a field.

They sampled the number of earthworms in a 1 m^2 area at a depth of 15 cm once every two months for one year.

(a) Give the **independent** variable in this investigation.

_____ [1]

The students also measured the average air temperature and rainfall for each two month period during their investigation.

(b) Describe how the students would have obtained the **average** air temperature for each two month period.

_____

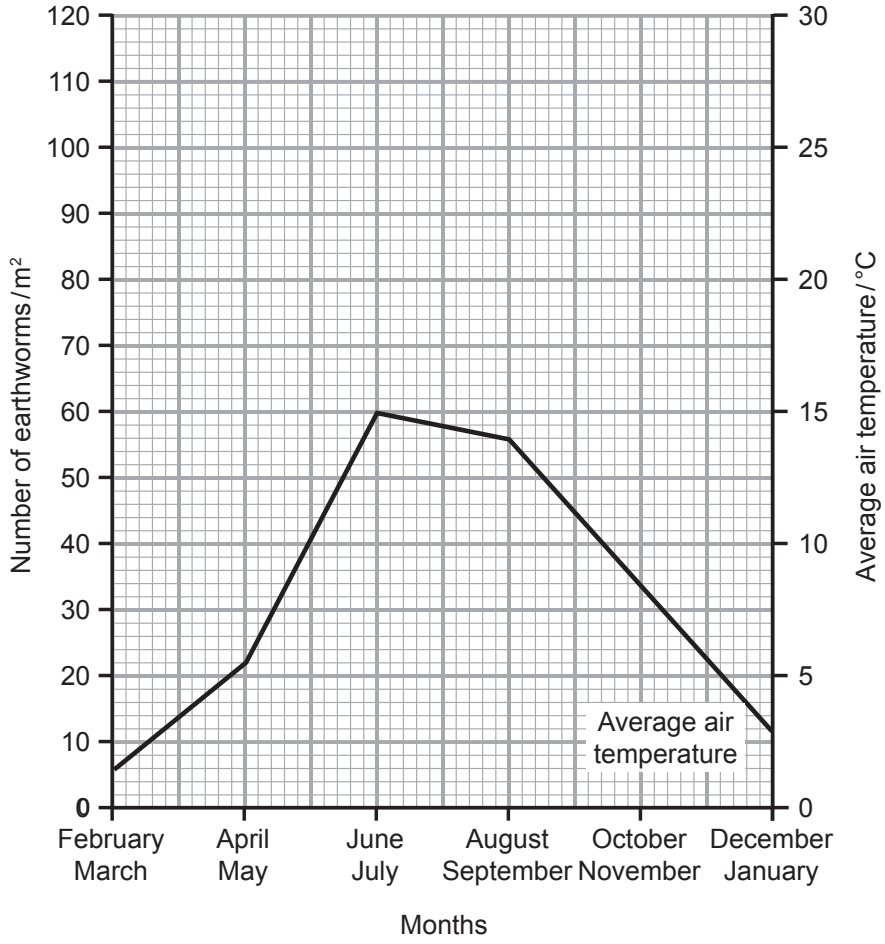
_____

_____

_____ [2]

[Turn over

(c) The graph below shows the average air temperature the students obtained for each two month period.



(i) Use the axis on the **right hand side** of the graph to give the highest average air temperature the students obtained.

_____ °C [1]

The students recorded the number of earthworms in each two month period. The table below shows their results.

Months	Number of earthworms / m²
February and March	22
April and May	104
June and July	12
August and September	50
October and November	118
December and January	76

(ii) Use the data in the table opposite to draw a line graph of the number of earthworms on the grid.

Use the scale given on the **left hand axis**. [3]

The students also recorded the average rainfall in each two month period during their investigation.
The table below gives their results.

Months	Average rainfall / mm^3
February and March	61
April and May	110
June and July	33
August and September	47
October and November	120
December and January	105

The lowest number of earthworms were recorded in June and July.

(iii) Use the table of average rainfall above and the information in the graph to explain why.

Use **one** piece of data to support your answer.

Explanation _____

_____

_____

_____

Data _____ [3]

(d) Suggest **one other** abiotic factor that could affect the number of earthworms in a field.

_____ [1]

THIS IS THE END OF THE QUESTION PAPER

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
Total Marks	

Examiner Number