

GCSE Biology A (Gateway)

J247/02 B4-B6 and B7 Foundation (Foundation Tier)

Question Set 20

1

A salt marsh is a large, muddy area of land where a river joins the sea.

(a) When the tide comes in, the salt marsh gets covered with seawater.

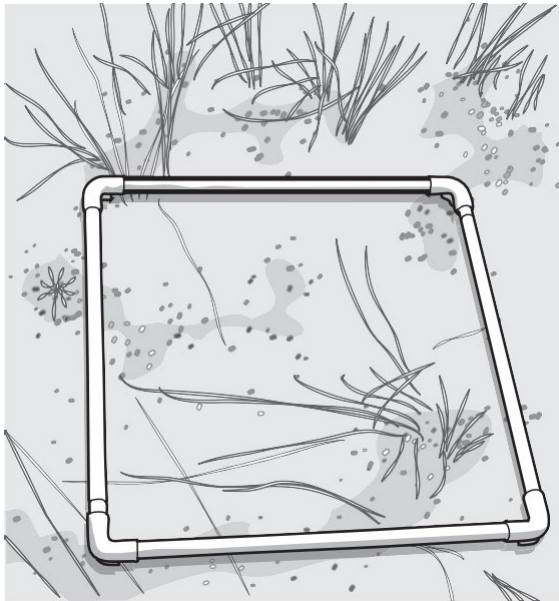
Suggest **one** reason why salt marshes are difficult places for plants to grow. [1]

Plants do not have access to CO_2 from the air, when they're inundated with seawater. CO_2 is needed for photosynthesis, to make glucose necessary for growth.

(b) Student **A** and student **B** study the plants growing on a salt marsh.

They both sample the plants present by laying out two tape measures at right angles across the salt marsh.

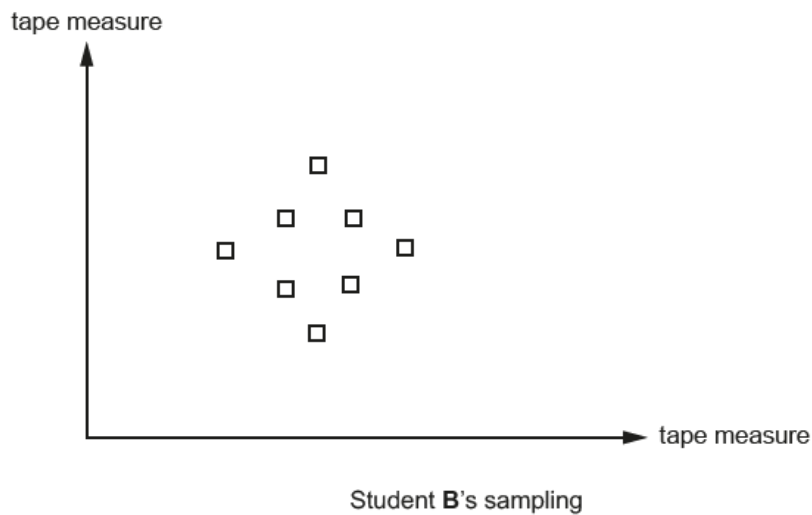
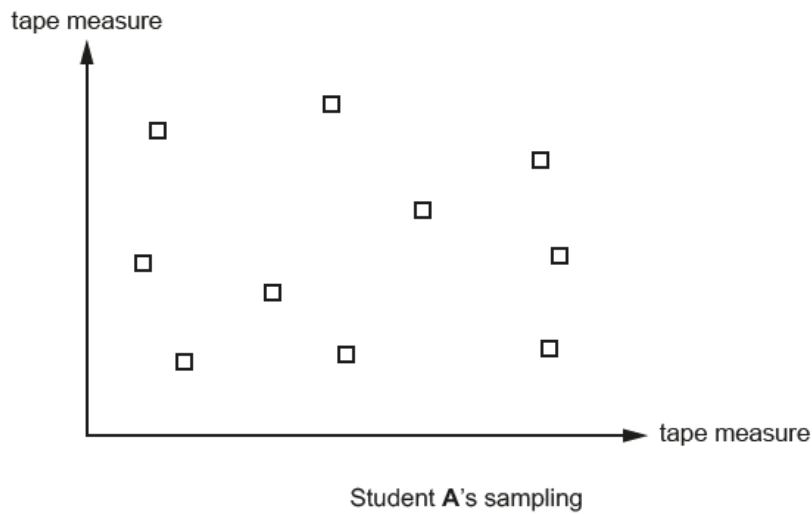
They then place a square frame on the ground in different places and count the number of plants in the square, as shown below.



What is the name of the square frame that they use to sample the plants? [1]

quadrat

- (c) The diagrams show the position of each student's samples across the salt marsh. Each small square in the diagrams represents one sample.



- (i) The whole salt marsh has an area of 2500m^2 .
 Each square frame has an area of 0.25m^2 .
 Calculate the percentage of the whole salt marsh that was sampled by student A.

Percentage = 0.1 %

[3]

10 quadrats

$$0.25 \times 10 = 2.5\text{m}^2$$

$$\frac{2.5}{2500} \times 100 = 0.1\%$$

- (ii) Look at the two students' sampling shown in the diagrams.

Explain which student is likely to get the most accurate estimate for the number of plants in the salt marsh.

student A.....

→ not biased

explanation: the quadrats are more spread out across the marshland, so the result is more representative of the area, compared to student B's results as their quadrats are all in the middle.

[3]

- (iii) Their teacher said that they should take care as there may be harmful bacteria in the salt marsh.

State **two** things that the students could do to reduce the risk of infection from the harmful bacteria.

1 wear gloves

2 disinfect clothes worn during sampling

[2]

(d)*

In some salt marshes large sand banks have been built. These stop tides from entering the salt marsh. The level of soil on the salt marsh builds up and the marsh turns into dry land.

Local farmers want to turn salt marshes into dry land and other people want to leave it as a salt marsh.

Explain why. Use ideas about land use and biodiversity in your answer.

Farmers want the area to become dry land, as this would allow them to grow crops on the soil.

[6]

from these crops, they can make greater profits. Also, it means there is less habitat for any pests which might be damaging their current crops.

Other people would rather it be left as salt marshland, as the marshland acts as a habitat for many species of animals and insect. If the marshland remained, this would preserve biodiversity. The tide is able to wash into the marsh if it is not covered with soil, which protects the coast from erosion as the sea water has somewhere to go.

Total Marks for Question Set 20: 16

OCR

Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge