Oxford Cambridge and RSA

GCSE Biology A (Gateway)

J247/04 Biology A B4-B6 and B7 (Higher Tier)

Question Set: 22

1 A salt marsh is a large muddy area of land where a river joins the sea. This is a rare habitat and some plants grow on salt marshes but nowhere else.

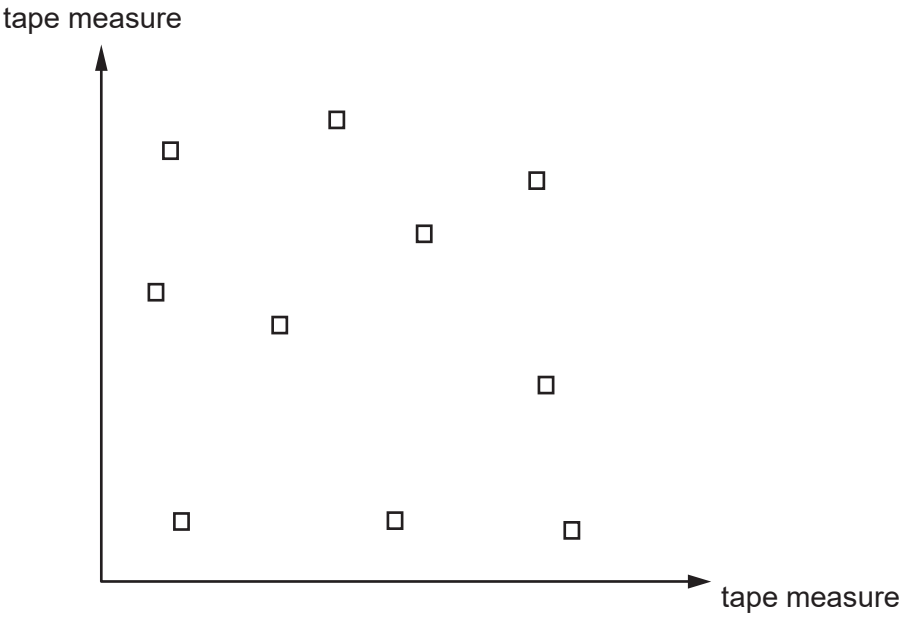
(a) When the tide comes in the salt marsh gets covered with seawater.

Explain the effects of salt water on plant cells. **[1]**

(b) A student investigates the plants growing on a salt marsh. He uses a quadrat to sample the plants.

He puts down two long tape measures at right angles to each other across the salt marsh. He then picks numbers at random and uses them to decide where to place a quadrat.

The diagram shows the position of all his quadrats across the salt marsh.



(i) The salt marsh measured 50 m × 50 m.

Each quadrat measured 0.5 m × 0.5 m.

Calculate the percentage of the whole salt marsh that was sampled by the student. **[3]**

(ii) A second student sampled by placing five quadrats close together in the centre of the salt marsh.

Evaluate the sampling method of the second student compared to the method of the first student.

[3]

(iii) Suggest **one** factor that the students should consider in a risk assessment for their experiment.

[1]

(c) In some salt marshes large sand banks have been built. This stops tides from entering thesalt marsh.

The level of soil on the salt marsh builds up and the marsh turns into dry land.

This dry land shows a greater biodiversity of plants than a salt marsh.

Explain why some scientists want to limit the building of sand banks, even though they increase biodiversity.

[2]

Total Marks for Question Set 22: 10