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| Centre Number | Candidate Number | Name |
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

AGRICULTURE

5038/03

Paper 3 Practical Test

May/June 2006

1 hour 15 minutes

Candidates answer on the Question Paper

Additional Materials: As listed in Instructions to Supervisors

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

The number of marks is given in brackets [] at the end of each question or part question.

| For Examiner's Use | |
|--------------------|--|
| 1 | |
| 2 | |
| 3 | |
| Total | |

This document consists of **7** printed pages and **1** Supervisor's Report.



Answer **all** the questions.

Write your answers in the spaces provided.

- 1 You are going to investigate the movement of carbohydrates through a selectively permeable membrane. Table 1.1 shows tests for the carbohydrates.

Table 1.1

| carbohydrate | test | positive result |
|----------------|--|--------------------------|
| reducing sugar | <ul style="list-style-type: none"> 1 cm depth of sample in test tube add 1cm of Benedict's solution warmed gently for 2 minutes | mixture turns brick red |
| starch | <ul style="list-style-type: none"> a few drops of sample on to white tile using a pipette, add a few drops of iodine solution | mixture turns blue-black |

Test a sample of **AS1** for the presence of reducing sugar.

Test a sample of **AS1** for the presence of starch.

- (a) (i) Record your observations below.

| | result of test for reducing sugar | result of test for starch |
|------------|-----------------------------------|---------------------------|
| AS1 | | |

[2]

- (ii) What conclusion can you make about **AS1**?

.....

 [2]

- Collect a 10 cm length of Visking tubing, making sure it is wet.
- Using cotton, tie a knot in the tubing about 1 cm from the end. Lay the tubing on a bench and place a slip knot around the other end. **Do not** tighten yet.
- Lift the open end of the tube, keeping the slip knot in place, and pipette **AS1** into the tubing up to 1 cm from the other end.
- Pull the slip knot tight see Fig.1.1.
- Place the tube containing **AS1** into a boiling tube of deionised water, and leave the boiling tube for 20 minutes.

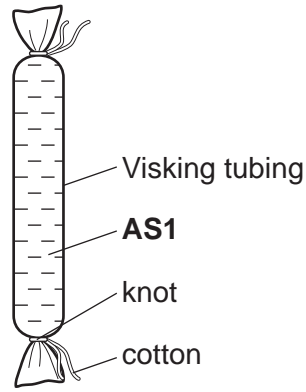


Fig. 1.1

You should begin Question 2 or Question 3 while you are waiting.

- After 20 minutes, test the deionised water for reducing sugar and for starch.
- Also test **AS1** from the Visking tubing for reducing sugar and for starch.

(b) (i) Record your observations and results below.

| | test for reducing sugar | test for starch |
|-----------------------------------|-------------------------|-----------------|
| deionised water from boiling tube | | |
| | | |
| AS1 from Visking tubing | | |
| | | |

[4]

(ii) Explain your results

.....

.....

.....

.....

.....

.....

.....

.....

[4]

[Total: 12]

2 (a) (i) Make a clear line drawing of the external features of **AS2**.

[2]

(ii) Remove one side of **AS2** so that you can see the internal structure. Make a clear line drawing of the internal features of **AS2**.

[3]

(b) (i) Suggest the method by which seeds of **AS2** are dispersed.

..... [1]

(ii) Give a reason for your answer.

.....
..... [1]

[Total: 7]

3 You are going to investigate two soils, **AS3** and **AS4**.

(a) Collect a small sample of **AS3**.
Rub the sample of soil between your fingers.

(i) Describe the texture of **AS3**

.....
..... [1]

Repeat the texture test with **AS4**.

(ii) Describe any difference in texture between **AS3** and **AS4**.

.....
..... [1]

(b)

- Use a retort stand, boss and clamp, to hold a funnel above a 250 ml beaker.
- Make a bung in the neck of the funnel using cotton wool. The cotton wool must be **loosely packed** to allow water through but not the sample.
- Fill the rest of the funnel with **AS3** as shown in Fig.3.1. up to around 5 mm from the rim of the funnel.

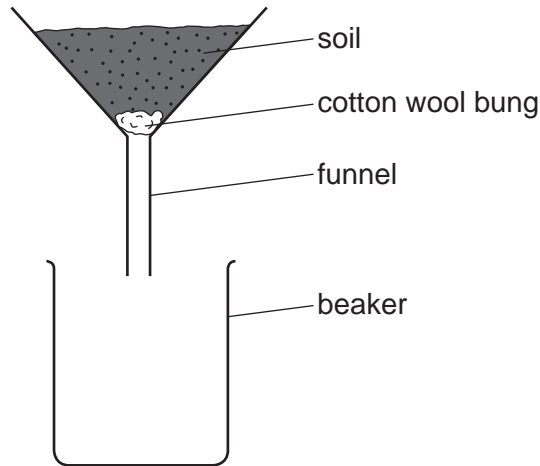


Fig. 3.1

- Use a measuring cylinder to measure 100 ml of water.
- Start timing as you slowly pour this water into the soil in the funnel. **Do not** allow the water to overflow from the top of the funnel.
- Time how long it takes for the water to pass through the soil into the beaker.
- Measure the volume of water in the beaker.

(i) Time of drainage for **AS3**

(ii) Volume of water in beaker.

Repeat the test with **AS4**.(iii) Time of drainage for **AS4**

(iv) Volume of water in beaker. [3]

(v) Suggest which sample, **AS3** or **AS4**, contains more clay particles. Give a reason for your answer.

.....
..... [1]

(vi) Suggest why less than 100 ml of water passes into the beaker.

.....
..... [1]

(vii) State how you knew the drainage of the water was completed?

.....
..... [1]

(viii) Describe how you measured the volume of water in the beaker.

.....
..... [1]

(c) Describe how a farmer can slow the rate of drainage through a seedbed.

.....
.....
..... [2]

[Total: 11]

SUPERVISOR'S REPORT

* *The Supervisor or Teacher responsible for the subject is asked to answer the following questions.*

- 1 Was any difficulty experienced in providing the necessary materials? Give brief details.
- 2 Did the candidate experience any difficulty during the course of the examination? If so, give brief details. Reference should be made to
- (a) difficulties arising from faulty specimens;
 - (b) accidents to apparatus or materials;
 - (c) any information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

3 Identity of leguminous plant **AS2**

4 Details of soil samples **AS3** **AS4**

Declaration to be signed by the Principal, and completed on the top script from the Centre.

The preparation of the Practical Test has been carried out so as to fully maintain the security of the examination.

Signed

Centre Number School

* **Information that applies to all candidates need only be given once.**