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5038/03

May/June 2008

1 hour 15 minutes

Additional Materials: As listed on Instructions to Supervisors.

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.
DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
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 **6** printed pages and **1** blank page and **1** Supervisor's Report.

Answer **all** the questions.

Write your answers in the spaces provided.

For
Examiner's
Use

1 AS1 and AS2 are two soil samples.

- Mark up two boiling tubes; one with **AS1** and the other with **AS2**.
- Put 2 cm depth of **AS1** into the boiling tube labelled **AS1** and stand the boiling tube in a rack or holder.
- Put 2 cm depth of **AS2** into the other boiling tube, labelled **AS2**.
- Add tap water to each boiling tube to within 0.5 cm of the top.
- Place a cork or rubber bung into each tube and shake both boiling tubes for 20 seconds, taking care to fully invert the boiling tube at least three times.
- Then allow the boiling tubes to stand for 5 minutes in the boiling tube rack or holder.

While this is happening use the remaining soil samples **AS1** and **AS2**.

- (a)** Moisten your fingers with tap water. Rub **AS1** between your thumb and fore-finger. Describe how the soil feels.

.....

.....

..... [2]

- (b)** Moisten your fingers with tap water.
Rub **AS2** between your thumb and fore-finger. Describe how the soil feels.

.....

.....

..... [2]

Now return to the boiling tubes.

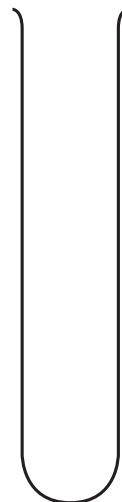
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- (c) Draw on the diagrams below of the two boiling tubes to show the different layers. Label the humus and **two** other layers in each tube.

AS1



AS2



[4]

- (d) Measure in mm the depth of humus in each sample and record the results below.

Depth of humus: **AS1** **AS2** [2]

- (e) Which sample **AS1** or **AS2** would be best for:

crops needing well drained soil

Give a reason for your answer

[2]

crops needing a rich organic soil

Give a reason for your answer

[2]

[Total: 14]

- 2 You are provided with **two** bean seeds. **AS3** is a dry seed and **AS4** has been soaked in water for at least 24 hours.

(a) Look carefully at **AS3**. You may find that a hand lens allows you to observe in more detail. In the space below draw a large, clear, labelled diagram showing three different parts.

[3]

(b) Remove **AS4** from the water and place it on a white tile or mat. Using a scalpel and forceps, remove the outer layer of the seed. Separate the seed into **two** halves and make a large drawing of both halves, showing the main structures.

Label the: **cotyledon**, **radicle** and **plumule**.

[3]

- (c) Take **one** of the halves of **AS4** and break it up into small pieces by chopping with a scalpel.

Add three or four drops of iodine and note the result below.

Colour after adding iodine

This suggests that the white material inside the seed is rich in

..... [2]

- (d) In addition to the food nutrient found in (c), beans are a rich source of the food nutrient needed for animal growth.

Name this food nutrient

.....

Describe a test that could be used to demonstrate the presence of this nutrient.

.....

..... [2]

[Total: 10]

For
Examiner's
Use

3 **AS5** is a part from a petrol engine.

(a) Identify **AS5**

..... [1]

(b) Draw a simple diagram to show the main parts of **AS5**.

[4]

(c) Suggest **one** possible fault in **AS5** which may affect its efficiency.

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

[Total: 6]

SUPERVISOR'S REPORT

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

1 Was there any difficulty in providing the soil samples **AS1** and **AS2**?

Was there any difficulty experienced with using the soil samples?

2 Which plant species did you use for the bean seeds **AS3** and **AS4**?

.....

Was there any difficulty in providing the bean seeds **AS3** and **AS4**?

3 Was there any difficulty in providing the petrol engine part **AS5**?

Declaration to be signed by 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

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