EXAMINATIONS COUNCIL OF ZAMBIA
Examination for General Certificate of Education Ordinary Level

Agricultural Science 5037/3
Paper 3 Practical Test
Thursday 4 AUGUST 2016

Candidates answer on the question paper
Additional materials
As listed in instructions to supervisors:

Time: 1 hour 15 minutes

Instructions to candidates

Write your name, centre number and candidate number in the spaces at the top of this page.
There are three questions in this paper.
Answer all the questions.
Write your answers in the spaces provided on the question paper.
Use sharp pencils for your drawings. Coloured pencils or crayons should not be used.

Information for candidates

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

Cell phones are not allowed in the examination room.

FOR EXAMINER’S USE

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Answer all questions

1 (a) You are provided with AS1.
   AS1 is a soil sample obtained from a farm which was on sale.

   (i) Put a spatula full of AS1 into a clean test tube. Add distilled water to
       one quarter (1/4) of the test tube and shake well.
       Add 2cm$^3$ dilute hydrochloric acid
       Observation: ................................................................. [1]

   (ii) Repeat the above experiment using another clean test tube. Bring the
        mouth of the test tubes containing AS1 and that containing lime water
        tilting gently so that their open ends touch. Observe what happens to
        the lime water. Do not allow the solutions to mix.
        Observation: ................................................................. [1]

   (iii) What is the gas being tested in (a) (ii) above?
        ................................................................. [1]

   (iv) What is the ion being tested?
        ................................................................. [1]

(b) (i) Place the remaining AS1 into another clean test tube. Add aqueous
       sodium hydroxide.
       Observation: ................................................................. [1]

   (ii) What ion is being tested?
        ................................................................. [1]

(c) From the results obtained in (a) and (b) above,

   (i) Name the chemical present in the soil.
       ................................................................. [1]

   (ii) Give one reason why the chemical is used in Agriculture.
       ................................................................. [1]

(d) What is the pH of the soil on the farm?

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

[Total: 9 marks]
2 You are provided with AS2.

AS2 is a part of a plant. Examine AS2 using a hand lens.

(a) Make a large labelled diagram of AS2, showing all the visible parts.

(b)  

(i) Carry out the procedure commonly used to determine whether the swellings on AS2 are root knots or root nodules.

Procedure: ........................................................................................................
...................................................................................................................
...................................................................................................................
................................................................................................................... [1]

Result: .......................................................................................................... [1]

Identity of the swelling AS2 ........................................................................... [1]

(ii) From your conclusion above, state the type of organism found in the swellings on AS2 ........................................................................................................... [1]

(iii) What type of relationship exists between the organism in the swelling and AS2?
...................................................................................................................... [1]

(iv) What is the importance of the organism in AS2 to Agriculture?
......................................................................................................................
...................................................................................................................... [2]

[Total: 13 marks]
3   (a)  AS3 is used in poultry production for incubation.

   (i) Identify AS3 ................................................................. [1]

   (ii) What type of incubation is AS3 used for?

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

   (iii) What types of birds are used is the type of incubation named in (a) (ii) above?

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

   (iv) State an advantage and a disadvantage of the management where AS3 is used.

       Advantage: ................................................................................ [1]

       Disadvantage: ............................................................................ [1]

(b) (i) What equipment is used in place of AS3 in large scale poultry production?

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

   (ii) What type of incubation in which the equipment you have mentioned in (b) (i) above is used?

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

   (iii) Give an advantage of the type of incubation you have named in (b) (i) above.

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

[Total: 8 marks]
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