EXAMINATIONS COUNCIL OF ZAMBIA

Examination for General Certificate of Education Ordinary Level

Agricultural Science 5037/3
Paper 3 Practical Test

Thursday 20 JULY 2017

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

Time 1 hour 30 minutes

Instructions to Candidates

Write your Name, Centre Number and Candidate Number in the spaces at the top of this page.

There are four (4) questions in this paper. Answer all questions.

You should show the essential steps in any calculation. Record all experimental results and observations 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 shown in brackets [ ] at the end of each question or part question.

Cell phones are not allowed in the examination room.

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Answer all questions

Question 1

You are provided with specimen **AS1**.

(a) (i) Put half of **AS1** into a clean test tube. Add 2cm$^3$ of distilled water and shake well.

**Observation**

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

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

(ii) Add 2cm$^3$ of diluted hydrochloric acid to the sample in the test tube and observe.

**Observation**

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

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

(b) (i) Take the remaining sample of **AS1** and put it in another clean test tube. Add 2cm$^3$ of distilled water and shake. Add 2cm$^3$ of dilute sodium hydroxide.

**Observation**

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

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

(ii) From the test in (b)(i) above, which metallic ion is being tested?

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

(c) (i) Name the chemical compound tested in (a) and (b) above.

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

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

(ii) What is the chemical compound, commonly used for in agriculture?

........................................................................................................................................ [1]
(iii) Give two examples of other compounds that are used for the same purpose as AS1?

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

(d) How is the metallic element in AS1 beneficial to:

(i) Plants

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

(iii) Animals

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

[Total: 10 marks]

Question 2

You are provided with specimen AS2 and AS3 which are pieces obtained from the digestive system of a farm animal.

(a) Name the part of the stomach from which AS2 and AS3 were obtained.

AS2 ................................................................................................................................................ [1]

AS3 ................................................................................................................................................ [1]

(b) Examine specimens AS2 and AS3 carefully using a magnifying glass.

(i) What group of animals has a stomach with such structures?

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

(ii) Explain how the structures of AS2 and AS3 are adapted to their functions in the digestion of food.

AS2: ........................................................................................................................................... [2]

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

AS3: ........................................................................................................................................... [2]
(c) Why is the knowledge of the digestive system of the group of farm animals you have named in (b) (i) above, important to the farmer?

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

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

(d) Give two types of feed which farmers usually prepare for animals that have stomachs such as AS2 and AS3.

(i) .................................................................................................................. [1]

(ii) .................................................................................................................. [1]

[Total: 10 marks]

Question 3

You are provided with AS4 which has a cut. Examine the cut carefully.

(a) (i) What is the name of the cut and what is its purpose?

Name of the cut ........................................................................................................... [1]

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

(ii) What method of propagation is being prepared using AS4?

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

(iii) What is the role of AS4 in this method?

................................................................................................................................. [1]
(b) Draw a well labelled diagram to show how you would complete this procedure.

(c) Give one example of crop plants which are commonly propagated by this method in Zambia?

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

[Total: 10 marks]

Question 4

ASS is used in livestock production for artificial inseminations.

(a) Name the instrument ASS.

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

(b) (i) Describe how ASS is used in artificial insemination.

........................................................................................................................................ [3]

(ii) Give two reasons why artificial insemination should be carried out.

........................................................................................................................................ [2]
(c) When should artificial insemination be done in animals?

.................................................................................................................................

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

(d) (i) What is the name of the fluid that is being inseminated?

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

(ii) How is the fluid you have named in (d) (i) above, stored?

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(e) Mention one disadvantage of carrying out artificial insemination.

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[Total: 10 marks]
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