

Candidate Name

Centre Number

Candidate Number



ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

CROP SCIENCE

6049/3

PAPER 3 Practical Test

SPECIMEN PAPER

2 hours 30 minutes

Additional materials:

Answer paper,

Graph paper,

As listed in Instructions to Supervisors,

Scientific Calculator.

TIME 2 hours 30 minutes + 10 minutes preparation time.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page and on every page of your answer paper.

This paper consists of **three** questions. Answer **all** questions. The number of marks is given in brackets [] at the end of each question or part question.

You are advised to spend the first **10** minutes carefully reading through the whole paper before answering any questions. Spend at least **40** minutes on each question. All writing must be in blue or black ink except for diagrams which must be drawn in pencil.

You are reminded of the need for good English and clear presentation in your answers.

FOR EXAMINER'S USE	
1	
2	
3	
TOTAL	

This question paper consists of 8 printed pages.

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[Turn over

1. **CS1** is a dry soil sample
Place the dry soil into a measuring cylinder, shake it down gently until it comes up to **30cm³**.
Pour **30cm³** of distilled water into the measuring cylinder with soil.
Shake gently or stir until all the soil is wet.

- (a) Read the final level of water in the cylinder after **10 minutes** and record your observations.

[4]

- (b) State the soil component being investigated

[1]

- (c) Calculate the percentage of the component being investigated

[3]

- (d) Explain the significance of the component being investigated in the soil.

[5]

- (e) How can a farmer manage his/her soil to improve the availability of the component being investigated?

[4]

- (f) Besides the component under investigation, state any other **three** soil components.

[3]

- 2 (a) **CS2** and **CS3** are fertiliser samples.
You are required to determine the behaviour of the fertilisers when placed on soil surface on a rainy day.

Proceed as follows:

Weigh **40 g** of the soil sample provided.

Place into a filter fitted funnel.

Place over a **50 ml** measuring cylinder.

Prepare **three** sets of this set up and label them **A**, **B** and **C**.

Weigh **10g** of **CS2** and place on top of the soil in **B**. Repeat the process with **CS3** and put in **C**.

Pour **40ml** of distilled water gently over all the **three** set ups.

Record your observations during the pouring of the distilled water and after **10 minutes**.

- (i) Observations

[3]

- (ii) Measure the pH of filtrates **B** and **C**.

[2]

- (iii) Comment on the results obtained in (i) and (ii).

[3]

- (iv) From the observations on the behaviour of the fertilizers, suggest suitable management practices when using **CS2** and **CS3** fertilizers.

[2]

- (v) What are the long term effects of using high amounts of **CS2** and **CS3** to the soil environment?

[2]

- (b) If the application rate of **CS2** is **20g** per planting station in maize production, how much of **CS2** would you require for a **hectare** plot using a plant spacing of **30cm** by **90cm**?

[3]

- (c) Justify the use of **CS2** and **CS3** fertiliser types over organic fertilizers in crop production.

[2]

- (d) Outline ways by which **CS2** and **CS3** fertilizers are lost from the soil.

[3]

- 3 (a) You are required to investigate water loss from leaves of plants.

Proceed as follows:

Detach a leaf from **CS4** and weigh immediately.

Place the leaf on a white tile and place where air blown by a fan reaches.

Weigh the leaf again at **5 minutes** interval for the next **25 minutes** and record the mass of the leaf at each stage in the table below.

(i)

Time (mins)		Mass (g)
Start	0	
	5	
	10	
	15	
	20	
End	25	

[6]

- (ii) Using an appropriate scale, plot the graph of **mass (g)** versus **time (minutes)**.

[4]

- (iii) What conclusion can you draw from the graph?

[2]

- (iv) Outline any **two** environmental factors that can affect crop water loss.

[2]

- (b) Suggest how farmers can minimise water loss during harvesting, storage and marketing of leaf crops.

[6]