Candidate Name	Centre Number	Candidate Number

ZIMSEC
For Performance Measurement

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

BUILDING TECHNOLOGY AND DESIGN 6003/02

PAPER 2

SPECIMEN PAPER **15** hours

Additional materials:

- A3 and A2 drawing paper,
- Drawing board and T-Square,
- Window catalogue,
- Scientific calculator,
- Drawing instruments,
- Computer installed with a drawing software,
- Coloured pencils.

TIME 15 hours

INSTRUCTIONS TO CANDIDATES

1 The invigilator should allow 15 minutes break each day as indicated on the work programme.

2 This paper consists of **THREE (3)** questions.

3 Answer **ONLY ONE (1)** question.

4 Working drawings on section and location details maybe presented on separate sheet(s).

5 If using **ICT** ensure each working drawing is on a different title block.

6 Follow the design process up to model production when answering the question.

7 Use appropriate scale.

8 Apply relevant building by-laws.

9 All measurements should be in millimetres.

INFORMATION FOR CANDIDATES

Marks are given in brackets [ ] at the end of each question.

This question paper consists of 4 printed pages.

Copyright: Zimbabwe School Examinations Council, Specimen paper.

1 Architecture

A school has just completed installing a piped water system and would like to construct a water borne ablution block for the learners.

Design a water borne ablution block for the school with the following:

- **12** water closets for girls,
- **7** water closets for boys,
- Urinary for boys,
- Enough privacy for users,
- Storeroom,
- Incinerator for burning sanitary pads in the girls section,
- Access ramp.

You are required to come up with the following:

(a) **two** possible solutions,

(b) Detailed working drawings to a scale of **1:100,**

(c) A model of the ablution block to a scale of **1:100.**

Working Programme

Day	**Activity**	**Timing**
1	Possible solutions	2 hours
	Break	15 minutes
	Working drawings	3 hours
2	Working drawings	2 hours
	Break	15 minutes
	Working drawings	3 hours
3	Model making	2 hours
	Break	15 minutes
	Model making	3 hours

NB: - Scheduling of break sessions is flexible.
- Fast candidates can be allowed to move to model making process on day 2.

2 Renewable Energy

A rural clinic uses firewood for heating water needed for its operations. Firewood is now scarce in the area, affecting the operations of the clinic.

Design a direct solar energy water heating system for the clinic.

Consider the following in your design:

- Water supply should be enough for kitchen, maternity ward and bathrooms,
- Provisions for maintenance of hot water temperature during the night,
- Provision of security,
- Proper orientation of the system to absorb maximum solar energy.

You are required to come up with the following:

(a) **two** possible solutions,

(b) Detailed working drawings,

(c) A model of the designed structure.

Working Programme

Day	**Activity**	**Timing**
1	Possible solutions	2 hours
	Break	15 minutes
	Working drawings	3 hours
2	Working drawings	2 hours
	Break	15 minutes
	Working drawings	3 hours
3	Model making	2 hours
	Break	15 minutes
	Model making	3 hours

NB: - Scheduling of break sessions is flexible.
- Fast candidates can be allowed to move to model making process on day 2.

3 Structural Analysis

The department of National Parks and Wildlife is developing a Game Park at Tokwe Mukosi dam. Tourists come to the park to view wild animals under safe conditions without scaring them away.

A suspended floor at a height of **3.5 m** from the ground is required to enable tourists to view the animals when they come to the water point.

Design the structure to meet the following:

- Enough security for tourists from attack by wild animals,
- Safe load bearing capacity of up to **20** tourists at a time,
- Safe means of accessing the deck (viewing platform),
- Use of materials that blend well with the environment.
- Enough protection for tourists from weather elements such as rain, sun, wind and excessive light.

You are required to come up with the following:

(a) 2 possible solutions,

(b) Detailed working drawings to a scale of **1:50,**

(c) A model of the designed structure to a scale of **1:50.**

Working Programme

Day	**Activity**	**Timing**
1	Possible solutions	2 hours
	Break	15 minutes
	Working drawings	3 hours
2	Working drawings	2 hours
	Break	15 minutes
	Working drawings	3 hours
3	Model making	2 hours
	Break	15 minutes
	Model making	3 hours

NB: - Scheduling of break sessions is flexible.
- Fast candidates can be allowed to move to model making process on day 2.