Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

BUILDING TECHNOLOGY & DESIGN 4052/1

PAPER 1 Theory, Drawing and Quantities.

SPECIMEN PAPER 2 hours 30 minutes

Additional materials:
Answer paper,
Plain paper **A4** (1 sheet),
Scientific calculators,
Drawing instruments.

TIME 2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES
Write your name, centre number and candidate number in the spaces provided at the top of this page and on **all** separate answer paper used.

Section A
Answer **all** questions.
Write your answers in the spaces provided on the question paper.

Section B

Answer any **two** questions.
Write your answers on the separate answer paper provided.
At the end of the examination, fasten the separate answer paper securely to the question paper.

Section C
Answer **one** question only.
Write your answer on the separate answer paper provided.

INFORMATION FOR CANDIDATES
Marks for each question are given in brackets [ ] at the end of each question.
All dimensions are in millimetres unless otherwise stated.

FOR EXAMINER'S USE	
Section A	
Section B	
Section C	
TOTAL	

This question paper consists of 11 printed pages and 1 blank page.

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For Examiner's Use

Section A [40 Marks]

Answer **all** questions in the spaces provided.

1. State **two** duties of each of the following building personnel:

(a) Health Inspector,_____

_____ [2]

(b) Building Inspector._____

_____ [2]

2 **(a)** Give the correct use of the following hand tools:

(i) spade,_____ [1]

(ii) gauge rod._____ [1]

(b) Name any **two** materials used for cement production.

(i) _____ [1]

(ii) _____ [1]

3 State the test that is carried out on each of the following materials:

(a) Concrete strength,_____

_____ [1]

(b) Sand cleanliness,_____

_____ [1]

(c) Brick solidity,_____

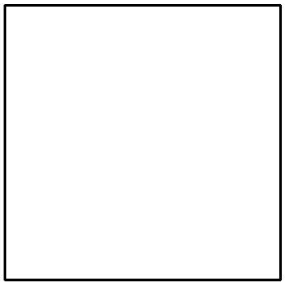
_____ [1]

(d) Concrete workability._____

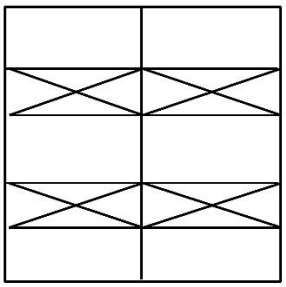
_____ [1]

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4 **(a)** Solve the bonding in English bond for course two in **Fig. 4**.



Plan of Course 2



Plan of Course1

[4]

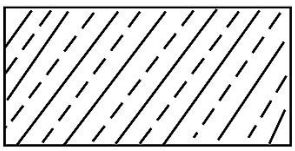
Fig 4.

5 What do the following symbols represent?

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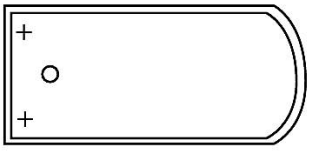
_____ [1]



_____ [1]



_____ [1]



_____ [1]

6 **(a)** Define landscaping_____

_____ [2]

(b) Suggest any **two** reasons for landscaping

(i) _____

_____

_____ [1]

(ii) _____

_____

_____ [1]

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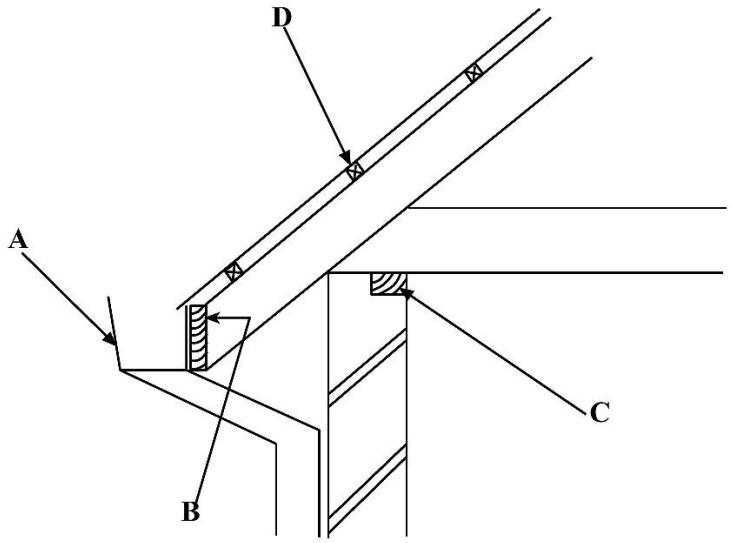


Figure 7

State the functions of parts **A**-**D** in **figure 7.**

(i) **A** _____

_____ [1]

(ii) **B** _____

_____ [1]

(iii) **C** _____

_____ [1]

(iv) **D** _____

_____ [1]

For Examiner's Use

8 Define the following electrical terms:

(i) Voltage,_____ [1]

(ii) Current, _____ [1]

(iii) Mains,_____ [1]

(iv) Short Circuit._____ [1]

9 **(a)** Give **two** natural ventilation methods.

(i) _____ [1]

(ii) _____ [1]

(b) State **two** artificial ventilation methods.

(i) _____ [1]

(ii) _____ [1]

10 **(a)** Name the renewable energy produced from animal or vegetable waste.

_____ [1]

(b) State **three** types of solar energy equipment.

(i) _____ [1]

(ii) _____ [1]

(iii) _____ [1]

SECTION B [40 marks]

Answer any **two** questions from this section.

11 **(a)** Draw a cross-section of a brick biogas digester and label any **eight** parts. [12]

(b) Describe how a paint is applied to a timber surface. [8]

12 **(a)** List any **six** parts of a building which form the sub-structure. [6]

(b) Name **four** types of foundations. [4]

(c) In point form, explain the process used to determine a suitable type of foundation. [5]

(d) Outline the hand method of mixing and placing concrete, up to the stage of curing. [5]

13 **(a)** State **two** advantages and **two** disadvantages of the builder's square method in setting out a rectangular building structure. [4]

(b) Explain in sequence, the setting out of a rectangular building, using the builder's square method. [6]

(c) **(i)** Name **two** parties that sign the contract form. [2]

(ii) Justify reasons for signing the contract form. [2]

(d) **(i)** Distinguish between equal settlement and differential settlement. [4]

(ii) Explain the effects of differential settlement to the buildings. [2]

14 **(a)** **Fig 14** shows a one brick thick course wall in English garden wall bond.
Solve the bonding for the **four** successive courses.

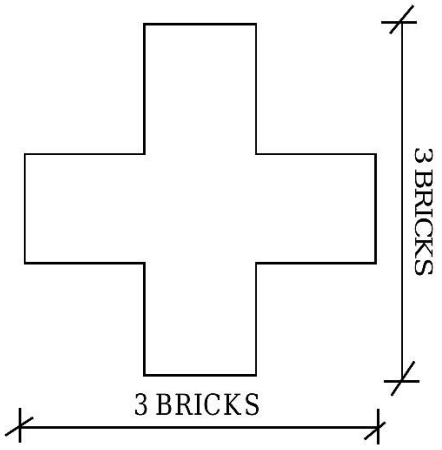


Fig 14

[20]

SECTION C [20 Marks]

Answer **one** question in this section.

15 **(a)** Sketch a planometric projection of a house comprising 1 kitchen, 1 bedroom, 1 dining and a veranda. [15]

NOTE: All walls to be built to wall plate level.

Doors and windows to be selected from the catalogue provided.

(b) **Figure 15** shows a plan of a rectangular room. Calculate the volume of oversite concrete required for **100mm** floor slab. [5]

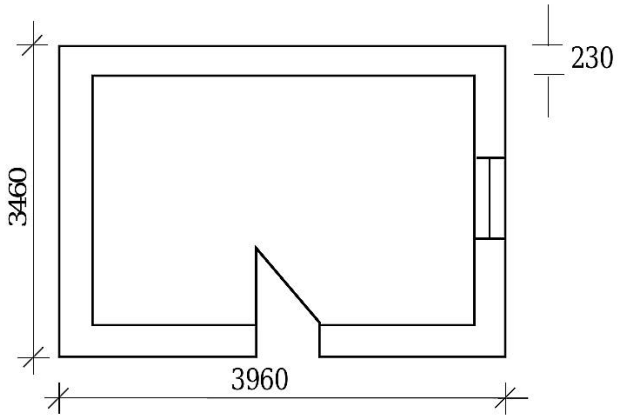


Fig. 15

[20]

16 **(a)** **Figure 16** (a) shows a cross-section of a substructure work that is **9** metres long.

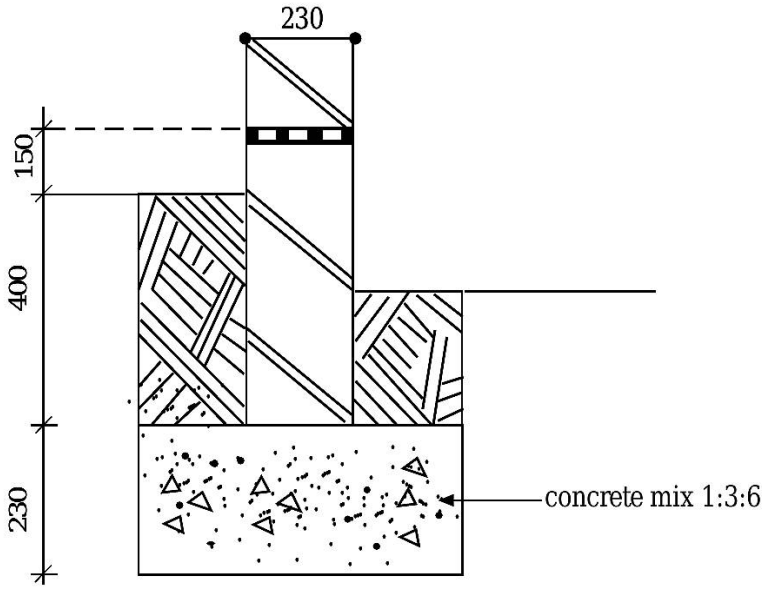


Fig. 16 (a)

(i) Calculate the volume of concrete foundation required for the **9m** length. [3]

(ii) Calculate the volume of river sand needed for the concrete. [3]

(iii) Calculate the volume of external backfill. [3]

(iv) How many bricks are needed up to damp proof course **(dpc)**, given that there are **104** bricks **per m^2** of brickwork. [6]

(c) **Figure 16(b)** shows a corner block in **first angle** projection.

Draw the block in isometric projection using a scale of **1:1.** [5]

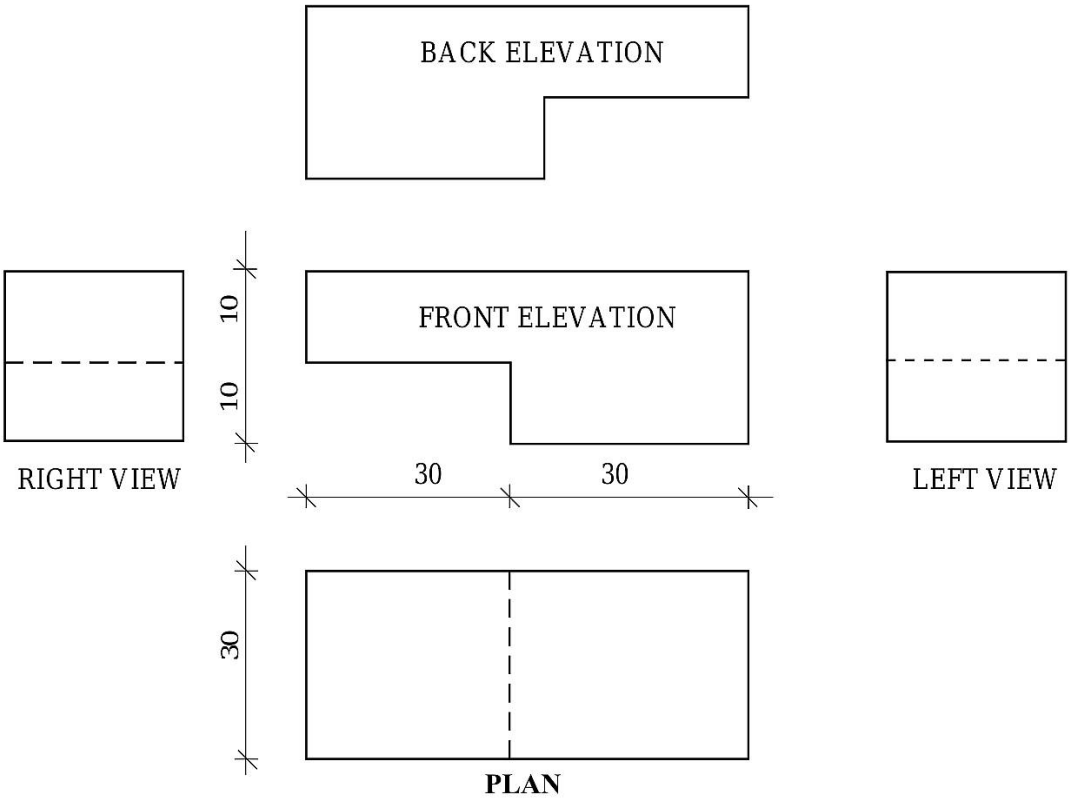


Fig. 16 (b)

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