



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

CIVIL ENGINEERING

**SUBJECT: Civil Engineering Materials and
Laboratory Practices – (Practical)**

PAPER NO: 313/18/S10

DURATION: 4 hours

MARCH/APRIL 2022 EXAMINATION

REQUIREMENTS

1. Answer booklet
2. Practicals score sheet
3. 24 standard bricks $(230 \times 115 \times 75)mm^3$
4. Flat hard surface of size $1m \times 6m$
5. Small wire brush (can be shared one per 5 candidates)
6. Measuring tape $10m$ (can be shared one per 5 candidates)
7. Practical question paper to be packed in a separate envelope and written in 4 hours after theory paper.

INSTRUCTIONS TO CANDIDATE

Answer all questions.

This paper consists of 5 printed pages.

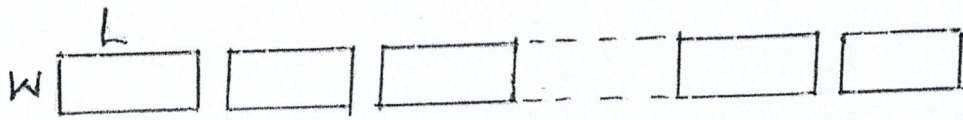
QUESTION 1

To determine the dimensional deviations in a sample of standard bricks.

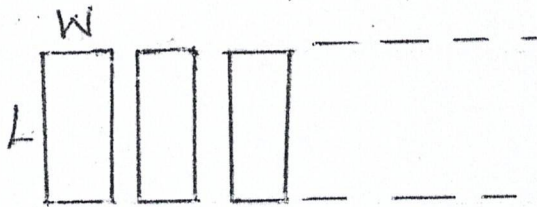
Procedure:

1. Select 24 standard burnt clay bricks randomly.
2. Use wire brush to remove any blisters, small projections or loose particles of day adhering to each brick.
3. Stack the bricks lengthwise on a flat hard surface and measure the overall length L.
4. Stack the bricks widthwise and measure the overall width W.
5. Stack the bricks edgewise and measure the overall height/depth H.
6. Alternatively, divide the sample in half and form two rows of 12 bricks. Measure each row separately and record the sum of the results for the two rows.

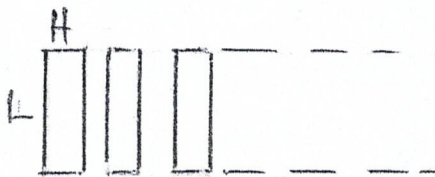
Fig. 1 Arrangement of bricks for measurement of dimensions



LENGTHWISE ARRANGEMENT



WIDTHWISE ARRANGEMENT



EDGEWISE ARRANGEMENT

Fig. Q1

Fig. Q1

- a) State the standard dimensions of burnt clay bricks. (5 marks)
- b) The overall dimensions of the brick measured were: (4 marks)
- Length (3 marks)
 - Width (3 marks)
 - Height (3 marks)

PAPER NO: 3131/18/S10 – CIVIL ENGINEERING MATERIALS AND LABORATORY PRACTICES – (PRACTICAL)

- c) What are the permissible minimum and maximum overall dimensions?
(5 marks)
- d) Using the information in (b) and (c) above, would you recommend the use of the bricks for building construction.
(5 marks)