

2705/303

2709/303

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**BUILDING CONSTRUCTION III,
DRAWING III AND SERVICES**

June/July 2022

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING TECHNOLOGY

DIPLOMA IN ARCHITECTURE

MODULE III

BUILDING CONSTRUCTION III, DRAWING III AND SERVICES

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Scientific calculator;

Drawing instruments;

Drawing paper size A₁.

*This paper consists of **EIGHT** questions in **THREE** sections; A, B and C.*

*Answer **TWO** questions from section A, **TWO** questions from section B and **ONE** question from section C.*

Each question in section A carries 25 marks in section B carries 15 marks and in section C carries 20 marks.

Maximum marks for each part of a question are as indicated.

Candidates should answer the questions in English.

This paper consists of 5 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A: BUILDING CONSTRUCTION III

Answer *TWO* questions in this section.

1. (a) (i) State **four** properties of a good ceiling. (10 marks)
- (ii) Outline **three** advantages of a suspended ceiling. (8 marks)
- (b) Outline **four** design parameters to consider in the designing and fixing kitchen fittings. (7 marks)
- (c) Sketch and label a detail of glazing a timber casement window using putty. (14 marks)
2. (a) (i) Outline **three** advantages of precast concrete staircases. (11 marks)
- (ii) Illustrate the plan layouts of the following staircases:
- (I) dog leg staircase;
- (II) quarter space landing staircase. (6 marks)
- (b) (i) State **five** advantages of ceramic tiles for floor finish. (11 marks)
- (ii) Describe the following types of ceramic tiles:
- (I) porcelain;
- (II) terracotta. (5 marks)
3. (a) State **four** purposes of cladding in buildings. (14 marks)
- (b) (i) State **four** factors that determine the number and length of underpinning bays. (5 marks)
- (ii) Sketch and label a section through an underpinning bay for a strip foundation. (5 marks)
- (c) Define each of the following parts of a door:
- (i) frame;
- (ii) jamb;
- (iii) rebate;
- (iv) sill;
- (v) mullion.



(5 marks)

SECTION B: DRAWING III

Answer *TWO* questions in this section.

4. Using drawing No. 01 and to a scale of 1:100, draw and label cross-section X-X. (15 marks)
5. Sketch and label a road gully detail. (15 marks)
6. Draw to a scale of 1:10 a ridge detail using the following information:
- half round ridge tile bedded in 1:3 cement sand mortar
 - 300 mm plain tiles
 - 200 x 25 mm ridge;
 - 150 x 25 mm rafters;
 - 38 x 25 mm timber battens;
 - vapour permeable underlay
 - 30° roof pitch angle.
- (15 marks)

SECTION C: BUILDING SERVICES

Answer *ONE* question in this section.

7. (a) Outline **three** advantages of natural ventilation. (6 marks)
- (b) With the aid of a diagram, explain the operation of the bell type flushing cistern. (14 marks)
8. (a) State the use of the following plumbing components:
- (i) globe valve;
 - (ii) gate valve;
 - (iii) float valve;
 - (iv) taps.
- (4 marks)
- (b) Describe the following types of sanitary appliances:
- (i) soil appliances;
 - (ii) waste appliances.
- (4 marks)

(c) (i) Define each of the following terms:

- (I) circuit;
- (II) electromotive force;
- (III) conductors;
- (IV) switch.

(ii) **Figure 1** shows an electric circuit. Using the information on the circuit, calculate:

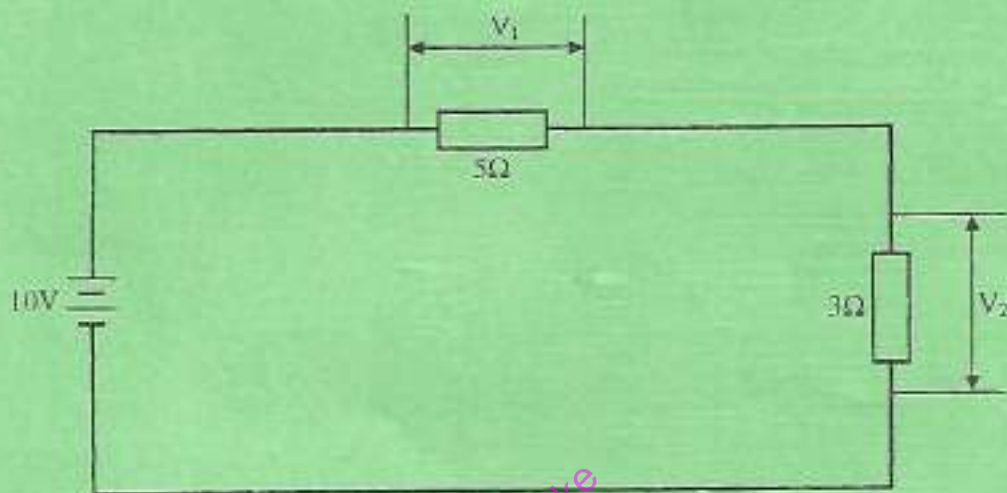


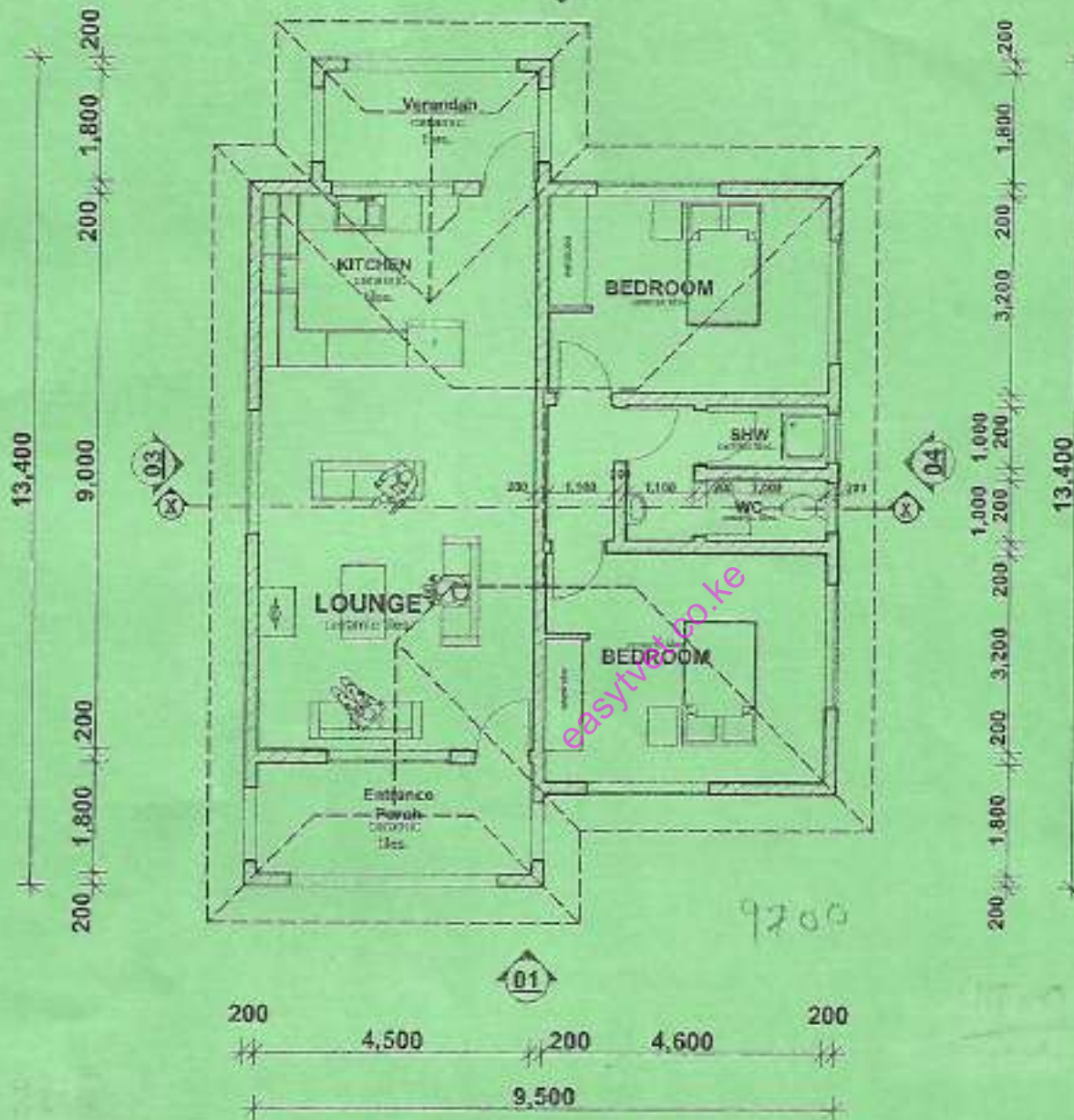
Fig. 1

- current;
- potential difference in each resistor.

(12 marks)



9,700
 800
 200 200 3,500 200 4,600 200



FLOOR PLAN

NOTE:

ROOF DETAILS:

- Roof pitch 22.5°
- Rafters - 100 x 50mm
- Tie beam - 100 x 50mm
- Fascia board - 200 x 25mm
- Purlin - 100 x 50mm
- Struts - 100 x 50mm
- Wall plate - 100 x 50 mm

FOUNDATION DETAILS:

- Adopt details for a Typical Strip Foundation.

- Assume any relevant information not provided.

DRAWING NO. 01

THIS IS THE LAST PRINTED.