

1704/103
BUILDING CONSTRUCTION I
AND DRAWING
Oct./Nov. 2017
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
CRAFT CERTIFICATE IN BUILDING TECHNOLOGY
MODULE I

BUILDING CONSTRUCTION I AND DRAWING

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

- Mathematical tables/Scientific calculator;*
- Drawing instruments;*
- Size A3 drawing paper;*
- Answer booklet.*

This paper consists of EIGHT questions in TWO sections; A and B.

Answer any FIVE questions choosing at least TWO questions from each section in the answer booklet provided.

All questions carry equal marks.

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

Candidates should answer the questions in English.

This paper consists of 6 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 I

Answer at least **TWO** questions from this section.

1. (a) Name **two** stages of evolution of the built environment. (2 marks)
- (b) Outline the following design factors in the built environment:
- (i) types of soils;
 - (ii) topography. (3 marks)
- (c) With the aid of a line diagram, show the following features of built environment.
- (i) **five** built envelope;
 - (ii) **five** adjoining features. (5 marks)
- (d) Sketch and label the following types of foundations.
- (i) pad foundation;
 - (ii) strip foundation showing ground floor slab. (5 marks)
- (e) Using a pictorial sketch, show timbering to trench on a moderately loose soil. (5 marks)
2. (a) With the aid of a labelled sketch, show the setting out of a foundation wall using a profile board. (5 marks)
- (b) List **six** materials used on a masonry wall. (3 marks)
- (c) Sketch and label **two** alternate courses of a flemish bond. (6 marks)
- (d) Explain **three** functional requirements of a foundation wall. (6 marks)
3. (a) Outline **four** differences between concrete floor and raised timber floor. (6 marks)
- (b) Sketch and label a concrete formwork showing the outline of edge beam and suspended slab. (6 marks)

(c) Explain the purpose of the following in floor construction:

- (i) hardcore filling;
- (ii) blinding layer;
- (iii) damp proofing;
- (iv) terminate control.

(8 marks)

4. (a) Explain the following types of walls:

- (i) masonry;
- (ii) monolithic;
- (iii) composite.



(6 marks)

(b) Sketch and label a vertical section through the window frame to include the lintel.

(6 marks)

(c) Explain **four** types of wall finishes applied to a masonry wall.

(8 marks)

SECTION B: DRAWING

Answer at least TWO questions from this section.

5. (a) (i) Outline **two** functions of building drawings.

(ii) Sketch and label the convectional symbols of the following

- I. concrete;
- II. planed timber;
- III. gate valve;
- IV. rough timber.

(5 marks)

(b) (i) Construct a diagonal scale of 145 mm long and 25 mm wide to read:

- I. 1.48 m
- II. 3.75 m

(8 marks)

(ii) Construct a regular heptagon using the universal method given one side as 20 mm.

(7 marks)

6. **Figure 1** shows a pictorial drawing of a shaped block. Draw the following in first angle projection:
- (a) front elevation from direction P;
 - (b) plan;
 - (c) end elevation.

(20 marks)

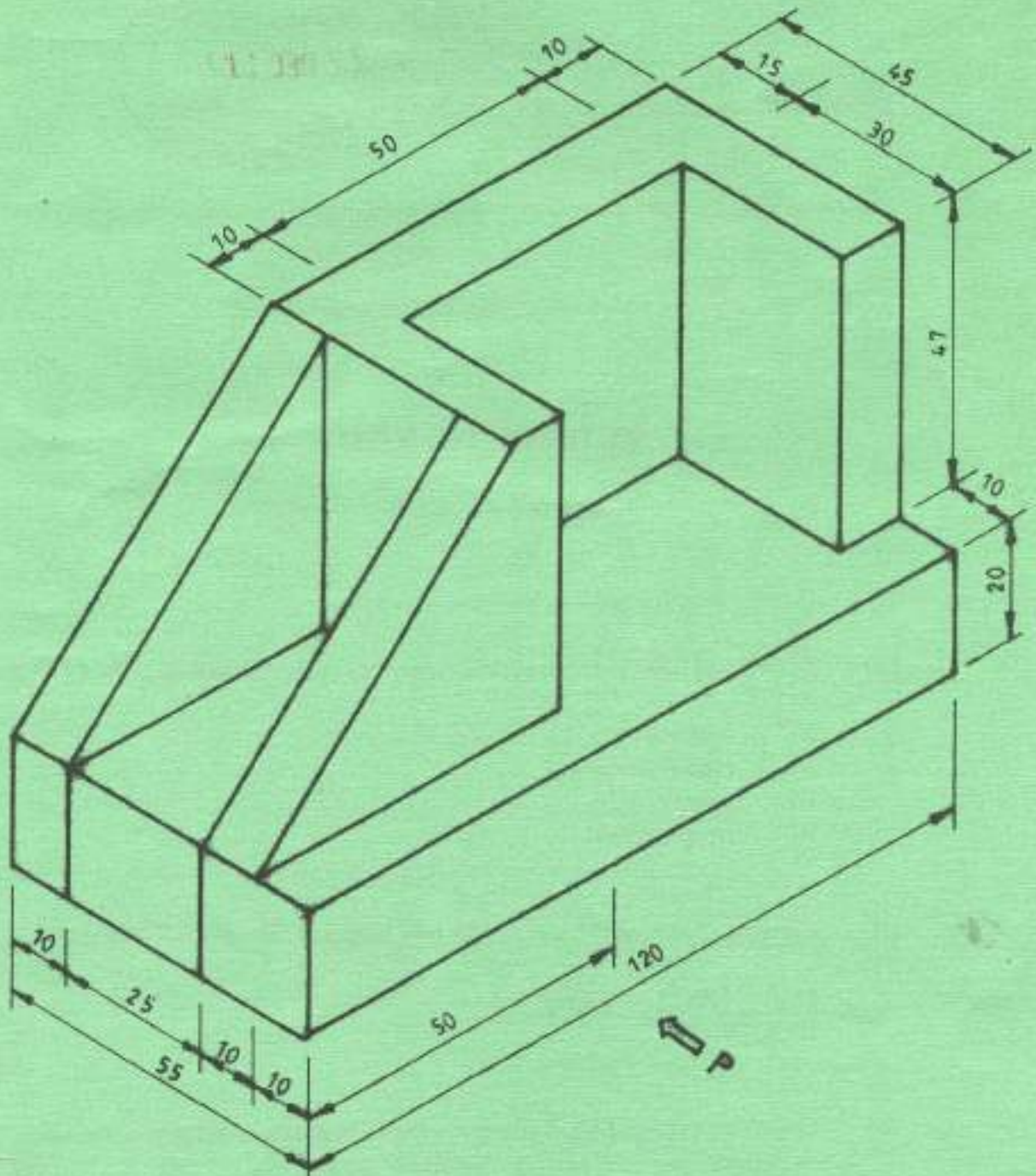


Fig. 1

7. Figure 2 shows three views in first angle projection. Draw the black oblique cavalier from the views, taking edge x-y as the lowest line. (20 marks)

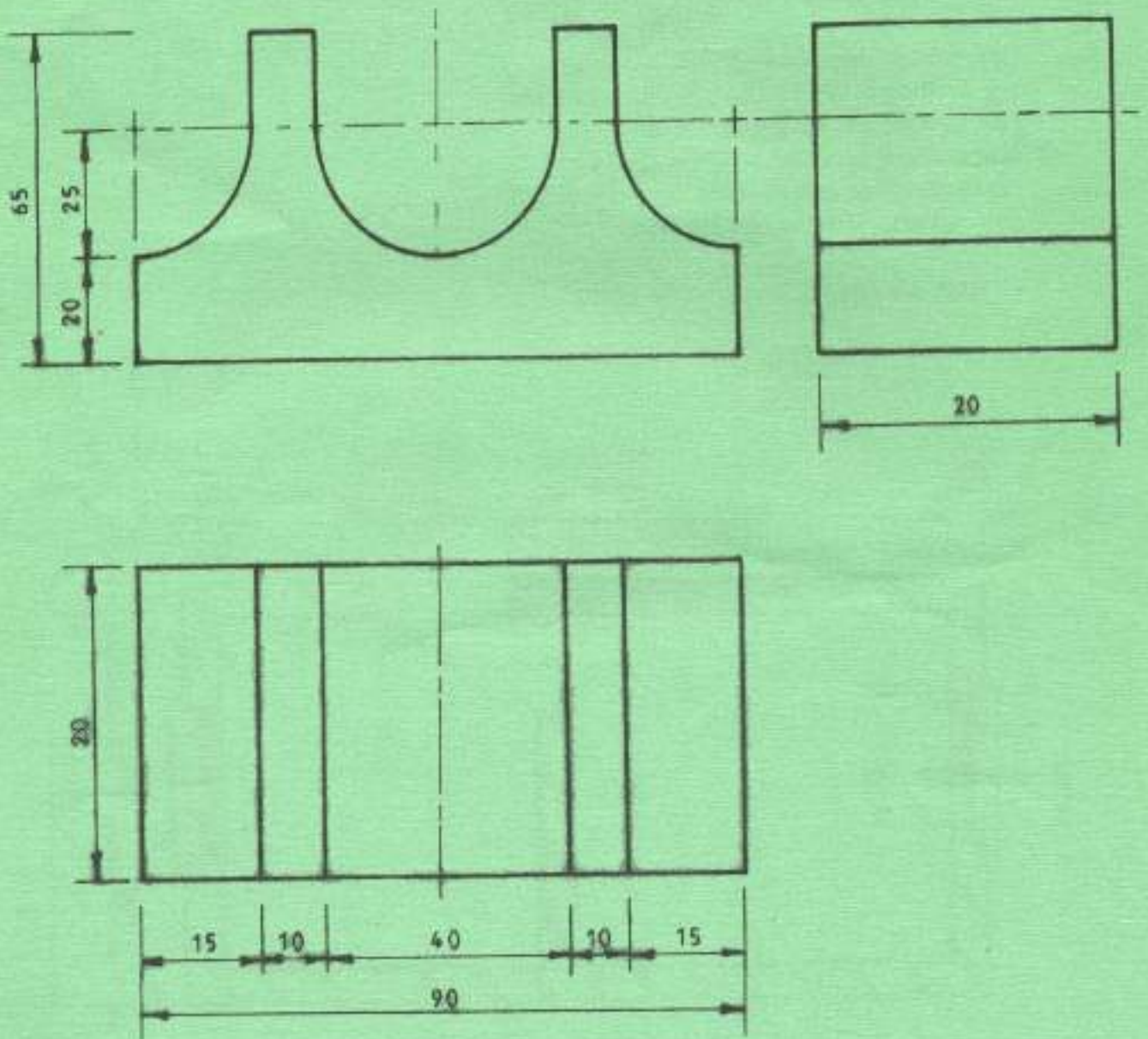


Fig. 2

8. **Figure 3** shows a plan of a house. To a scale of 1:20 draw section A-A given the following information:

- (i) Strip foundation = 900 mm below ground level
- (ii) Foundation walls = 200 mm natural stone wall
- (iii) Floor slab = 150 mm oversite concrete
= 50 mm blinding to receive dpm
- (iv) Wall above dpc = 200 mm
- (v) Ring beam = 300 mm depth
- (vi) Roof pitch angle = 30°
- (vii) Floor to ceiling height = 2500 mm
- (viii) Roofing material GCI sheet covering
- (ix) Purlin at 100 x 500 mm size

Assume any other information not given.

(20 marks)

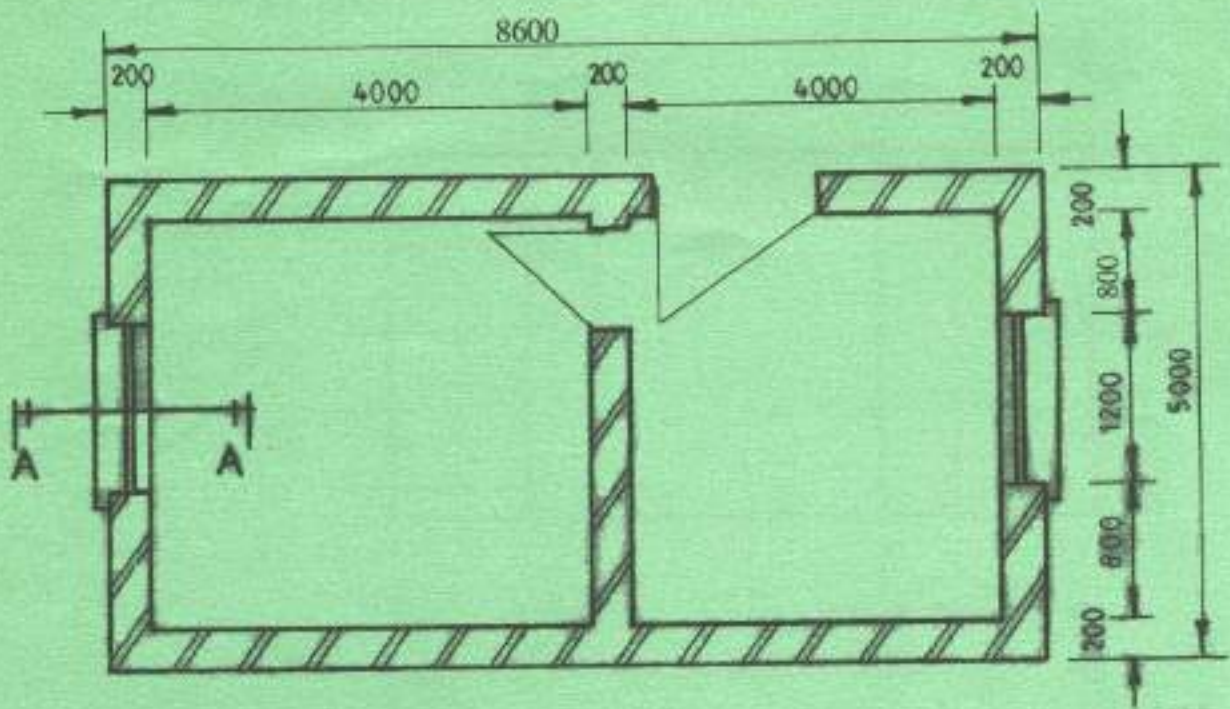


Fig. 3

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