

1704/103
BUILDING CONSTRUCTION I
AND DRAWING
June/July 2018
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:

Answer booklet;

A3 printing papers;

Drawing instruments.

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

Answer any FIVE questions choosing at least TWO questions from each section.

All questions carry equal marks.

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

Candidates should answer the questions in English.

This paper consists of 7 printed pages.

Candidates should check the question paper to ascertain that all 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) Explain how environment affects the design of a building in relation to human reaction. (8 marks)
- (b) With the aid of labelled diagrams, describe dewatering of a trench by well point method. (6 marks)
- (c) Illustrate the use of rails and boring rods in levelling the bottom of a foundation trench. (6 marks)
2. (a) State **three** factors that determine the choice of foundation for a building. (6 marks)
purpose of the building
- (b) Describe the **three** forces that may interfere with satisfactory performance of foundation walls. (6 marks)
- (c) State **four** functional requirements of mortar used in foundation wall construction. (8 marks)
3. (a) State **three** functions of hardcore. (3 marks)
- (b) Illustrate the **two** alternative positions of placing the damp proof membrane and damp proof courses in ground floors and adjoining walls. (10 marks)
- (c) Using a sketch, explain how a building is protected against termite attack in ground floors. (7 marks)
4. (a) Describe the difference between the following:
- (i) plastering and rendering;
- (ii) jointing and pointing. (8 marks)
- (b) State **four** purposes of thermal insulation in external walls. (4 marks)
- (c) Using suitable three dimensional sketches, show the following brick units:
- (i) half bat;
- (ii) queen closer;
- (iii) king closer;
- (iv) bevelled closer. (8 marks)

SECTION B: DRAWING

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

5. (a) Copy the drawings shown in **Figure 1** and dimension them fully showing dimension lines, projection lines, radius and diameter. (6 marks)

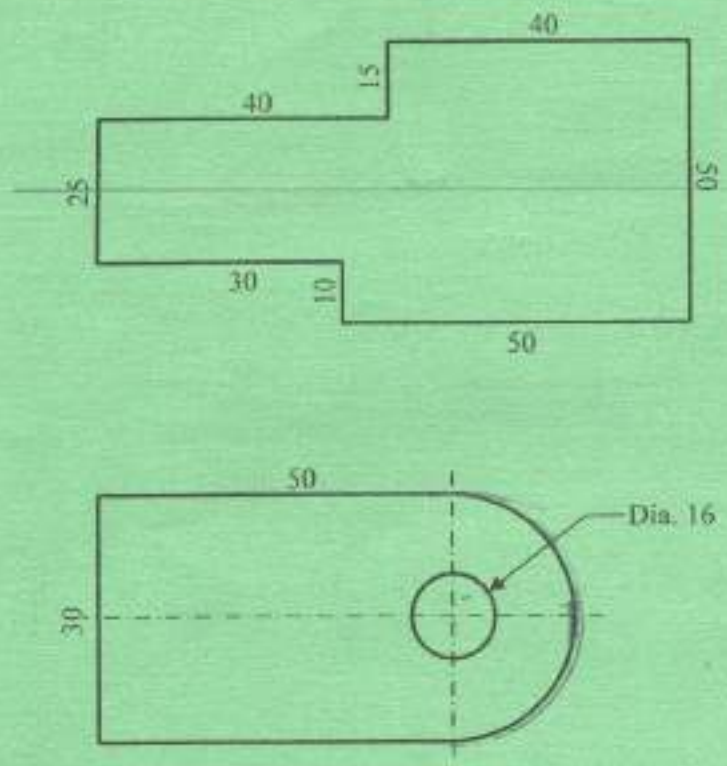


Fig. 1

- (b) Draw a tangent to the given circle in **Figure 2** from point P. (7 marks)

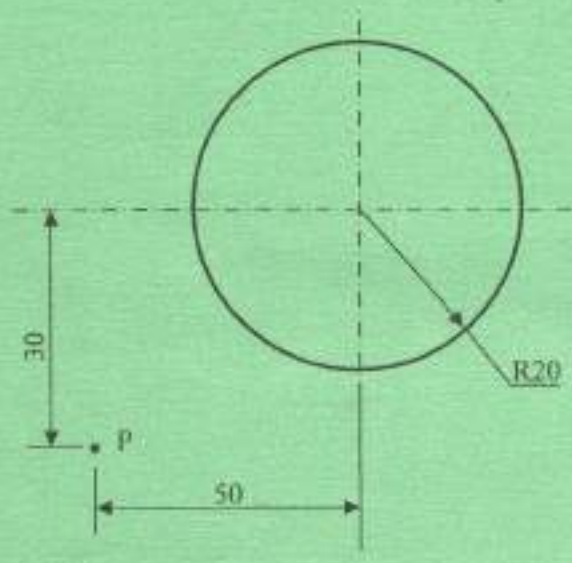


Fig. 2

- (c) **Figure 3** shows a crank BC rotating about a fixed centre C. A rod AB is pin-jointed to the crank at B and freely moves in the guide at A. Draw the locus of a point P for one revolution of crank. (7 marks)

*Coarser
higher proportion of sand is preferred
Subject code 1704/103*

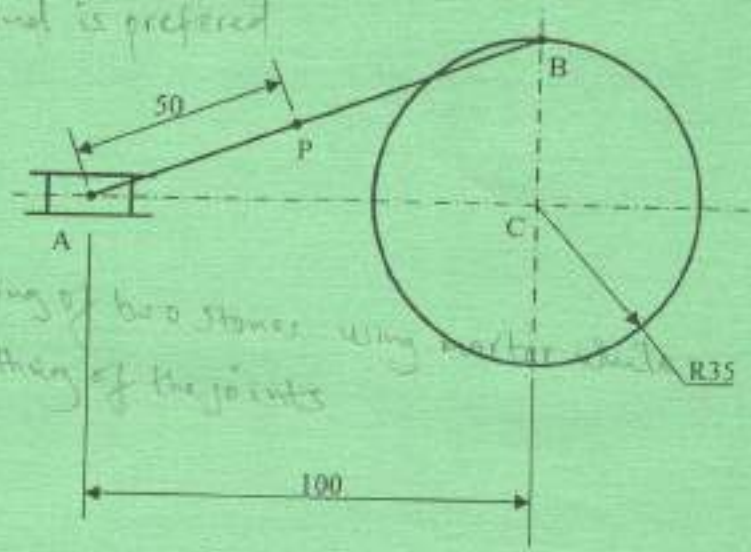


Fig. 3

6. (a) **Figure 4** shows the front elevation and end elevation of a block, draw these two views and add a plan in projection with the front elevation. (10 marks)
- (b) Make an accurate isometric drawing of the block. (10 marks)

*Joint is the combining of two stones using mortar which
pointing is the setting of the joints*

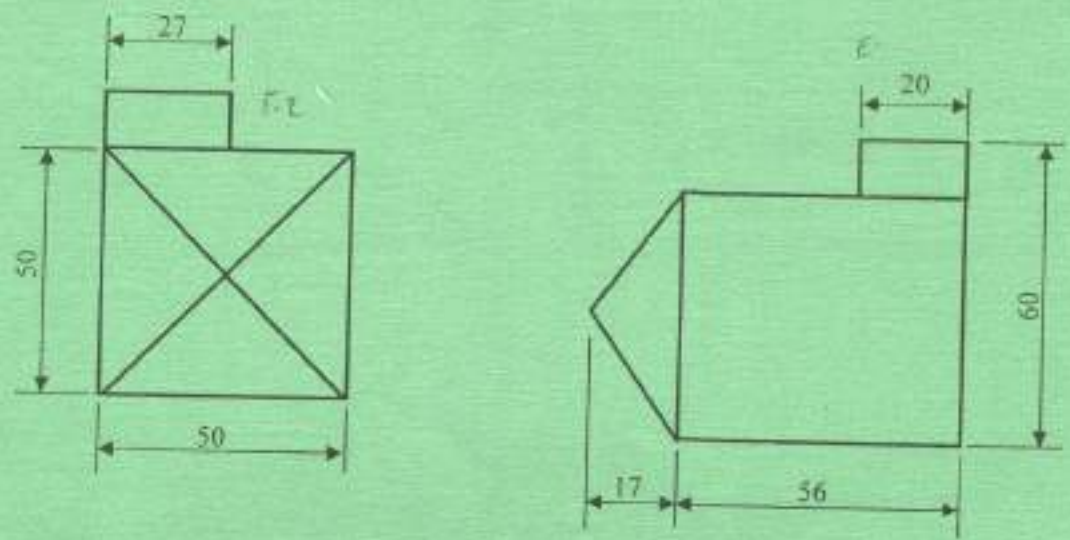


Fig. 4

7. (a) Figure 5 shows views of a truncated cube:

(i) draw the views and complete plan and end elevation; (5 marks)

(ii) draw the true shape of the truncated cube. (5 marks)

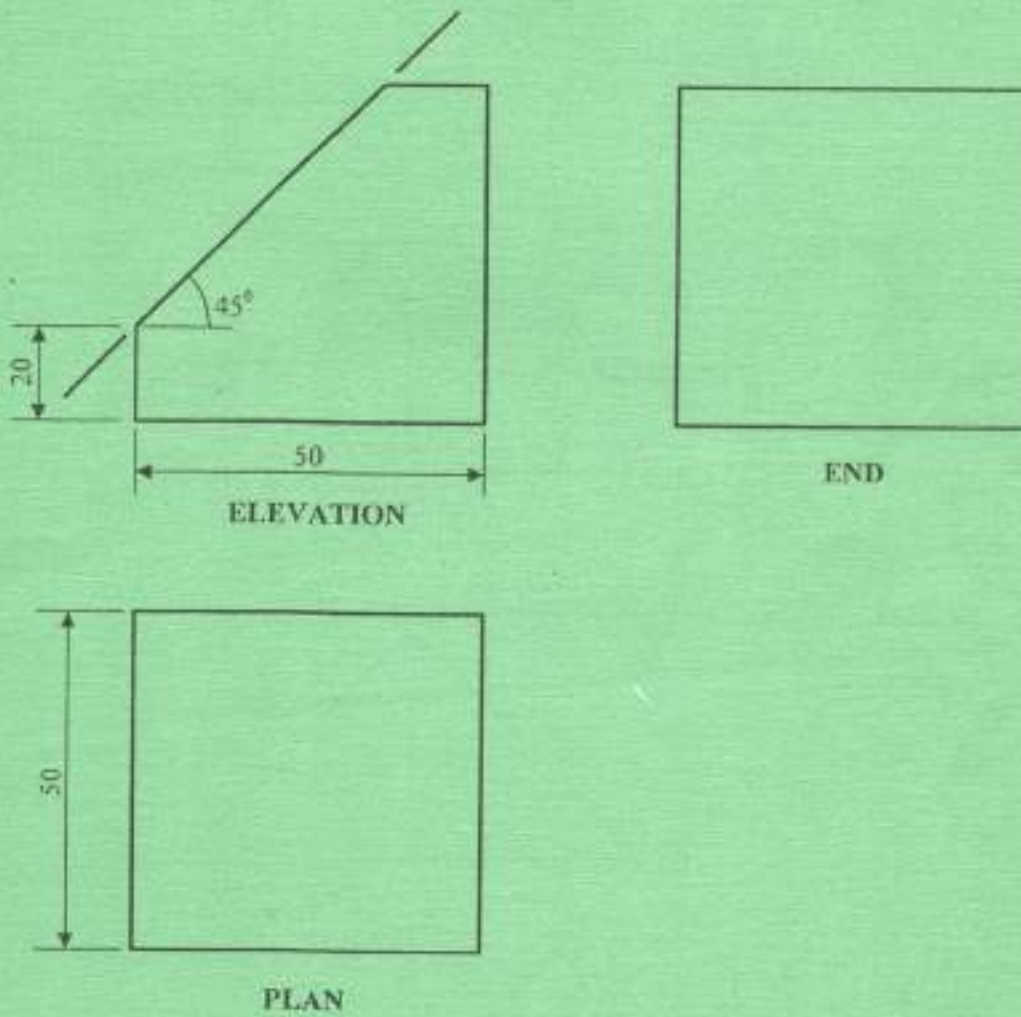


Fig. 5

(b) Figure 6 shows view of a square based right pyramid cut obliquely.

(i) Draw the given views and complete the plan. (5 marks)

(ii) Develop part B. (5 marks)

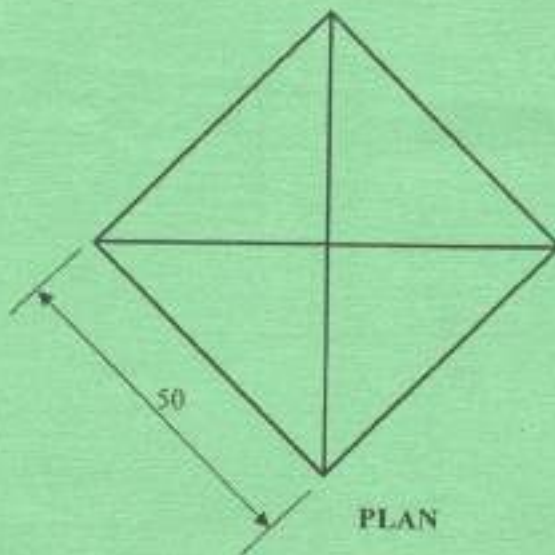
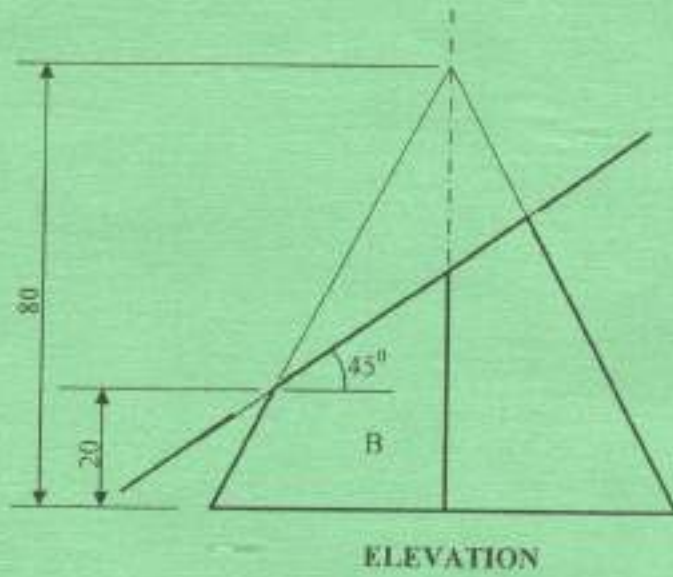


Fig. 6

8. (a) Illustrate graphical symbols for the following building components:

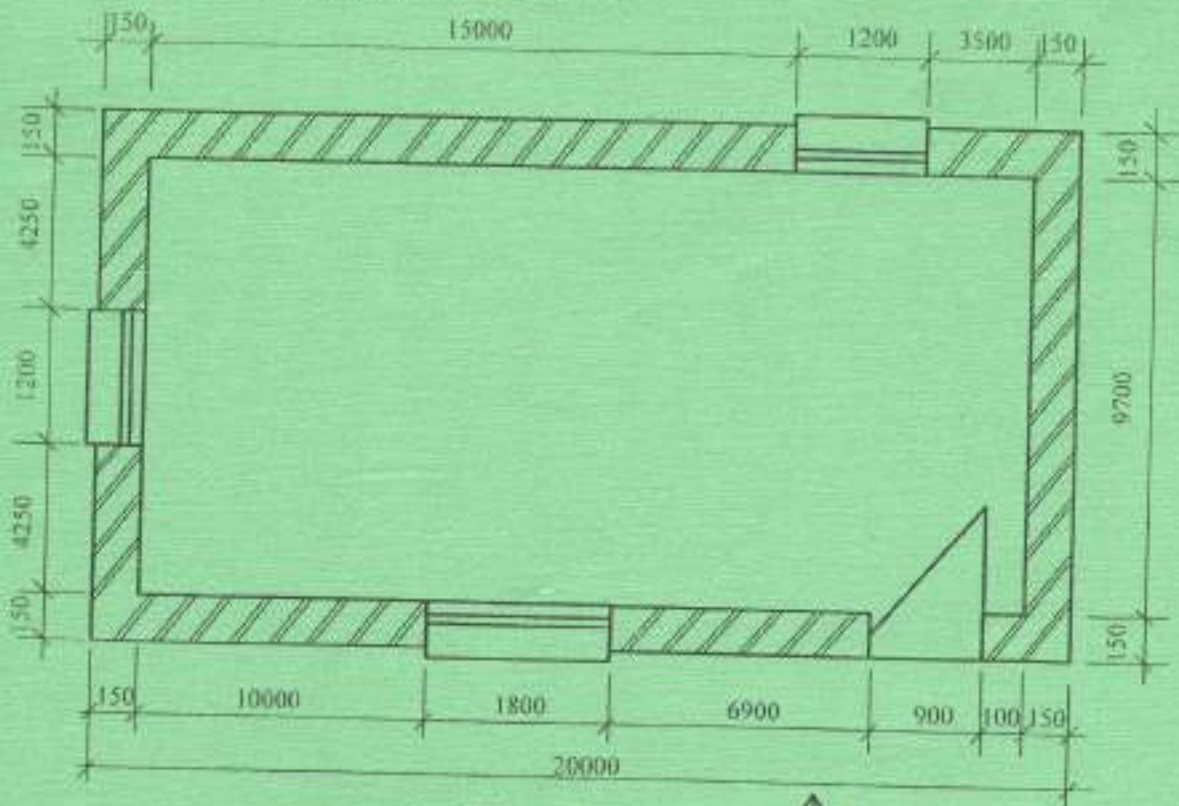
- (i) brick;
- (ii) partition block;
- (iii) plywood;
- (iv) concrete;
- (v) hardcore.

(5 marks)

(b) Given floor to floor height of a building as 2700 mm, maximum rise as 190 mm, minimum tread as 225 mm, minimum width as 750 mm and minimum headroom as 2025 mm, design a stair to suit the building. (5 marks)

(c) Figure 7 shows a house plan of a building. Make sketches not to scale of the following views:

- (i) Front view from arrow A and its related end view. (5 marks)
- (ii) Rear view and its related end view. (5 marks)
 - Take roof pitch as 30°;
 - Roof type as gable;
 - Assume any other information.



HOUSE PLAN

Fig. 7

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