



2705/105

2707/105

2709/105

**BUILDING CONSTRUCTION I,
TECHNICAL DRAWING AND
CONSTRUCTION PLANT**

June/July 2018

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN BUILDING TECHNOLOGY
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE**

MODULE I

BUILDING CONSTRUCTION I, TECHNICAL DRAWING AND CONSTRUCTION PLANT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing paper size A3;

Scientific calculator.

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

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

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 7 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 TWO questions from this section.

1. (a) State **three** examples of each of the following elements:
- (i) natural environment;
 - (ii) built environment.
- (6 marks)
- (b) (i) Using a labelled sketch describe a site square. (5 marks)
- (ii) Sketch a builder's square and illustrate its use in setting out the plan shown in figure 1. (8 marks)

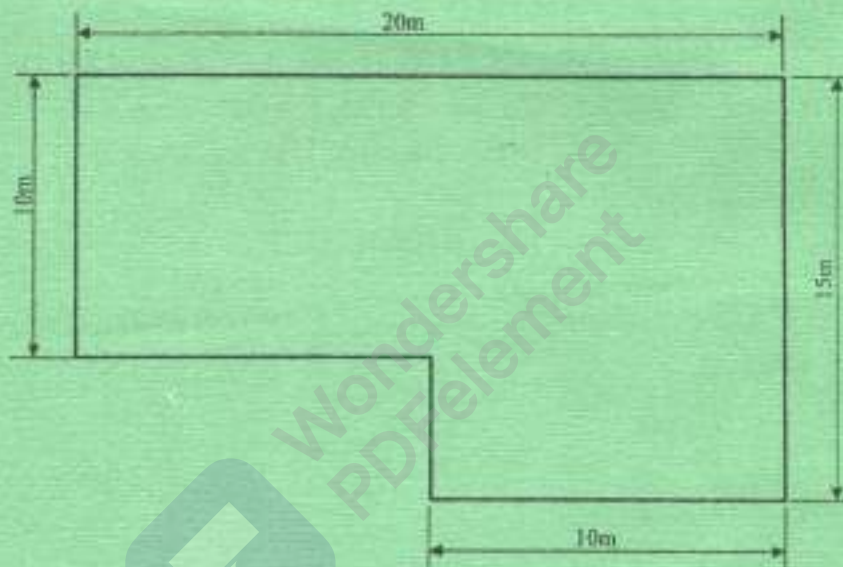


Fig. 1

- (c) Illustrate the **three** methods of levelling a sloping site. (6 marks)
2. (a) (i) State **two** effects of ground water in a site. (3 marks)
- (ii) Using labelled sketches describe the following methods of dewatering a site:
- (I) simple sump pumping;
 - (II) well point systems.
- (10 marks)

(b) Using labelled sketches, describe the following types of foundations:

- (i) short bored pile foundation,
- (ii) wide strip foundation.

(10 marks)

(c) State **two** reasons of thermal insulation in external walls.

(2 marks)

3. (a) **Figure 2** shows an external elevation of a traditional wood casement window.

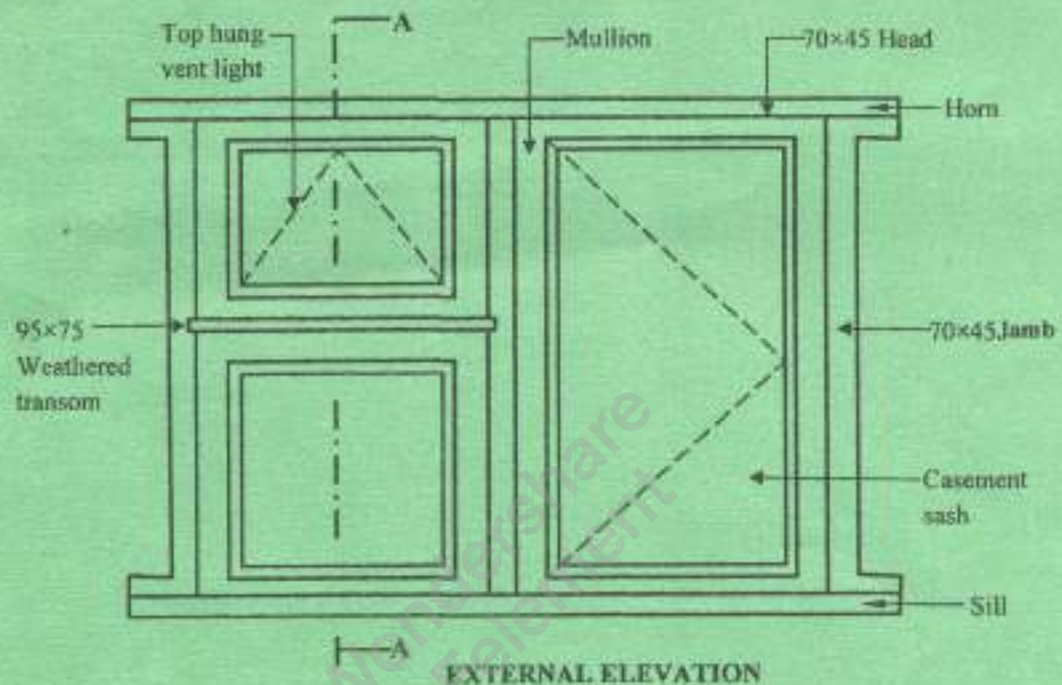


Fig. 2

Sketch section A-A given the following information, 45 x 40 ventilight framing, 45 x 40 fixed light top rail and stiles, and 70 x 40 bottom rail. (15 marks)

(b) With the aid of sketches outline **two** building code by-laws regarding construction of hearths. (7 marks)

(c) State **three** suitable materials for damp-proof membranes. (3 marks)

SECTION B: TECHNICAL DRAWING

Answer **TWO** questions from this section.

4. (a) (i) Draw the views of the block in figure 3 in first angle projection with the front elevation viewing in the direction of arrow X.
(6 marks)

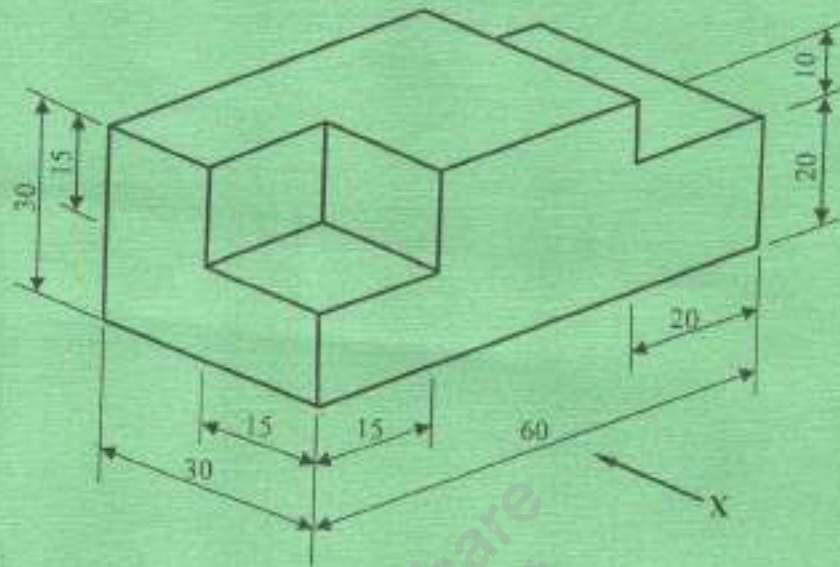


Fig. 3

- (ii) Draw the block in figure 4 in third angle projection with the front elevation viewed in the direction of arrow P.
(6 marks)

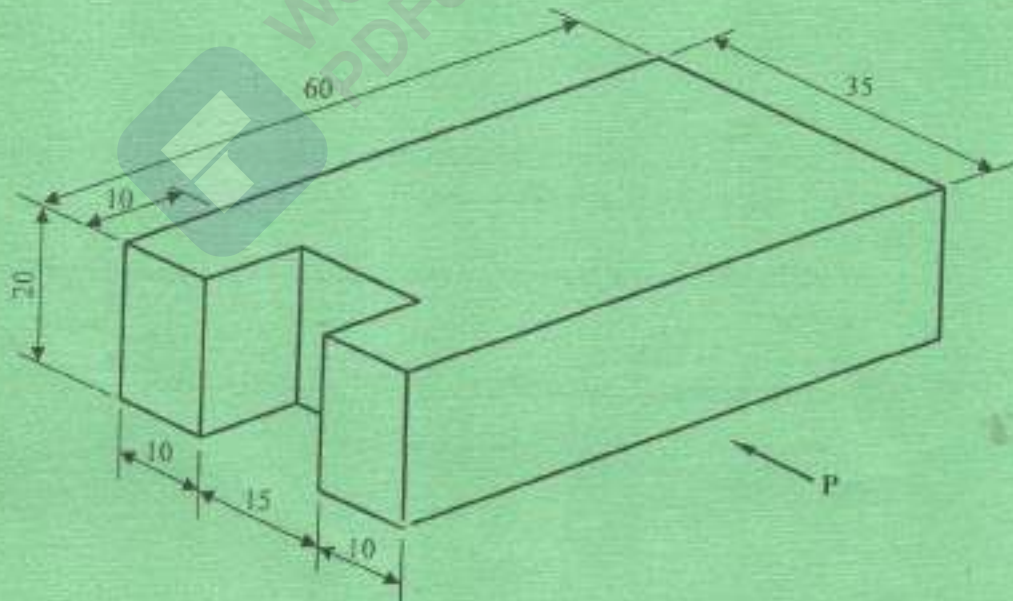


Fig. 4

(b) Explain the uses of the following lines in drawing:

- (i) thick lines;
- (ii) medium lines;
- (iii) thin lines.

(3 marks)

5. Two pipes of unequal diameter intersect at an angle as shown in **figure 5**. Draw the given elevation and plan.

(a) Complete the line of intersection for the two pipes.

(b) Draw the development of pipe B.

(15 marks)

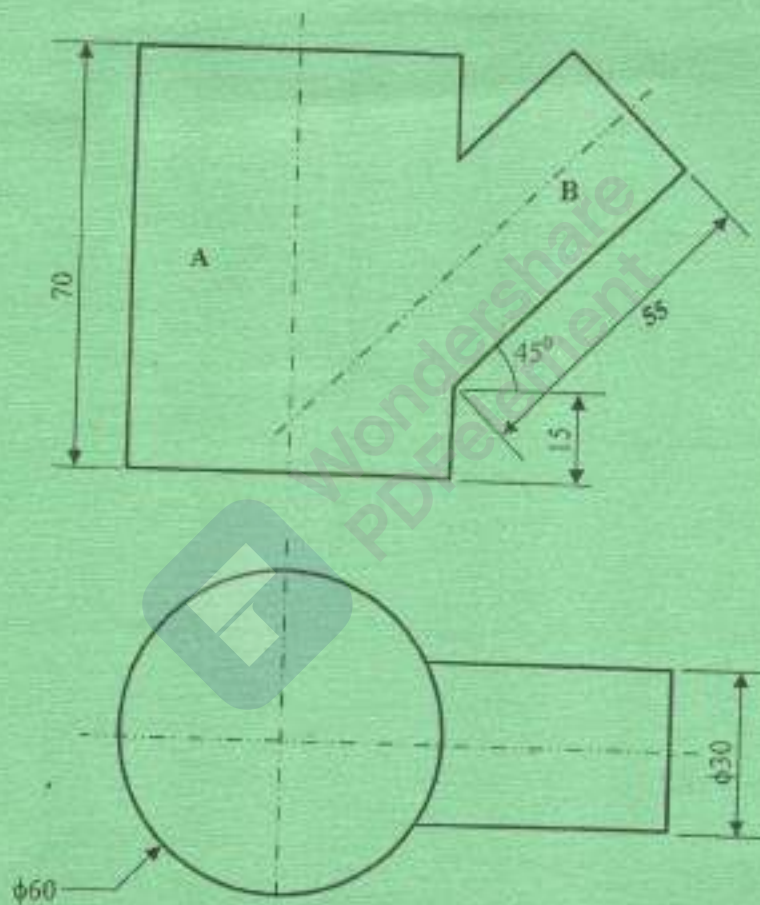


Fig. 5

6. (a) **Figure 6** shows views of a block in orthographic. Draw the oblique view of the block with face parallel to the plane of projection. (10 marks)

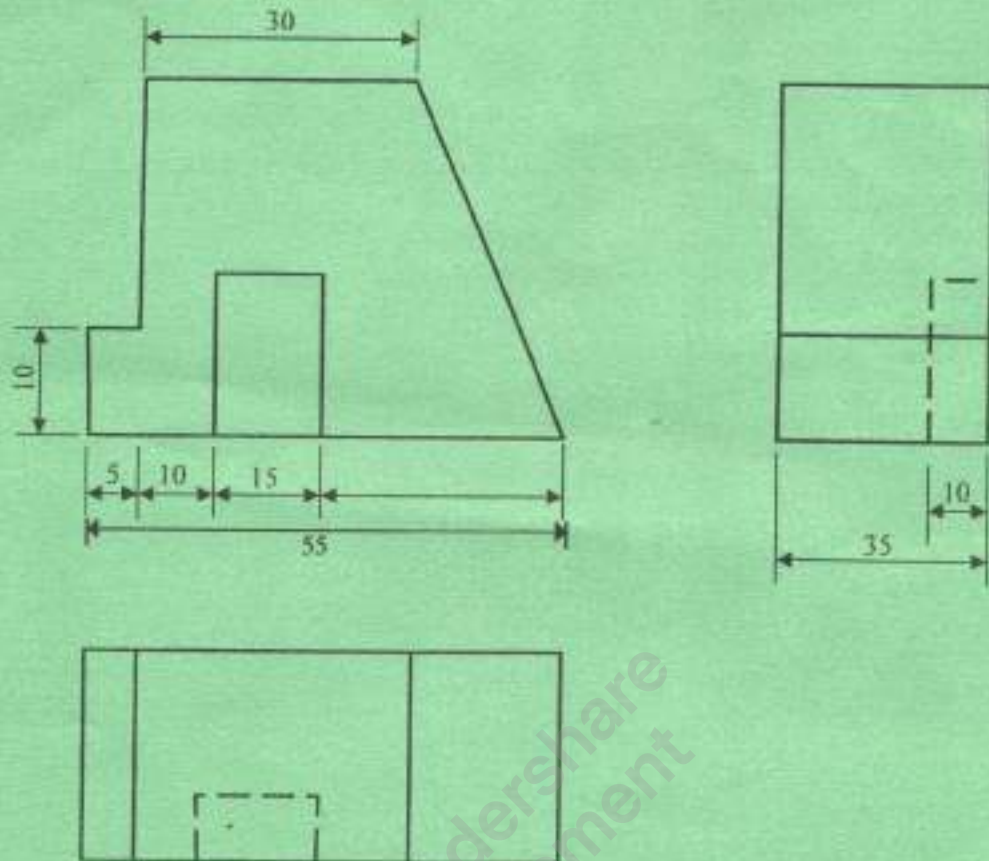


Fig. 6

- (b) Draw the plan of a line given the elevation and the true length as shown in figure 7. True length is 85 mm. (5 marks)

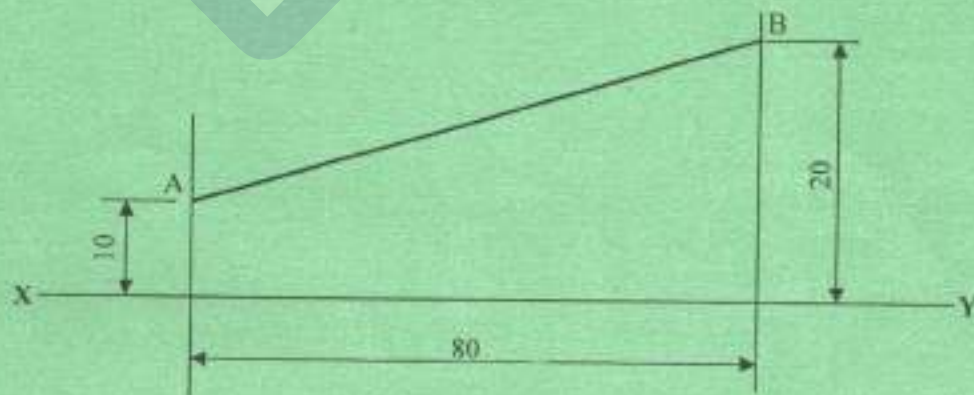


Fig. 7

**SECTION C: CONSTRUCTION PLANT**

Answer ONE question from this section.

7. (a) Give five reasons for use of plant on a construction site. (5 marks)
- (b) State five functions of a bulldozer. (5 marks)
- (c) Describe the following excavating machines:
- (i) universal excavators;
 - (ii) grader;
 - (iii) multi-purpose excavators;
 - (iv) tractor shovel.
- (10 marks)
8. (a) Differentiate between materials hoist and passenger hoists. (5 marks)
- (b) Describe three main types of cranes. (9 marks)
- (c) Describe the following plants:
- (i) concrete pumps;
 - (ii) poker vibrators;
 - (iii) power float.
- (6 marks)

THIS IS THE LAST PRINTED PAGE.