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**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)

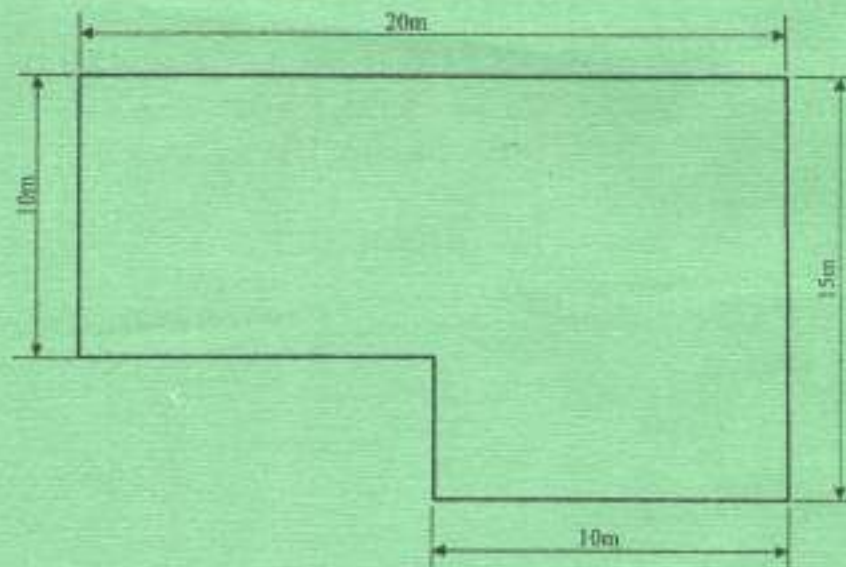


Fig. 1

- (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.

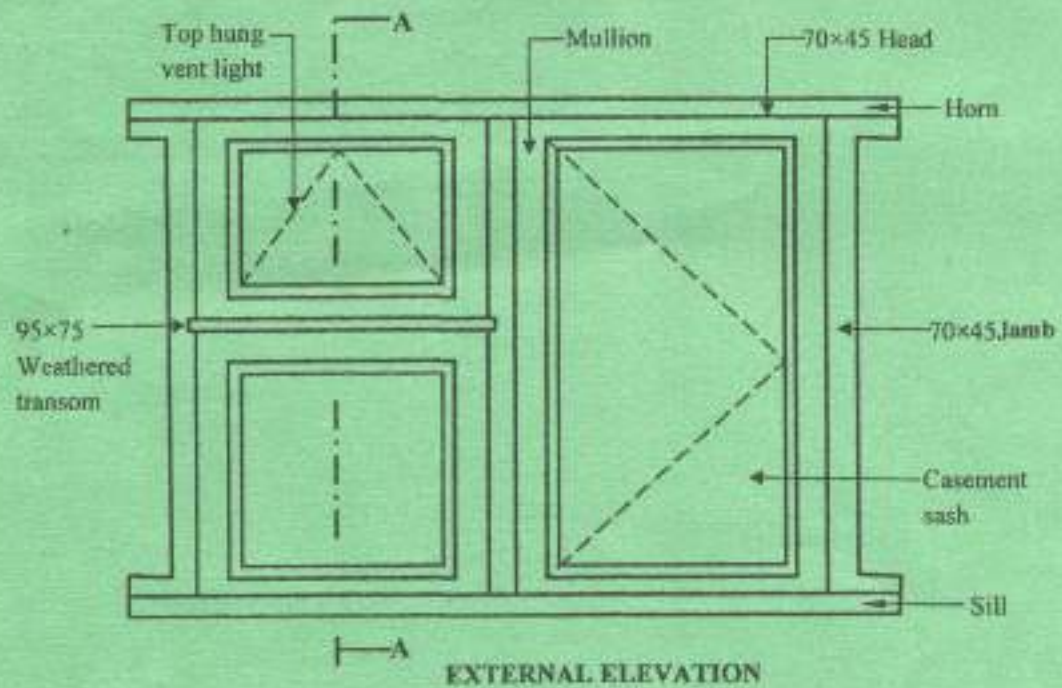


Fig. 2

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)

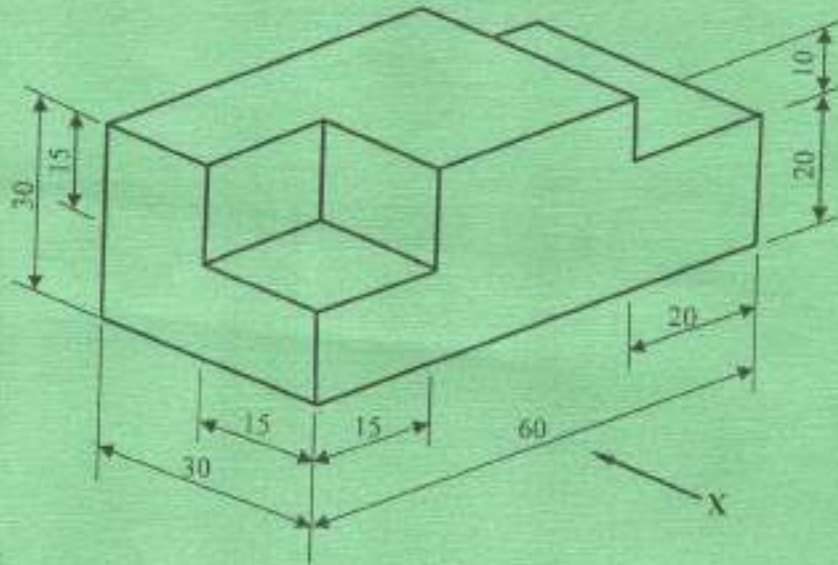


Fig. 3

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

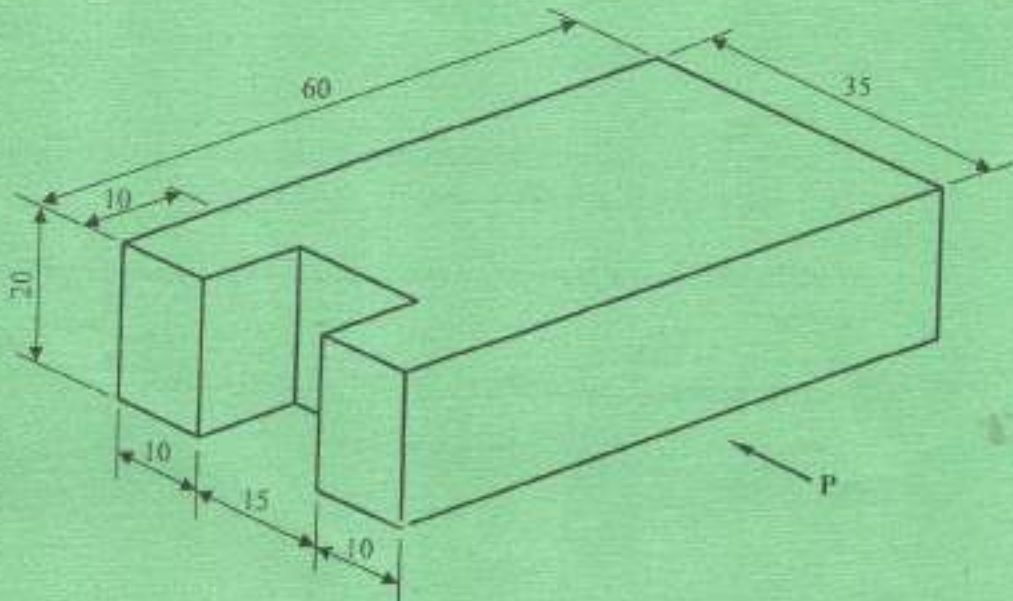


Fig. 4

(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)

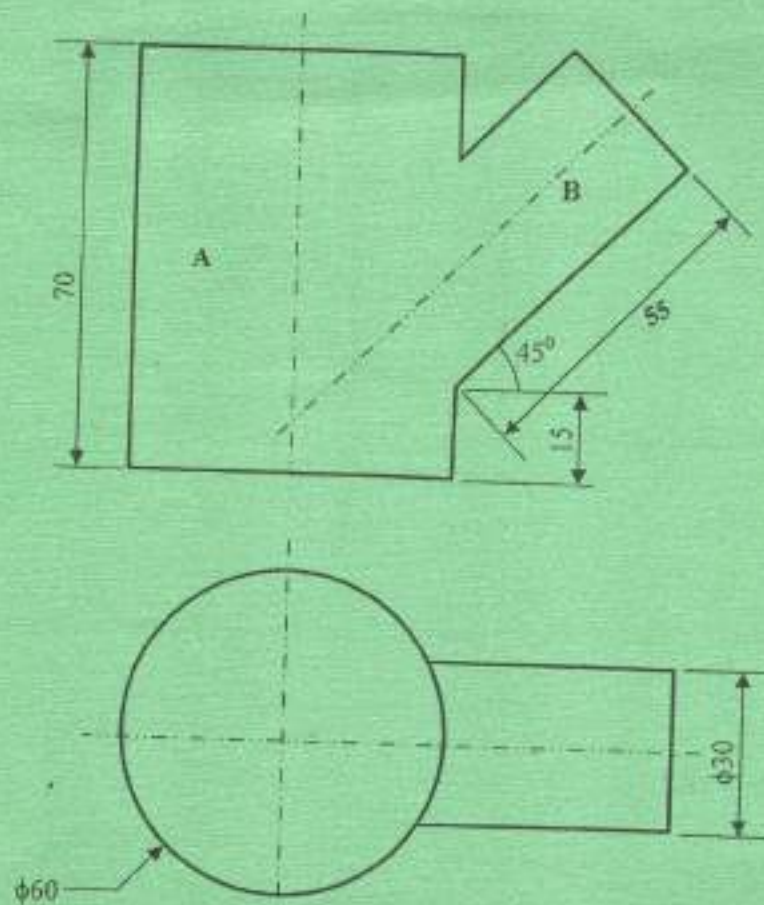


Fig. 5

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)

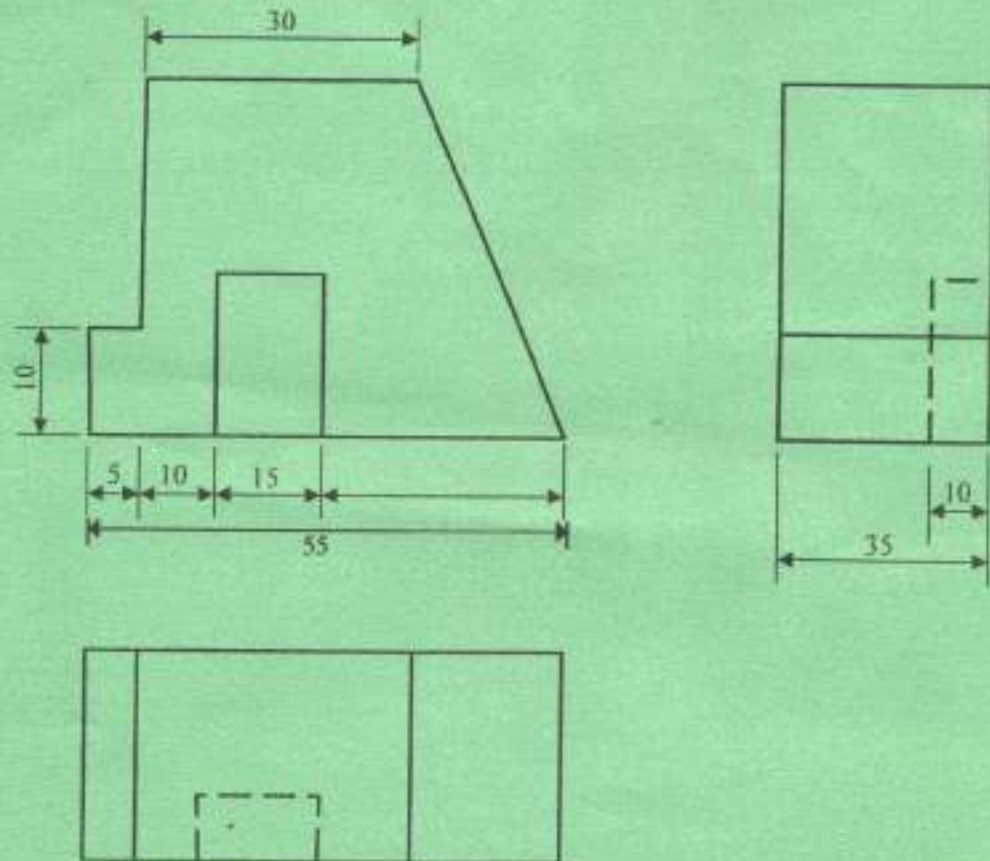


Fig. 6

- (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)

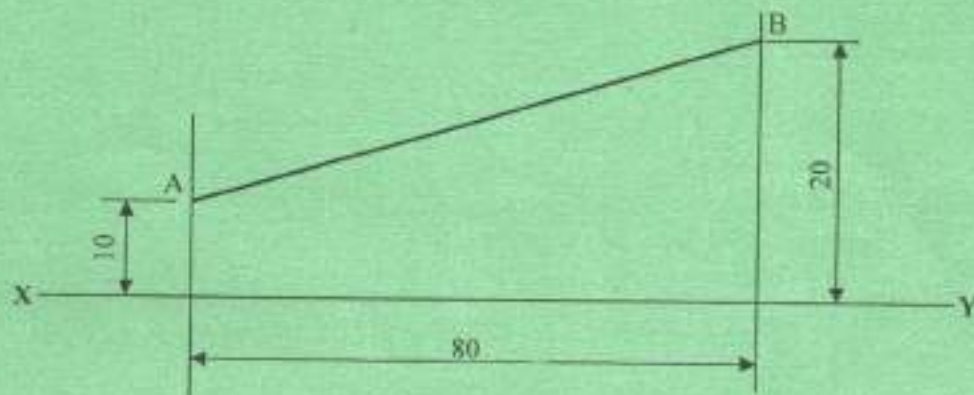


Fig. 7

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)

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