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

Oct/ Nov. 2017

Time: 3 Hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN BUILDING
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 A2;

Drawing instruments.

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

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

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

All dimensions are in millimetres.

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.

Answer **TWO** questions from this section.

1. (a) Explain the evolution of built environment. (6 marks)
- (b) State **four** reasons for soil investigation. (4 marks)
- (c) Highlight **two** advantages of site investigation. (3 marks)
- (d) With the aid of a sketch, explain the procedure of setting out a circular building using a string and a spike. (6 marks)
- (e) With the aid of sketches, explain **two** methods of protecting sides of trenches. (6 marks)
2. (a) With the aid of sketches, explain each of the following systems of land drainage:
- (i) natural;
- (ii) herringbone. (6 marks)
- (b) Explain **three** causes of ground movement. (6 marks)
- (c) With the aid of sketches, explain **two** methods of casting piles. (6 marks)
- (d) Sketch and label a window frame. (3 marks)
- (e) State **four** principles to be considered when laying a damp proof course. (4 marks)
3. (a) State **three** purposes of hardcore in ground floors. (3 marks)
- (b) With the aid of sketches, explain two types of framed wall construction. (6 marks)
- (c) Outline **four** aims of dimensional coordination. (4 marks)
- (d) Highlight **four** functions of door frames. (4 marks)
- (e) Explain **four** causes of smokey chimneys. (8 marks)

SECTION B: TECHNICAL DRAWING (30 marks)

Answer TWO questions from this section.

4. Figure 1 shows a pictorial view of an object. Draw the orthographic views. (15 marks)

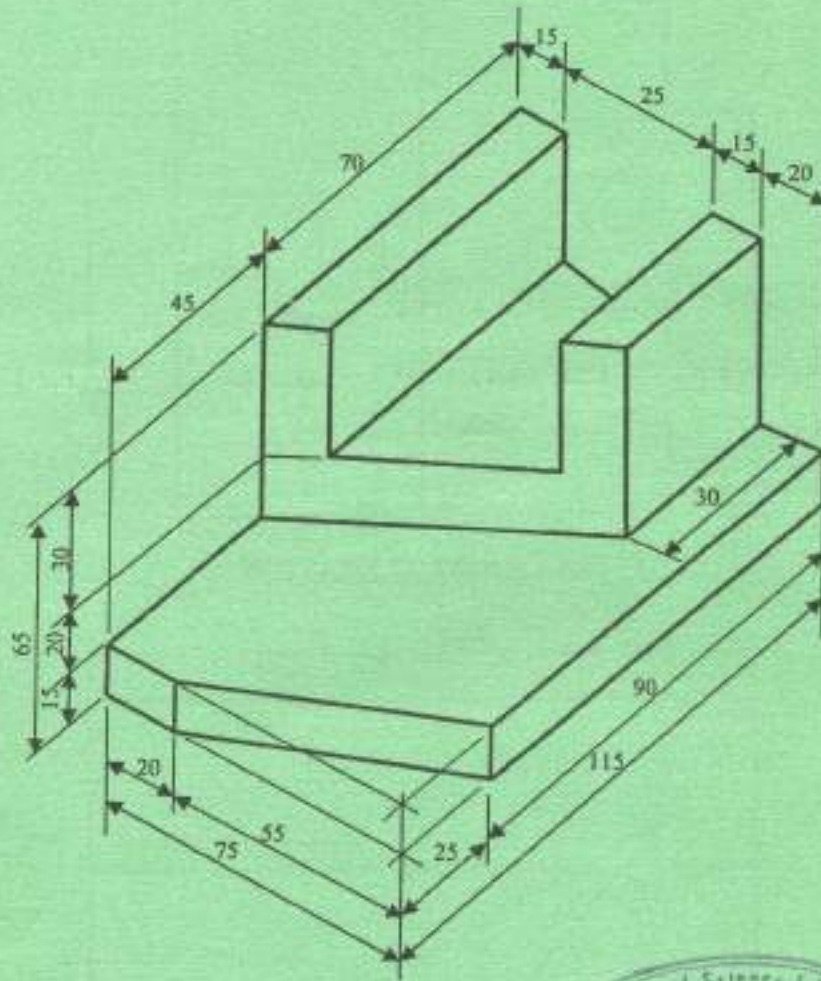


Fig. 1



5. **Figure 2** shows the plan and the front elevation of an interpenetration of a square based prism and a triangular based prism. Given that the square based prism is of sides 30 mm and height 80 mm and the triangular based prism is of sides 30 mm x 50 mm x 65 mm and height 80 mm. Determine the points of intersection on the front elevation. (15 marks)

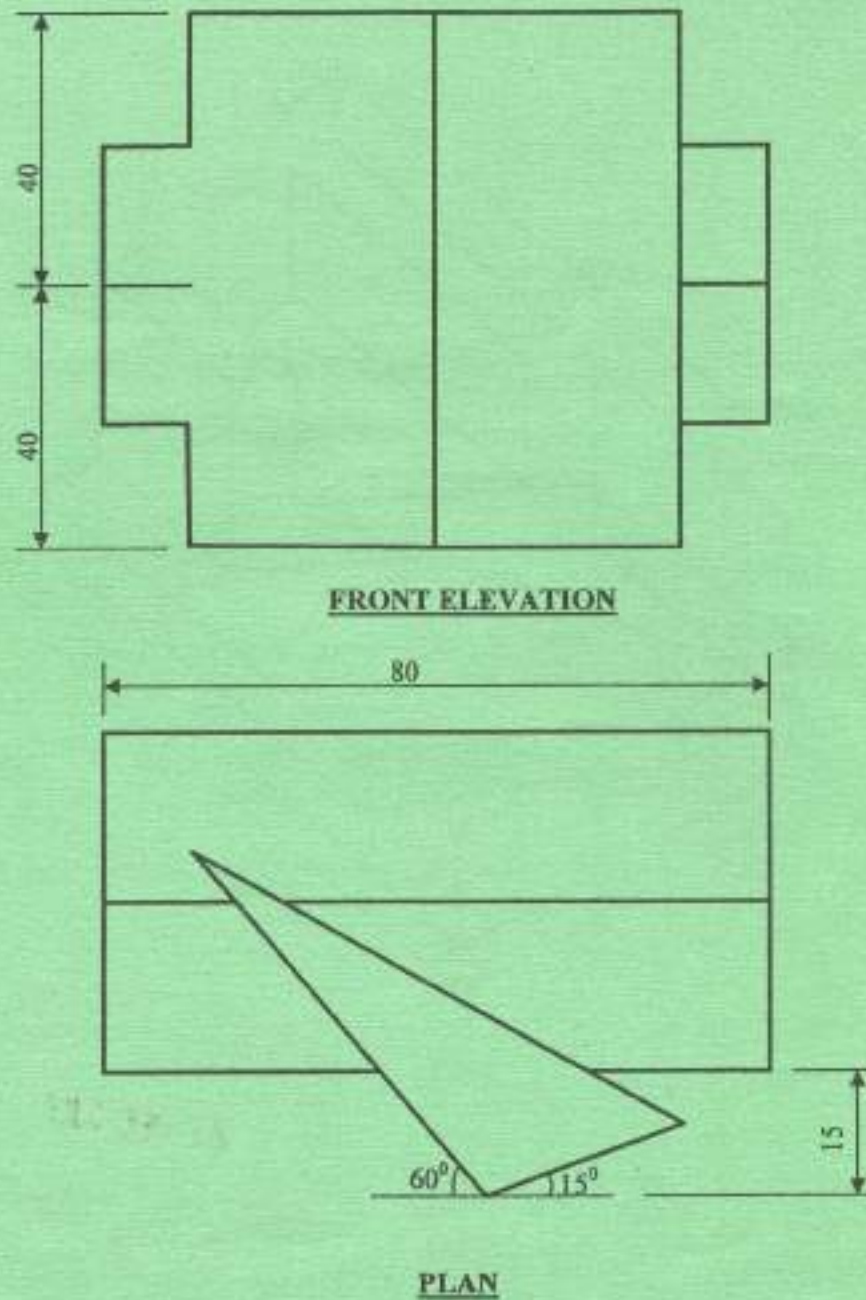


Fig. 2

6. Figure 3 shows the front elevation of a truncated cone. Using 3rd angle draw an ellipse as a conic section. (15 marks)

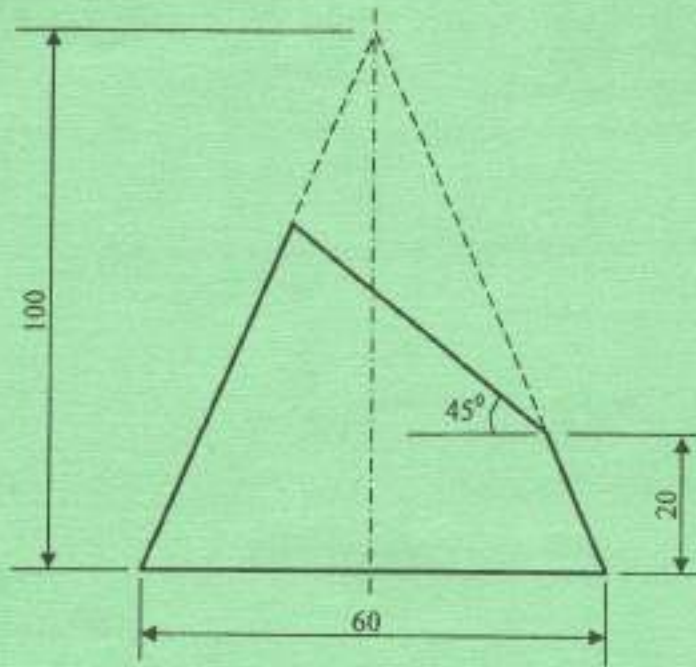


Fig. 3

SECTION C: CONSTRUCTION PLANT (20 marks)

Answer ONE question from this section.

7. (a) State **four** factors that affect the productivity of a loader shovel. (2 marks)
- (b) With the aid of sketches, explain the operation of the following plant:
- clamshell;
 - belt conveyor;
 - scotch derrick crane.
- (15 marks)
- (c) State six advantages of pumpretes. (3 marks)

8. (a) State **six** factors which affect work cycle of trucks. (3 marks)
- (b) With the aid of sketches explain the operation of the following plant:
- (i) transit mixer;
 - (ii) sheep's foot roller;
 - (iii) telescopic boom forklift.
- (15 marks)
- (c) State **four** factors to consider when selecting crane skip. (2 marks)

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