



2705/105

2707/105

2709/105

**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.**

**SECTION A: BUILDING CONSTRUCTION**

*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 coarse. (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)

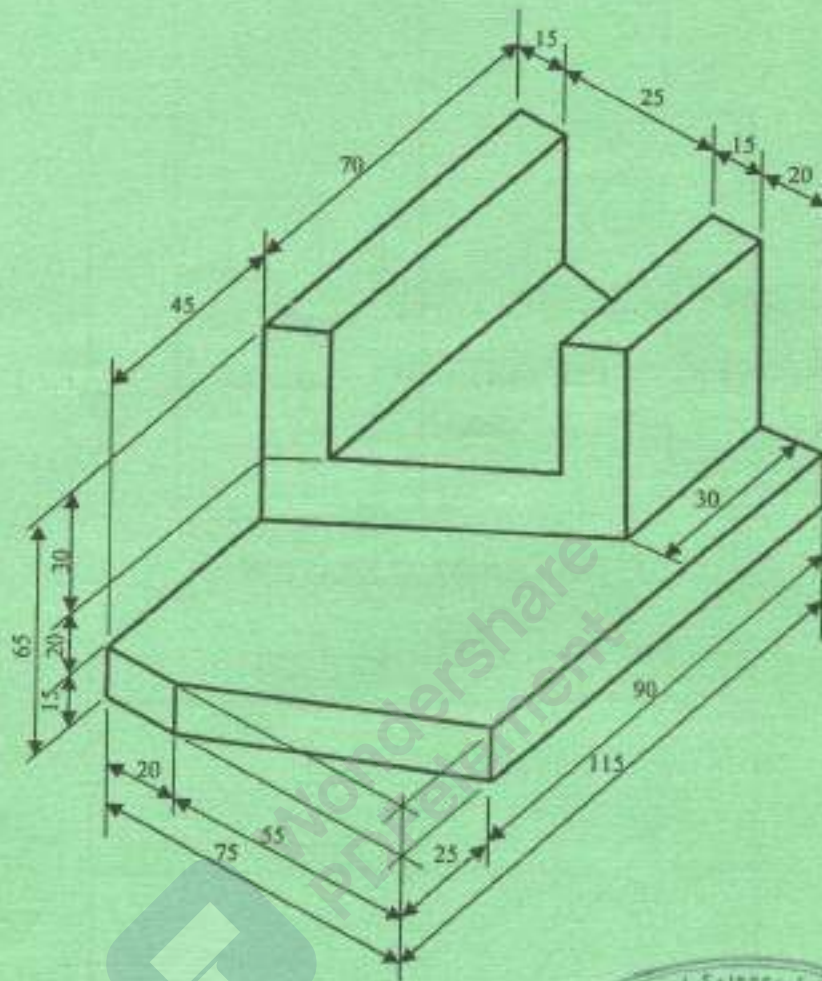


Fig. 1



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)

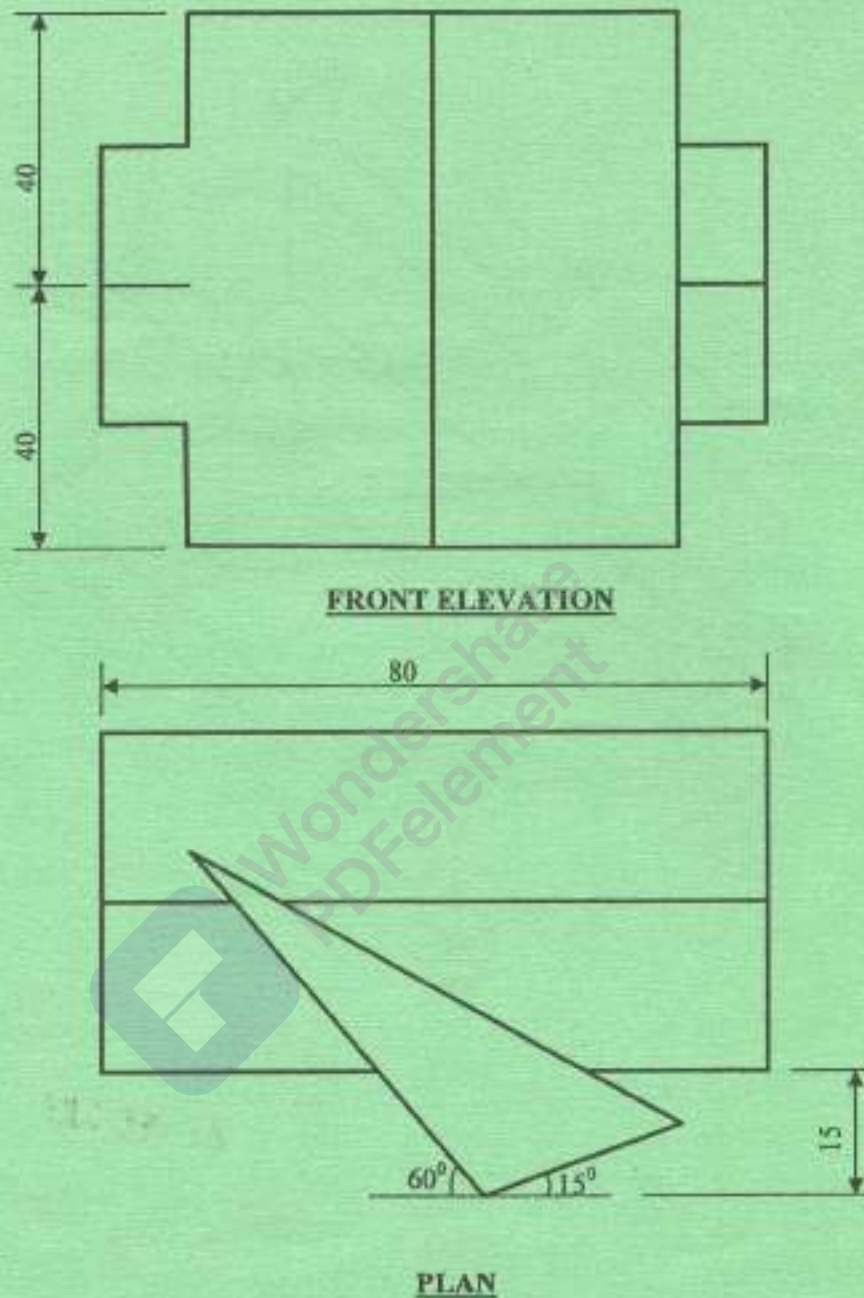


Fig. 2

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

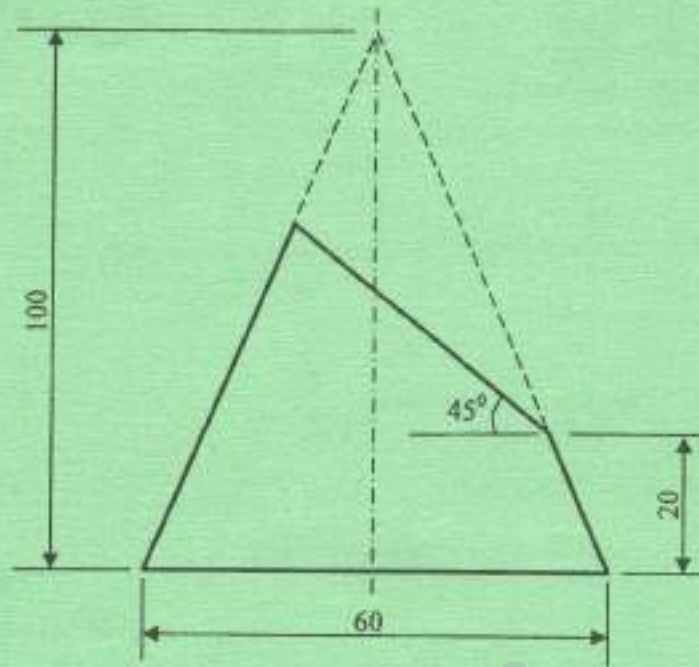


Fig. 3

### 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:
- (i) clamshell;
  - (ii) belt conveyor;
  - (iii) scotch derrick crane.
- (15 marks)
- (c) State six advantages of pumperetes. (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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