

Name: \_\_\_\_\_ Index No: \_\_\_\_\_ / \_\_\_\_\_

2705/105

Candidate's Signature: \_\_\_\_\_

2707/105

2709/105

Date: \_\_\_\_\_

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

Oct./Nov. 2014

Time: 3 hours



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**DIPLOMA IN BUILDING TECHNOLOGY**

**DIPLOMA IN CIVIL ENGINEERING**

**DIPLOMA IN ARCHITECTURE**

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

**3 hours**

### INSTRUCTIONS TO CANDIDATES

*Write your name and index number in the spaces provided above.*

*Sign and write the date of the examination in the spaces provided above.*

*You should have a pocket calculator and drawing paper size A3 for this examination.*

*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 in the spaces provided and drawing paper where necessary.*

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

*Candidates should answer the questions in English.*

#### For Examiner's Use Only

Section	Question	Maximum Marks	Candidate's Score
A	1	25	
	2	25	
	3	25	
B	4	15	
	5	15	
	6	15	
C	7	20	
	8	20	
<b>TOTAL SCORE</b>			

This paper consists of 16 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 any **TWO** questions from this section.

1. (a) (i) State **three** activities in site clearing.
- (ii) With the aid of a sketch, briefly explain the following methods of setting out a building:
- I. builders square;
  - II. 3:4:5 method;
  - III. site square.
- (15 marks)
- (b) Sketch and label a pictorial detail of timbering to loose wet soil giving member sizes. (4 marks)
- (c) (i) Outline **two** functional requirements of a foundation in building.
- (ii) State **two** causes of settlement of buildings. (6 marks)
2. (a) (i) List **five** functional requirements of walls.
- (ii) State **six** functional requirements of a good mortar. (5½ marks)
- (b) (i) List **six** types of damp proof course materials.

- (ii) Figure 1 shows the elevation of a wooden door frame. Sketch and label section A-A assuming the frame is fitted with a solid core flush door and a glass ventlight.

(10½ marks)

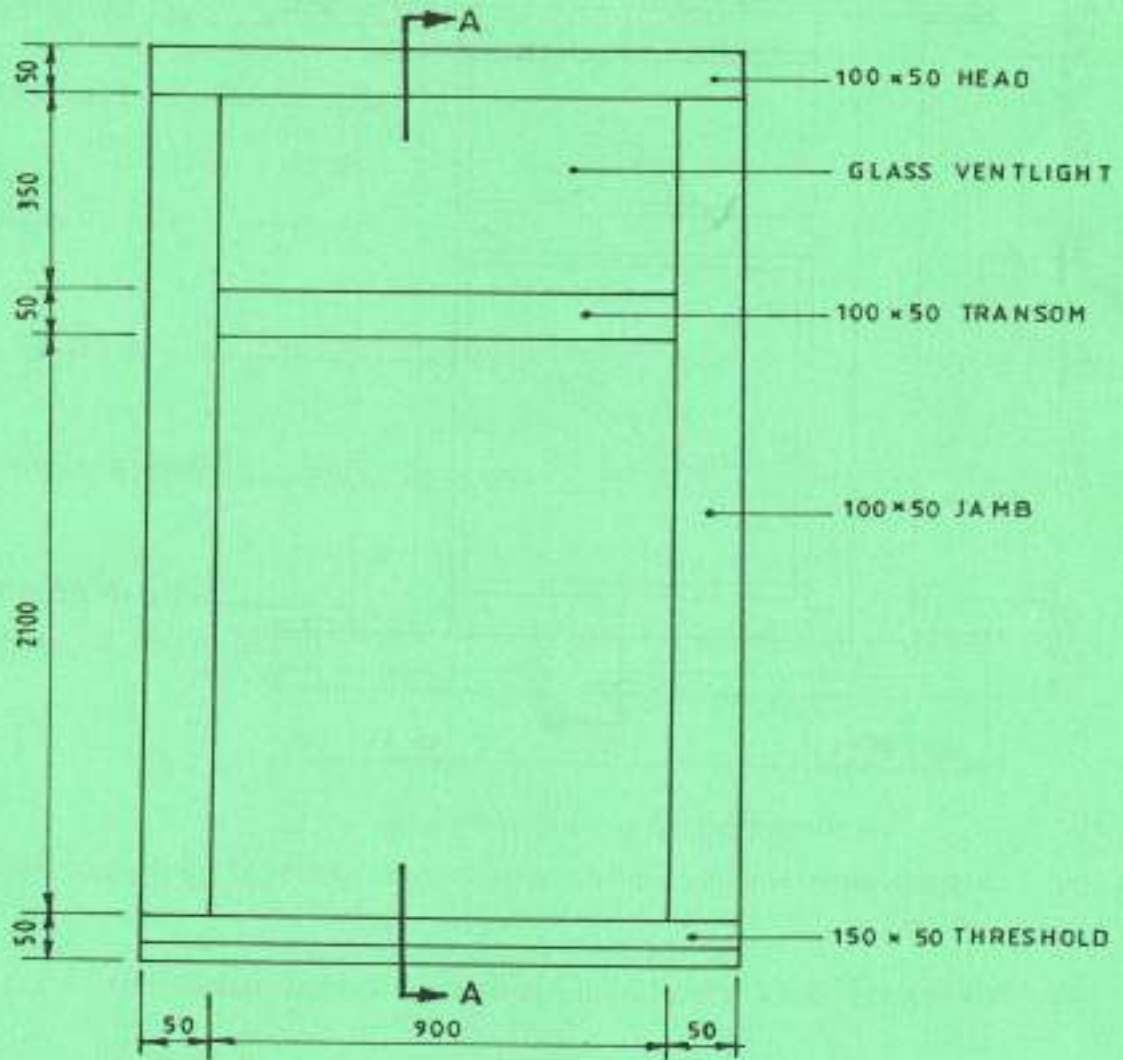


Fig. 1

(c) Figure 2 shows the elevation of a wooden window. Sketch section B-B.

(9 marks)

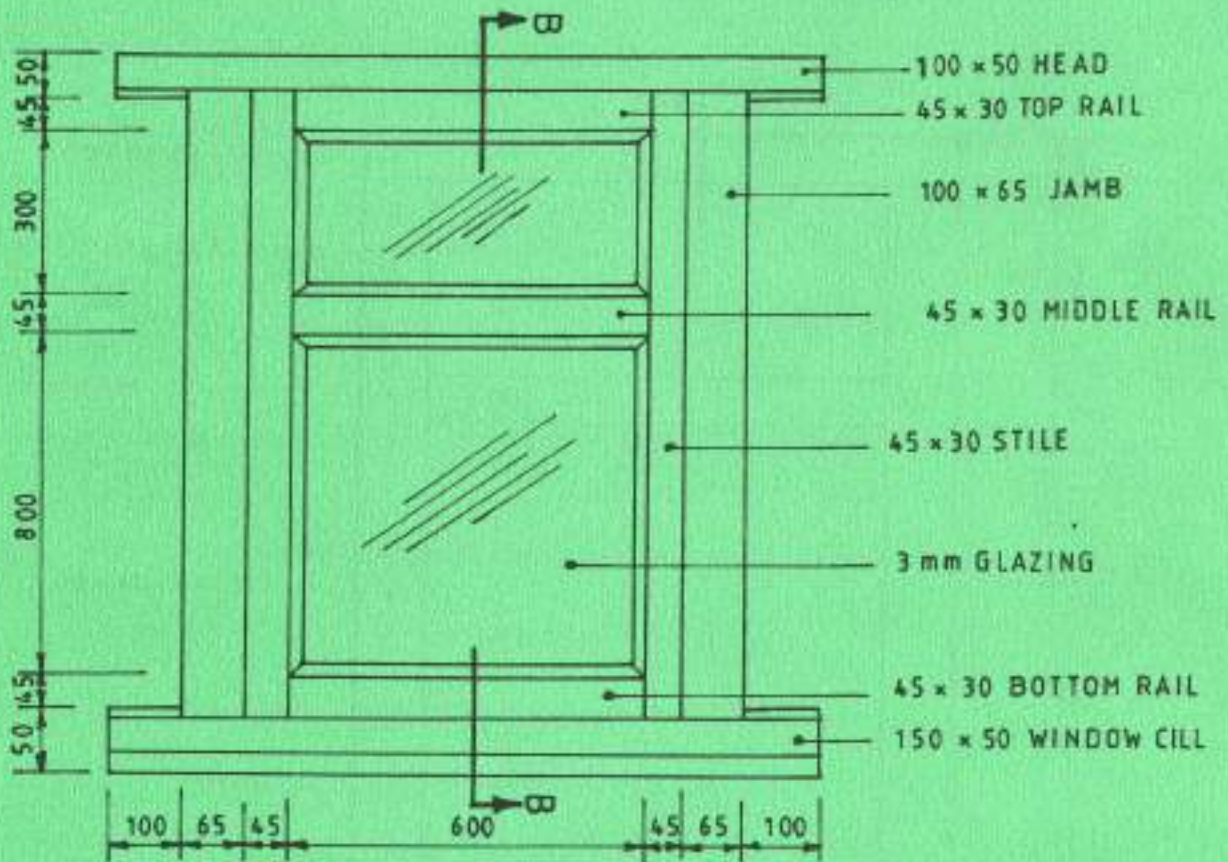


Fig. 2

3. (a) Illustrate **three** building regulations requirement relating to the chimney projection and the roof. (3 marks)
- (b) Sketch and label a vertical section through the fireplace upto the flue level. (8 marks)

- (c) (i) Figure 3 shows the plan of a house resting on a raft foundation. All the walls are cavity walls and are loadbearing. Sketch and label section C-C to show the vertical section of the foundation upto the skirting.

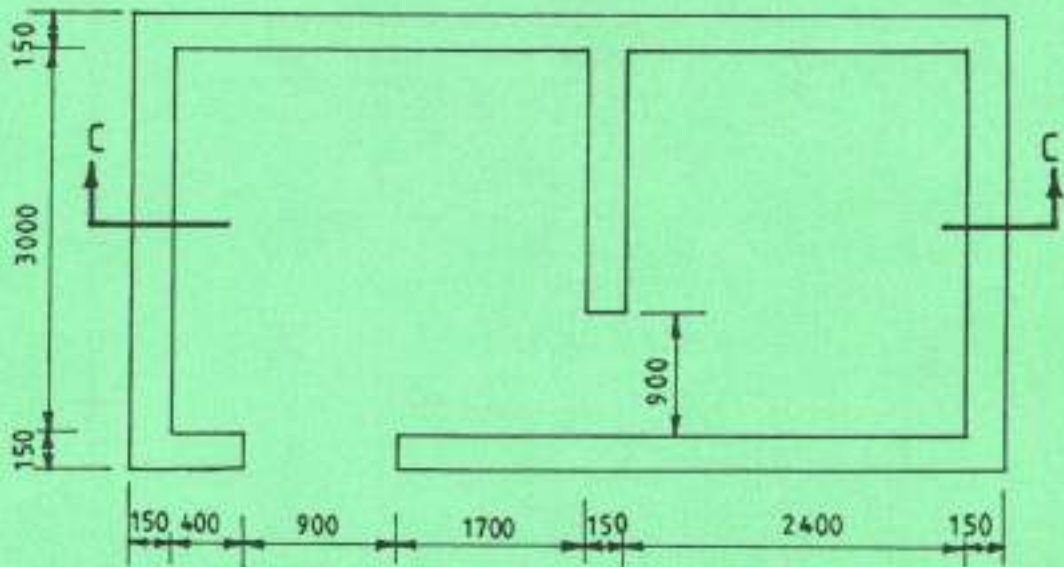


Fig. 3

- (ii) Outline **four** preliminary work necessary to be conducted before underpinning of a building commences. (14 marks)

**SECTION B: TECHNICAL DRAWING**

Answer any **TWO** questions from this section.

4. (a) A link mechanism in Figure 4 is made such that crank AB rotates at centre 'A'. Link BC is pinjointed to AB at point B. Point C oscillates along ED. Construct the locus of point P when AB makes one complete revolution. (7 marks)

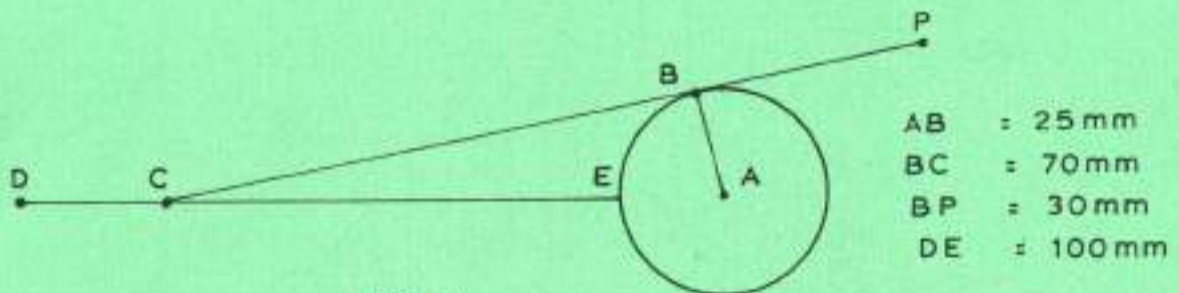


Fig. 4

- (b) Figure 5 shows views of a triangular lamina drawn in 1st angle projection. Copy the given views and draw the end elevation from direction of arrow x. (8 marks)

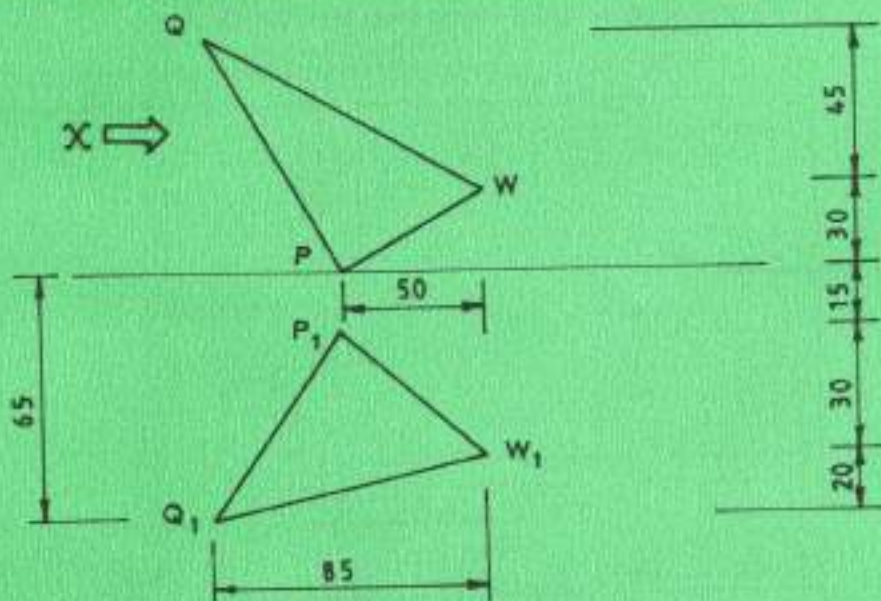


Fig. 5

5. Figure 6 shows the elevation of a cylinder interpenetrating a cone. Draw the following:

- (a) given elevation; (2 marks)
- (b) plan; (3 marks)
- (c) end elevation from arrow Y; (5 marks)
- (d) surface development of the cylinder. (5 marks)

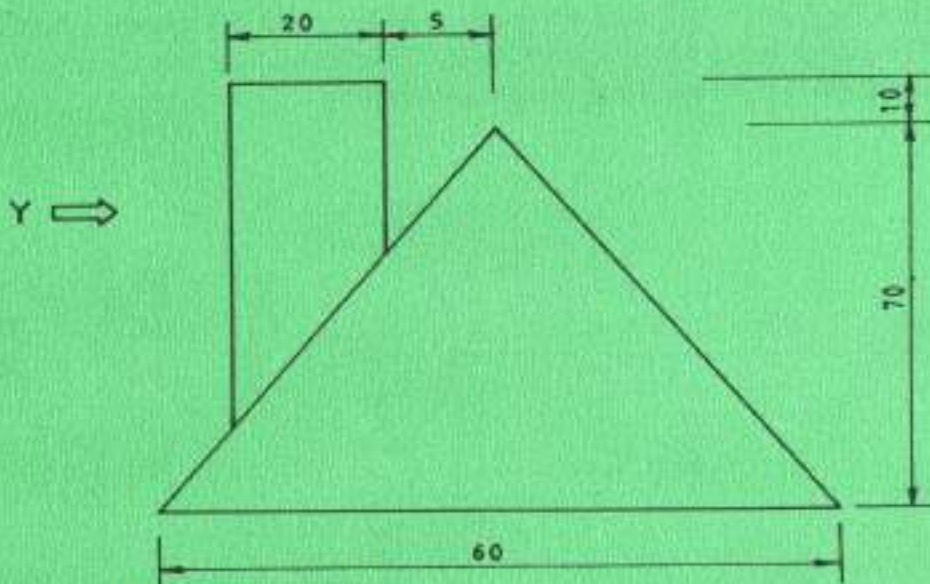


Fig. 6

6. Figure 7 shows the plan and elevation of a block. Use the given layout and draw the block in two point perspective. (15 marks)

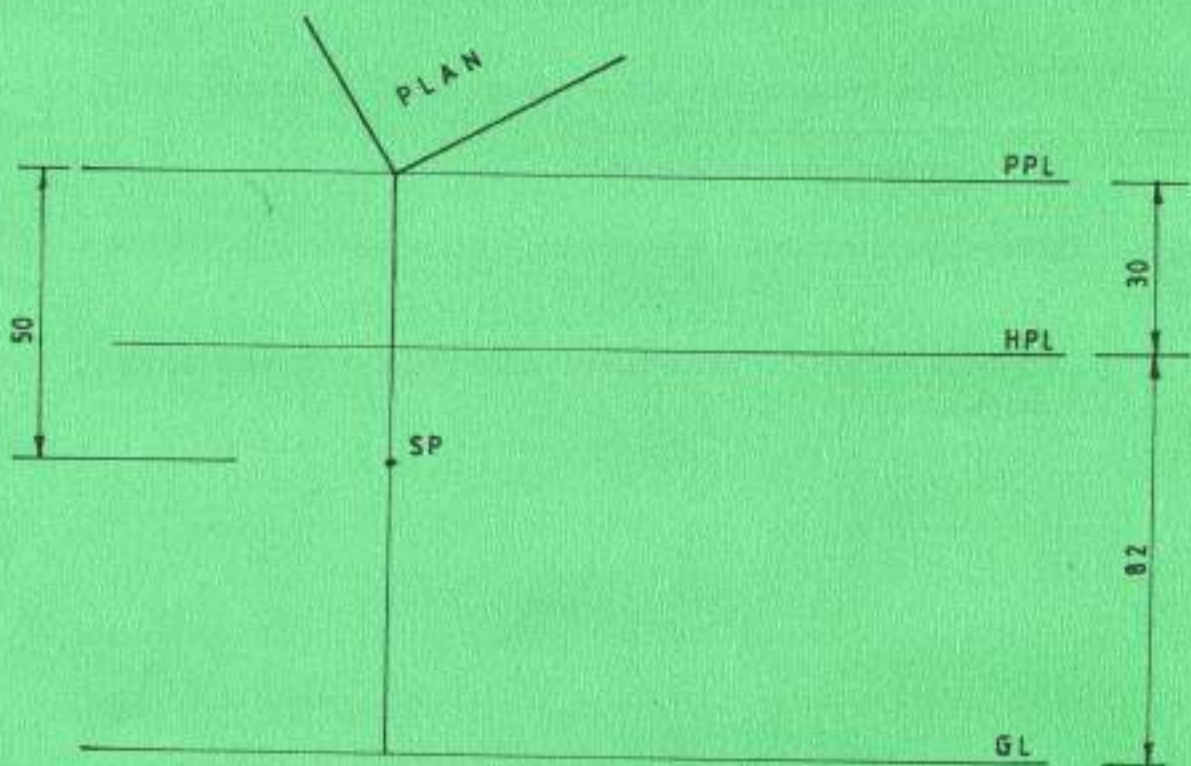
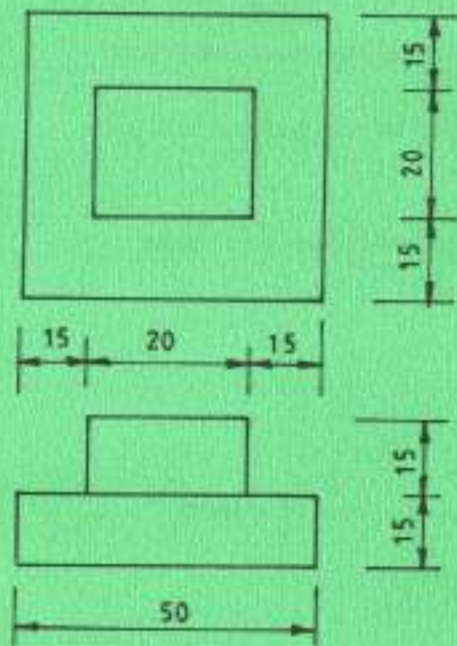


Fig. 7

**SECTION C: CONSTRUCTION PLANT**

*Answer any ONE question from this section.*

7. (a) (i) Outline **three** advantages of hiring construction plant.  
(ii) Outline **three** advantages of buying construction plant. (6 marks)
- (b) Briefly describe the following types of construction plant:  
(i) towed scraper;  
(ii) two axle scraper;  
(iii) three axle scraper. (6 marks)
- (c) (i) Briefly describe the following types of cranes:  
I. mobile crane;  
II. static crane;  
III. tower crane.  
(ii) Outline **two** factors to consider when selecting a type of mobile concrete mixer. (8 marks)
8. (a) (i) Outline **five** advantages of transporting concrete by pumping method.  
(ii) State **four** types of conveyors. ( $9\frac{1}{2}$  marks)
- (b) Outline **three** classifications of mechanical plants in relation to their degree of mobility. ( $4\frac{1}{2}$  marks)
- (c) Outline **four** comparative points between a centrifugal water pump and a reciprocating water pump. (6 marks)