Name: _____ Index No: _____/_____

2705/105
2707/105
2709/105
BUILDING CONSTRUCTION I,
TECHNICAL DRAWING AND
CONSTRUCTION PLANT
Oct./Nov. 2014
Time: 3 hours

Candidate's Signature: _____

Date: _____

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	
		TOTAL SCORE	

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.

Turn over

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.

($5\frac{1}{2}$ 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 ventilight.

($10\frac{1}{2}$ marks)

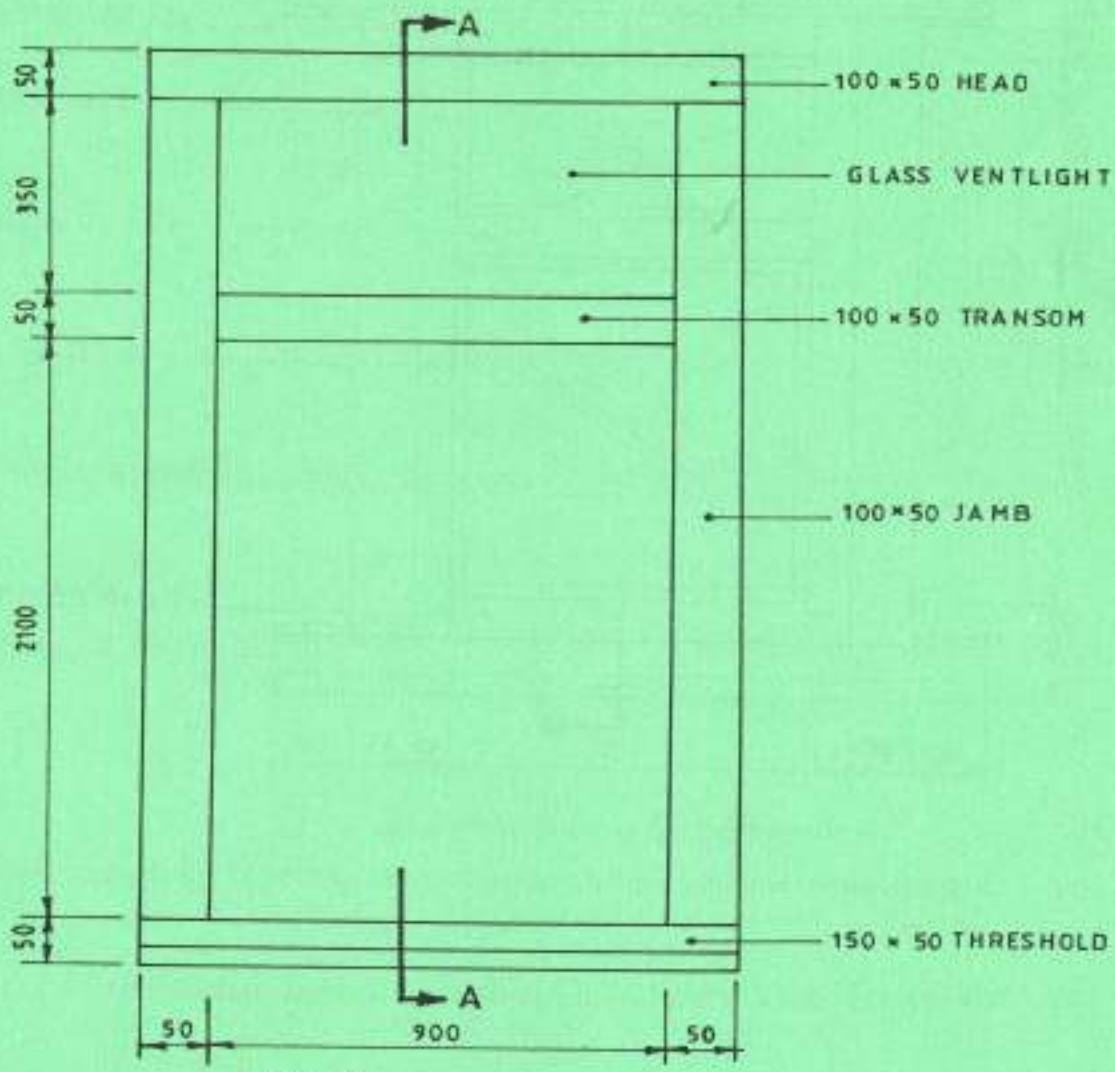

Fig. 1

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

(9 marks)

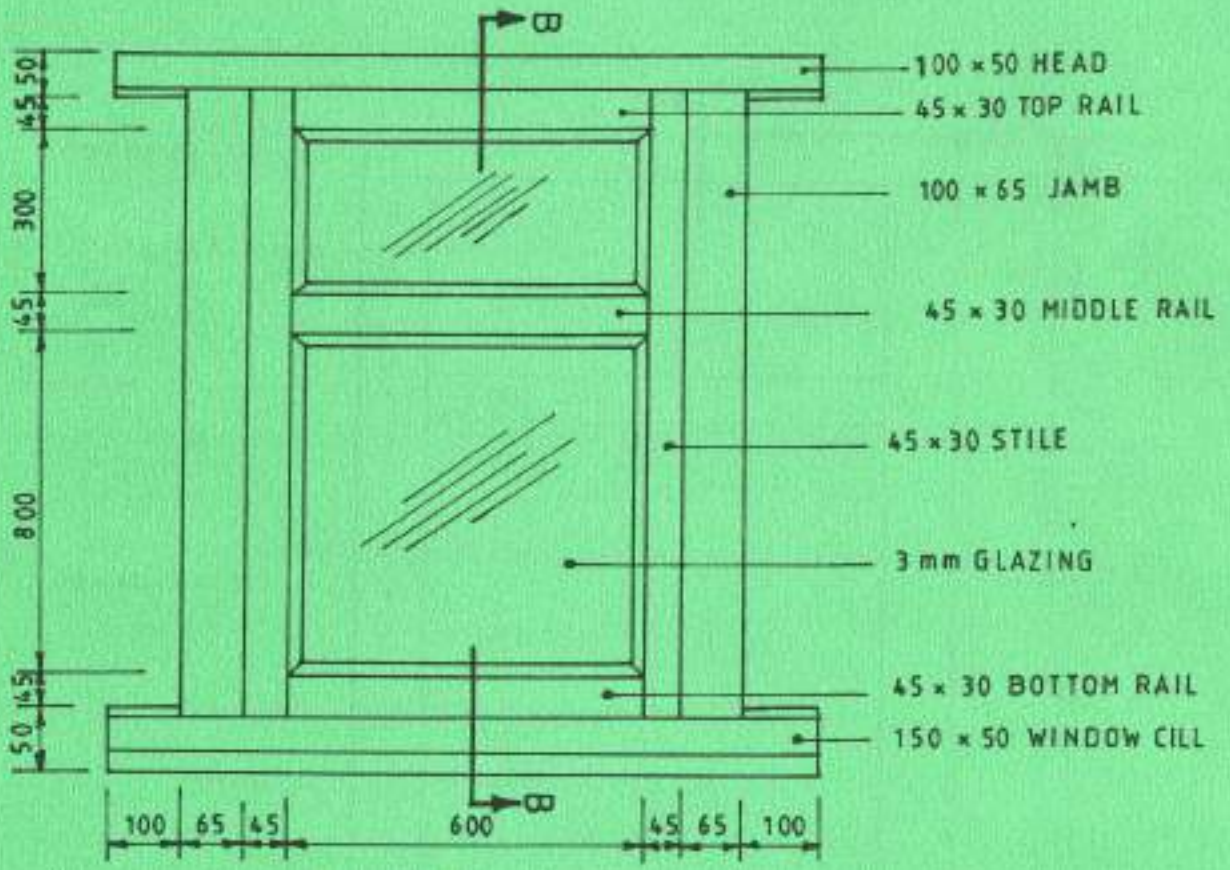

Fig. 2

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.

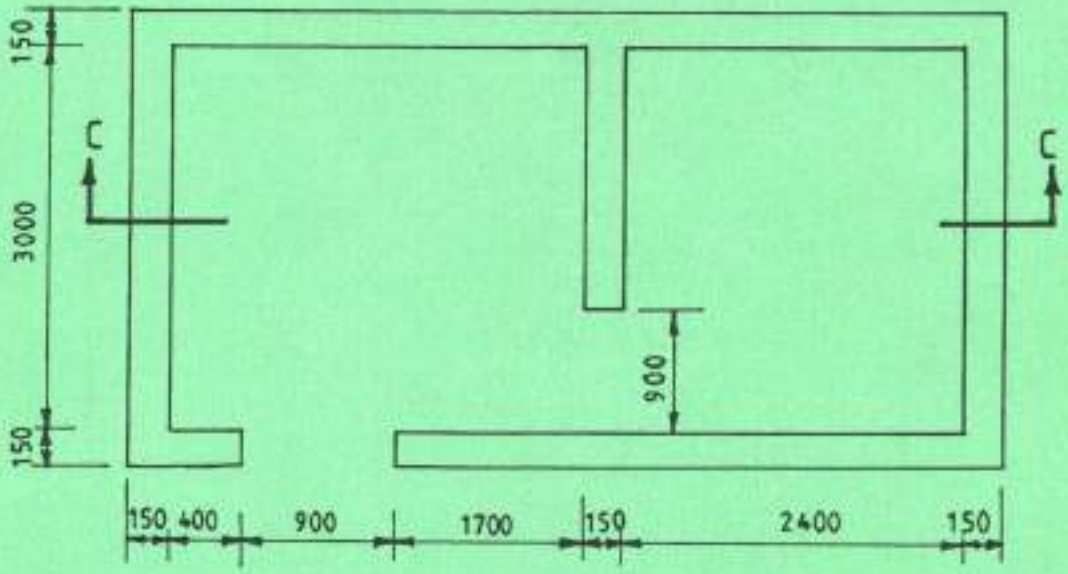

Fig. 3

(ii) Outline **four** preliminary work necessary to be conducted before underpining 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 oscilates along ED. Construct the locus of point P when AB makes one complete revolution. (7 marks)

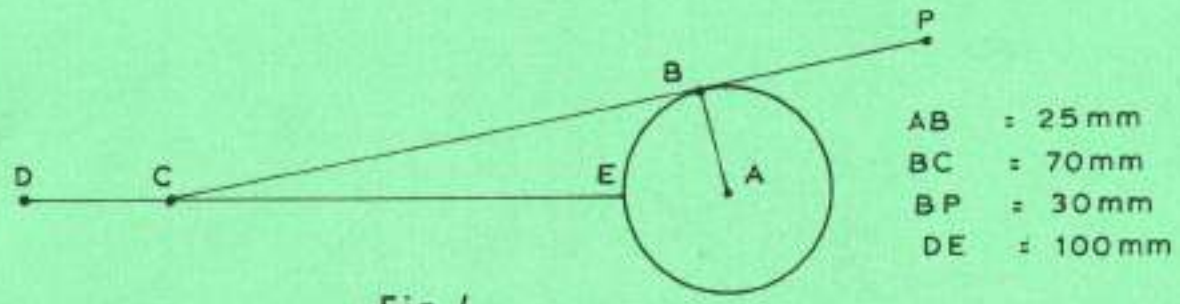

Fig. 4

(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)

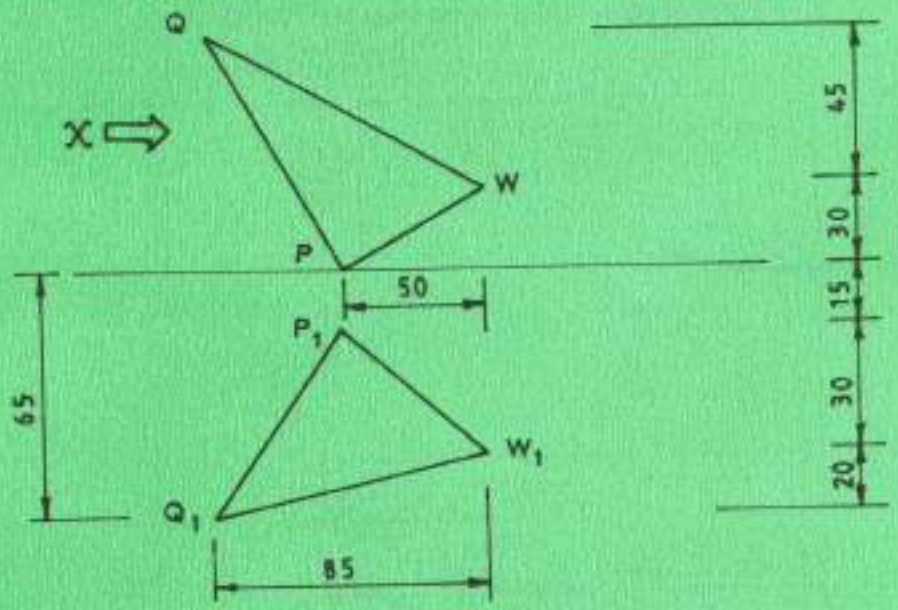

Fig.5

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)

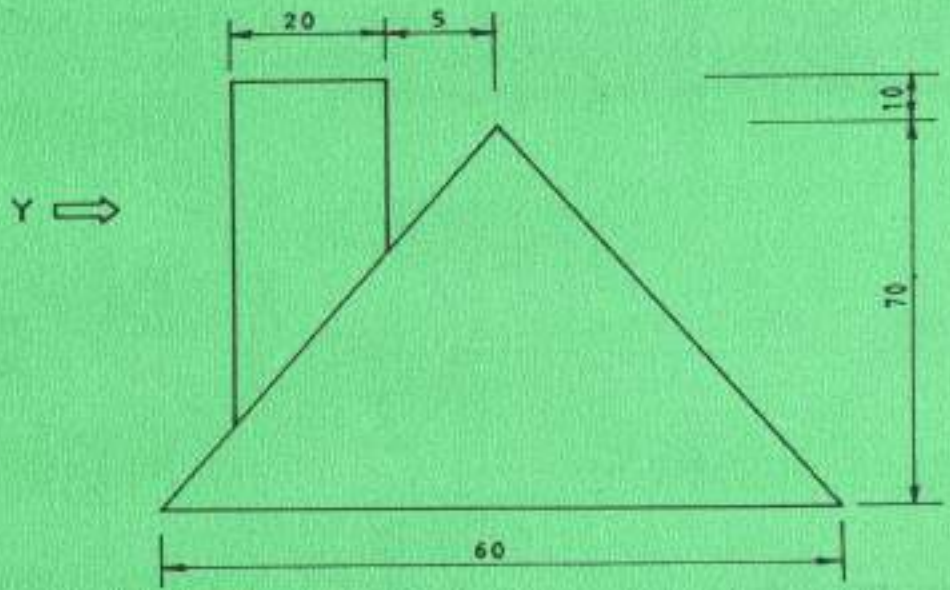

Fig. 6

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)

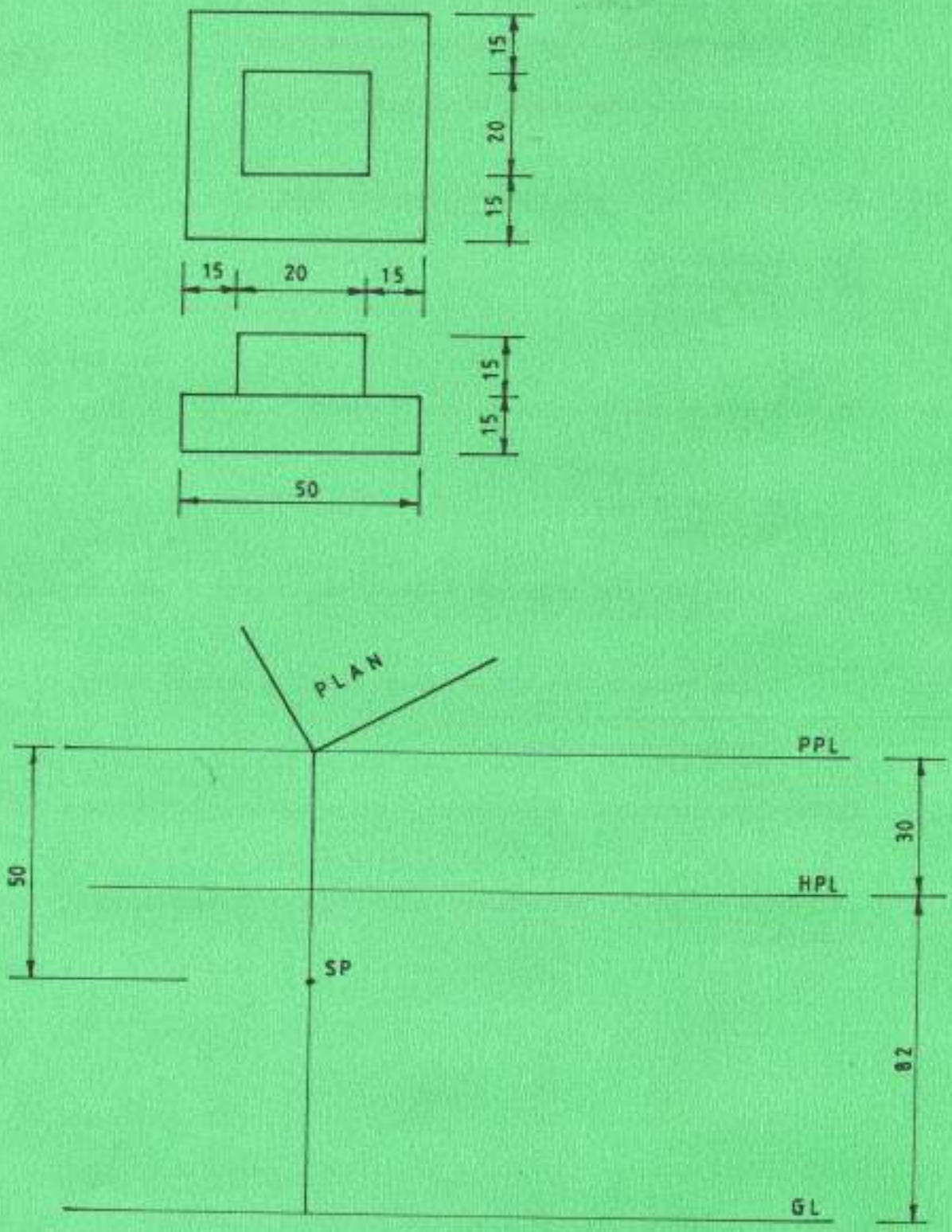

Fig. 7

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)