

Name: _____ Index No: _____

2705/105

Candidate's Signature: _____

2707/105

2709/105

Date: _____

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



June/July 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 the following for this examination:

- Pocket calculator;
- Drawing paper size A3.

This paper consists of EIGHT questions in THREE sections: A, B and C.

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

Answer the questions in the spaces provided and drawing paper where necessary.

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

Candidates should answer all 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.

SECTION A (50 marks)

Answer **TWO** questions from this section.

1. (a) Outline **three** methods of soil investigations. (6 marks)
- (b) Illustrate **three** methods of obtaining a level building ground from a slopy site. (3 marks)
- (c) (i) **Figure 1** shows the sketch plan of a building. Illustrate the method of setting out the building for excavation and walls. (10 marks)

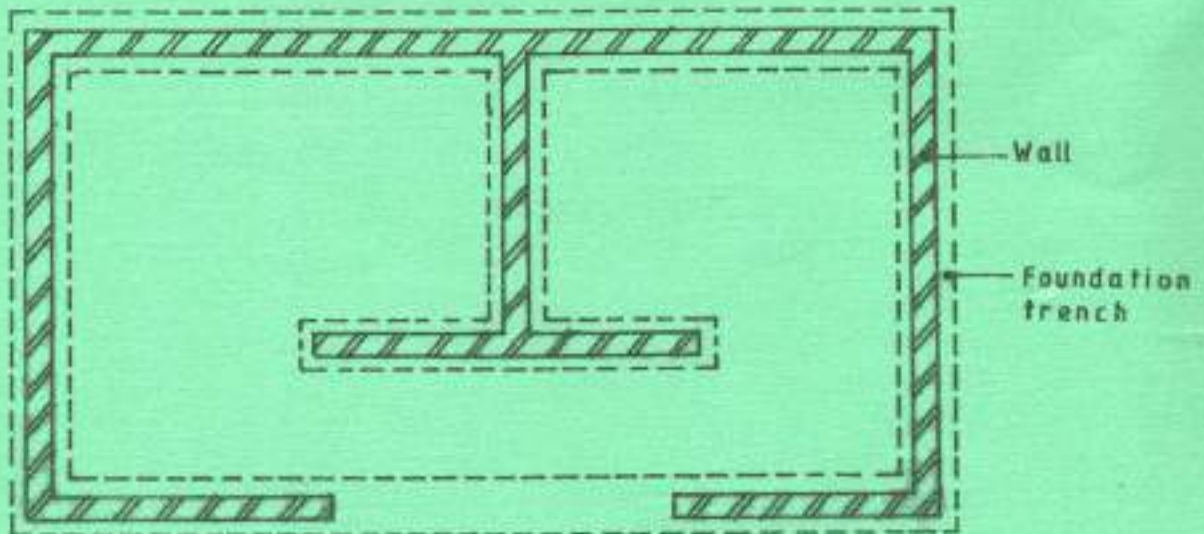


Fig.1

- (ii) With the aid of a sketch, explain the perimeter trench method of dewatering. (6 marks)
2. (a) Sketch and label the following typical foundation drawings indicating the building code requirements:
- (i) strip foundation; (2 marks)
- (ii) deep strip foundation; (2 marks)
- (iii) steeped foundation; (2 marks)
- (iv) pad foundation. (2 marks)

- (b) (i) Sketch and label a vertical section of a raft foundation through a cavity wall upto the ground level. (7 marks)
- (ii) Outline **four** functional requirements of damp proof course. (4 marks)
- (iii) List **two** advantages and **two** disadvantages of block walls over brick walls. (2 marks)
- (c) A line diagram of a typical window is shown below. Sketch and label the horizontal section A-A. (4 marks)

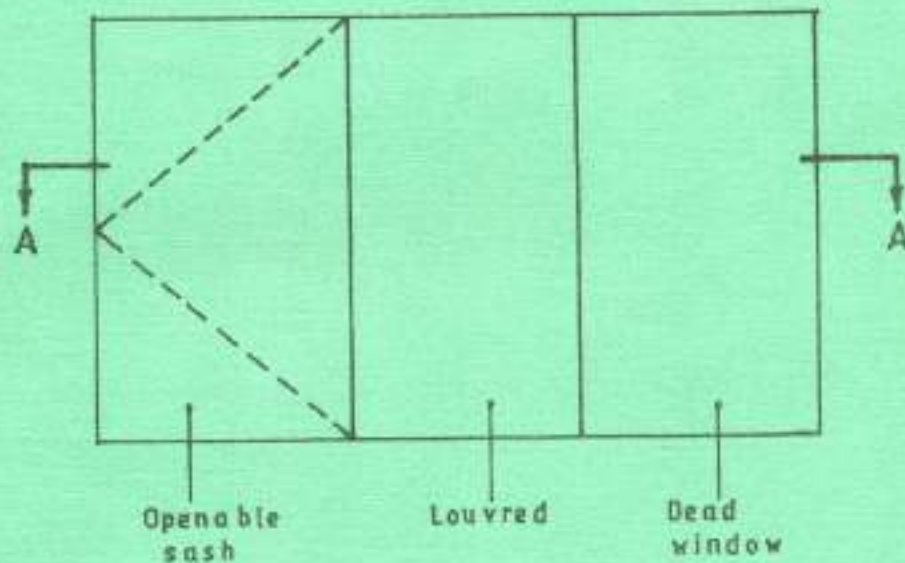


Fig. 2

3. (a) State the building code requirements for the following parts of the fireplace marked a,b, c, d, e and f in figure 3. (3 marks)

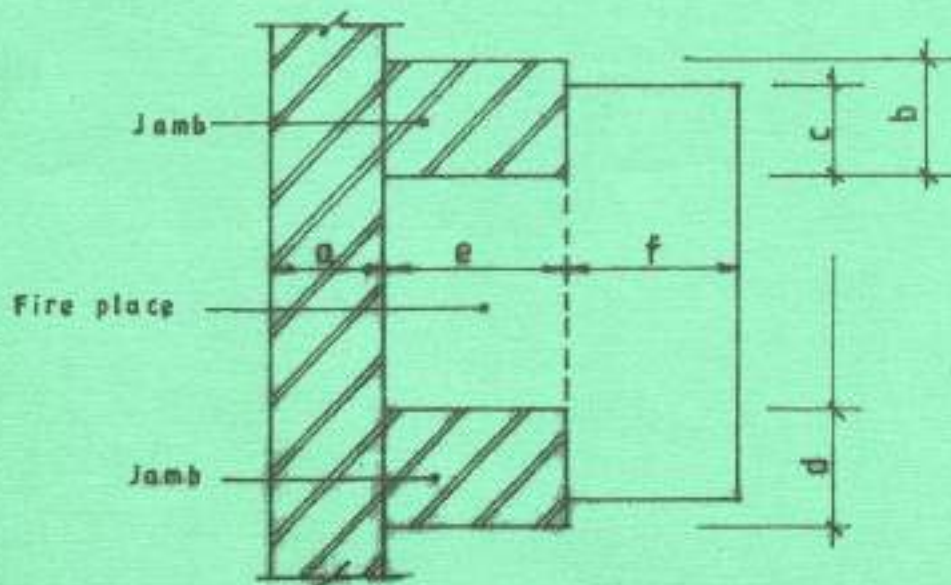


Fig. 3

- (b) (i) Figure 4 shows the sketch plan of a drying room. Sketch and label section B-B if the floor is a suspended timber ground floor. (8 marks)

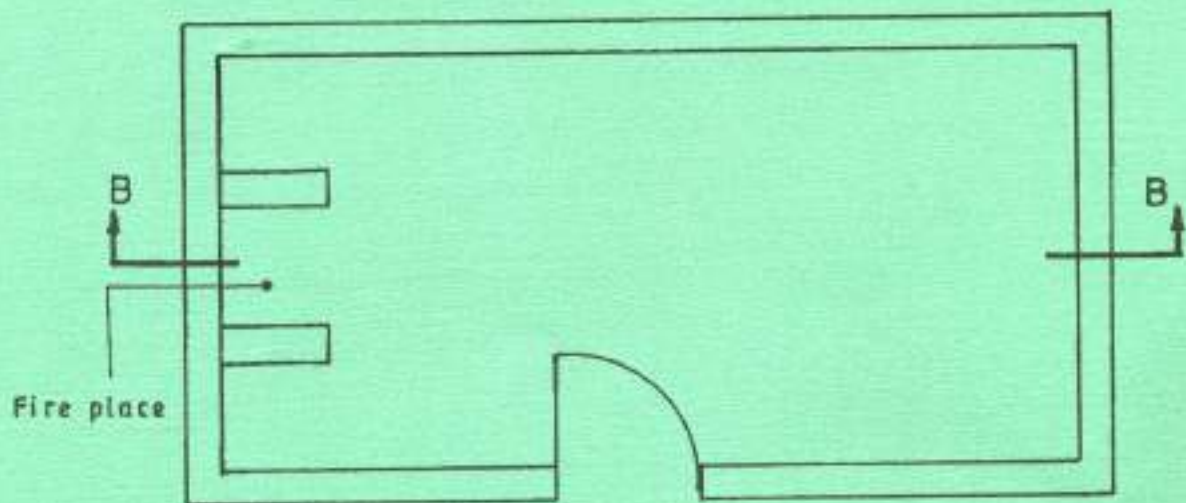


Fig. 4

- (ii) Outline **four** advantages of solid ground floor over suspended timber floor. (4 marks)
- (c) (i) List **four** suitable materials for damp proof membrane. (2 marks)
- (ii) Outline **three** reasons why a cavity wall may be preferred to a solid wall. (3 marks)
- (iii) Sketch the following types of joint finish to brickwork:
- (I) flush joint;
 - (II) recessed joint;
 - (III) weather joint;
 - (IV) keyed joint;
 - (V) weather pointing joint.
- (5 marks)

SECTION B: TECHNICAL DRAWING (30 marks)

Answer TWO questions from this section.

4. (a) In freehand, sketch the following:
- T-square;
 - hacksaw.
- (4 marks)
- (b) Line AB is 50 mm long, 20 mm from and parallel to the vertical plane. End A is 40 mm and B is 12 mm from the horizontal plane respectively. End B is also 12 mm from side vertical plane. Draw line AB in first angle projection if end elevation is viewed from left hand side. (6 marks)
- (c) Figure 5 shows the front and the plan of line AB in first angle projection.
- construct for the true length in the front elevation;
 - indicate the true angle.
- (5 marks)

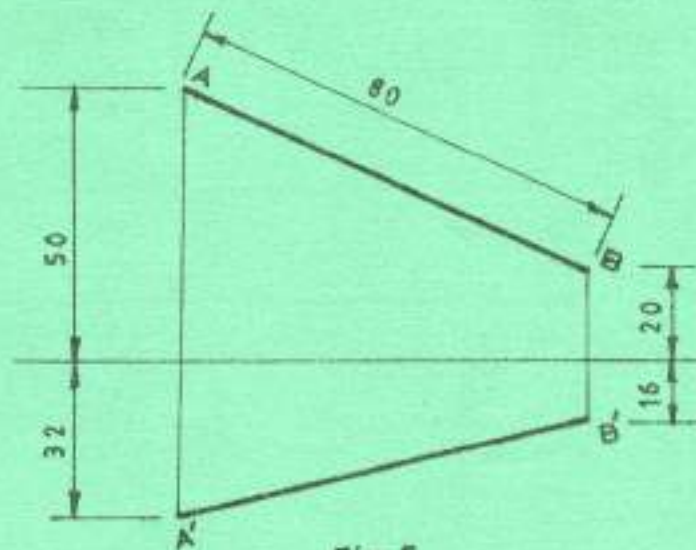


Fig. 5

5. **Figure 6** shows a cylinder penetrating a right cone.

- (a) Draw the elevation and show the line of intersection. (4 marks)
- (b) Draw the plan. (4 marks)
- (c) Draw the surface development of the cylinder. (4 marks)
- (d) Draw the end elevation from direction x. (3 marks)

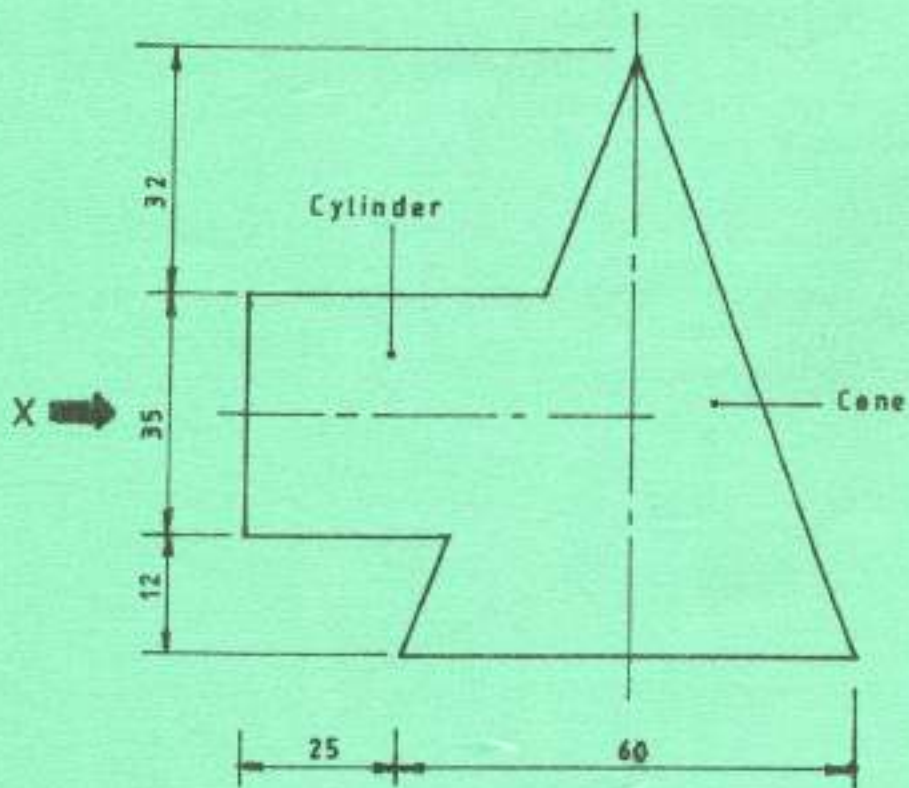


Fig. 6

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

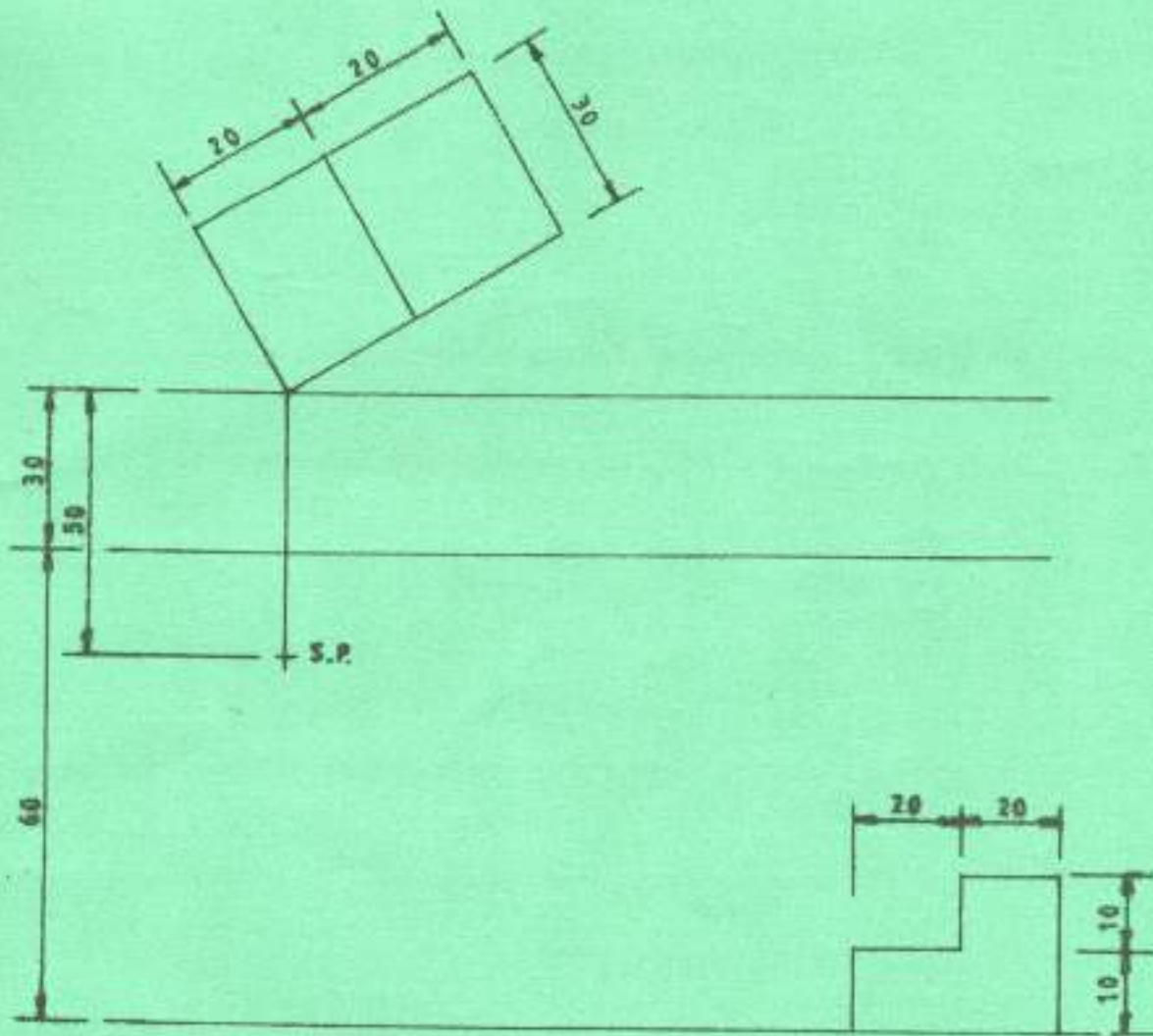


Fig 7

SECTION C: CONSTRUCTION PLANT (20 marks)*Answer ONE question from this section.*

7. (a) (i) List **four** reasons for hiring a construction plant.
- (ii) Outline the operation of the following plants:
- (I) dragline;
- (II) scraper. (6 marks)
- (b) Briefly explain **three** methods of mixing concrete on truck mounted concrete mixers. (6 marks)
- (c) Briefly describe how the following equipment work:
- (i) elevators;
- (ii) conveyors;
- (iii) static hoists;
- (iv) mobile hoists. (8 marks)
8. (a) (i) List **six** factors to consider when determining the method of transporting materials on site.
- (ii) Outline **three** advantages of plant maintenance. (6 marks)
- (b) (i) List **three** types of piling plants.
- (ii) Outline **five** operational sequence of drop hammer method in piling works. (9 marks)
- (c) State **five** advantages of pumping concrete over the other methods of placing concrete. (5 marks)
