

2705/205
BUILDING CONSTRUCTION II
AND DRAWING II
Oct./Nov. 2017
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING TECHNOLOGY
MODULE II
BUILDING CONSTRUCTION II AND DRAWING II

3 hours



INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

- A scientific calculator;*
- Drawing instruments;*
- Drawing paper size A3.*

*This paper consists of **EIGHT** questions in **TWO** Sections; **A** and **B**.*

*Answer **THREE** questions from Section **A** and **TWO** questions from Section **B** in the answer booklet provided.*

All questions carry equal marks.





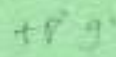


Maximum marks for each part of a question are as indicated

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 **THREE** questions from this Section.

1. (a) State **six** factors to be considered when selecting a system of precast concrete floor. (3 marks)
- Plan weight* *Thermal insulation* *Nature of super structure*
Fire resistance
Sound insulation
- (b) Sketch and label a vertical section through each of the following in upper concrete floor construction:
- (i) hollow pot floor;   
- (ii) flat slab (plate) floor;
- (iii) hollow precast reinforced concrete floor.  (12 marks)
- (c) Describe the following materials used for thermal insulation in floors, giving an example in each case:
- (i) insulating board;  
- (ii) quilts. (5 marks)
2. (a) (i) Sketch and label a typical section through TRADA truss spanning between brick walls.
- (ii) Outline **three** factors that govern the spacing of roof trusses.
- (iii) Outline **three** advantages of symmetrical roof truss construction. (10 marks)
- (b) Sketch and label the following:
- (i) a closed eaves detail for a tiled pitched roof; 
- (ii) a vertical section through a parapet wall on a flat roof showing the treatment at the roof and wall junction. (10 marks)
3. (a) Using line diagrams, illustrate **three** types of single roof construction in steel angle section indicating a maximum span in each case. (6 marks)
- (b) (i) Sketch and label a section through a monitor roof light.
- (ii) State **two** advantages of monitor roof lights. (7 marks)
- (c) Using standard steel roof member sizes, sketch and label a detail at ridge including asbestos covering. (7 marks)

4. (a) (i) Explain importance of inclusion of the "NORTH POINT" in an architectural drawing.
- (ii) Outline **four** objectives of landscaping. (10 marks)
- (b) Explain **three** uses of each of the following contract documents to the contractor during construction stage:
- (i) working drawings;
- (ii) specifications. (6 marks)
- (c) Explain **two** objectives of preserving old buildings. (4 marks)
5. (a) Sketch and label a section through an intermediate in situ concrete beam and slab showing the arrangement of reinforcements. (4 marks)
- (b) Sketch and label a vertical section to show water-proofing details in a brick chimney stack where it intersects with a pitched roof. (6 marks)
- (c) (i) Describe the procedure of laying roofing clay tiles,
- (ii) Outline **four** precautions taken in roof construction to control bats. (10 marks)

SECTION B: BUILDING DRAWING

Answer **TWO** questions from this Section.

6. To a scale of 1:50, draw section B - B through the maisonette whose roof plan is shown on **Figure 1** given the specifications: (30 marks)

- 7 150 mm oversite concrete
- 5 250 mm hardcore
- 600 x 200 mm foundation footing
- 20° roof pitch
- IT 5 roofing sheets
- 100 x 50 mm rafters at 1500 mm centres
- 100 x 50 mm ceiling joists
- 100 x 50 mm struts and ties
- 50 x 50 mm bracing
- 75 x 50 mm purlins
- c 300 mm deep ring beam
- 100 x 150 mm deep box gutter
- 25 mm thick T and G eaves boarding
- 75 mm diameter rain water downpipe
- 900 x 1200 mm high louvre window.



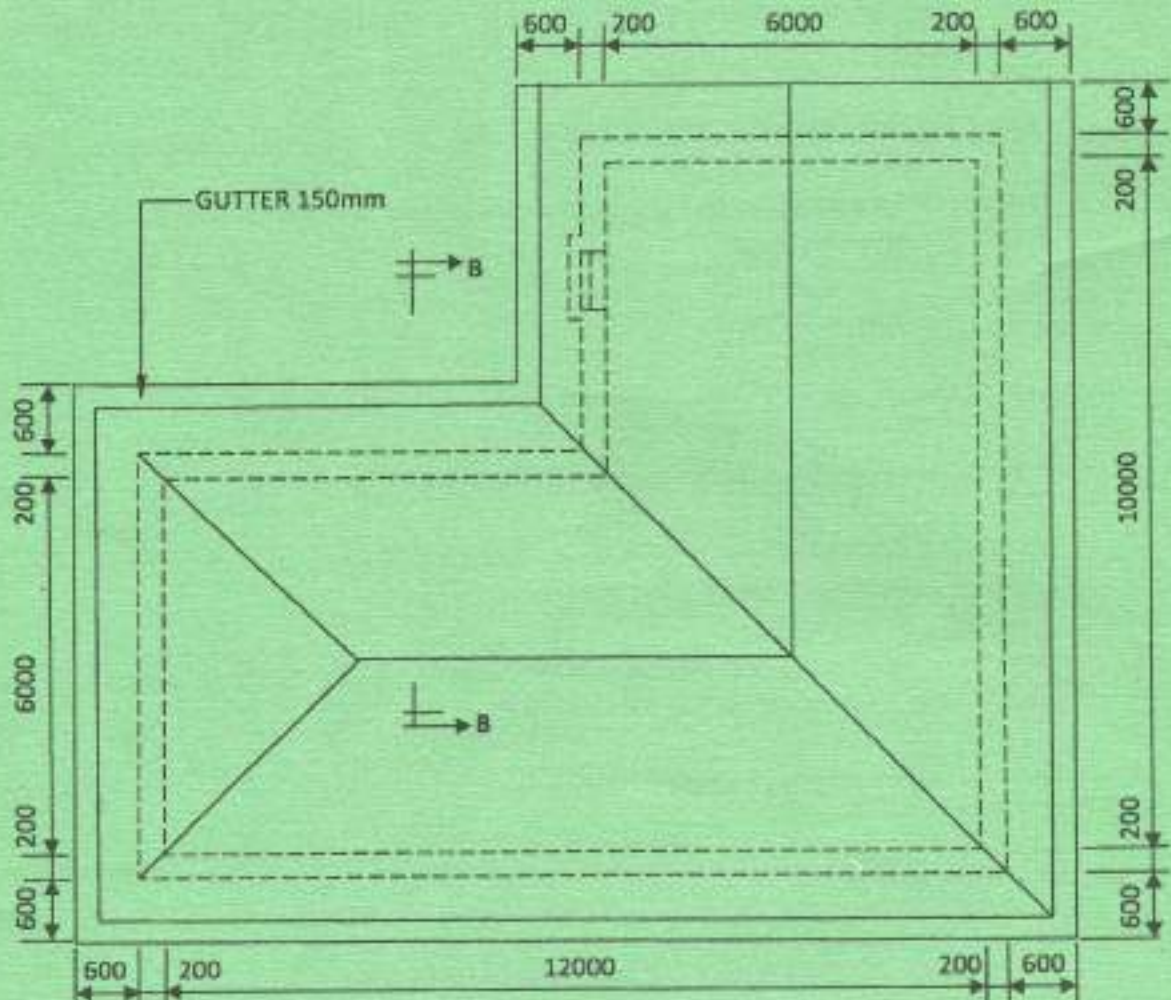


Fig. 1

7. (a) Figure 2 shows an outline plan of a farm house, whose external walls are on a reinforced strip foundation and the oversite concrete is resting on a ground beam. To a scale of 1:5 draw section A - A given the information: (15 marks)

Thickness of concrete slab	150 mm	2.4
Foundation depth	1200 mm	2.4
Depth of ground beam	450 mm	9
Depth of reinforced foundation strip	225 mm	4.5
Reinforcement bars	12 mm ϕ	
Wall thickness	225 mm	4.5
Hardcore filling	305 mm	6.1

Assume any other necessary information not given.

275 x 3



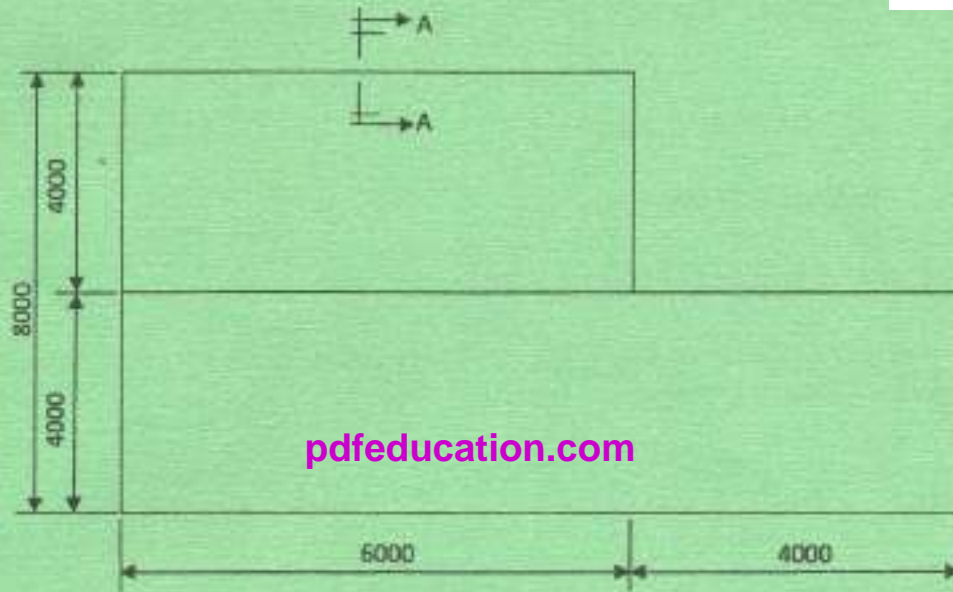


Fig. 2

- (b) Figure 3 shows the plan of a public reinforced concrete staircase. To a scale of 1:20, draw section A - A to show the details, given the following information. Ignore reinforcements including balusters and balustrades to Kenya Building code requirements. (15 marks)

Data

Waist	150 mm	7.5
Riser	150 mm	2.5
Going	250 mm	12.5
Landing	1000 mm	5.0
Floor to floor height	2700 mm	13.5

(Assume any other relevant information not given).

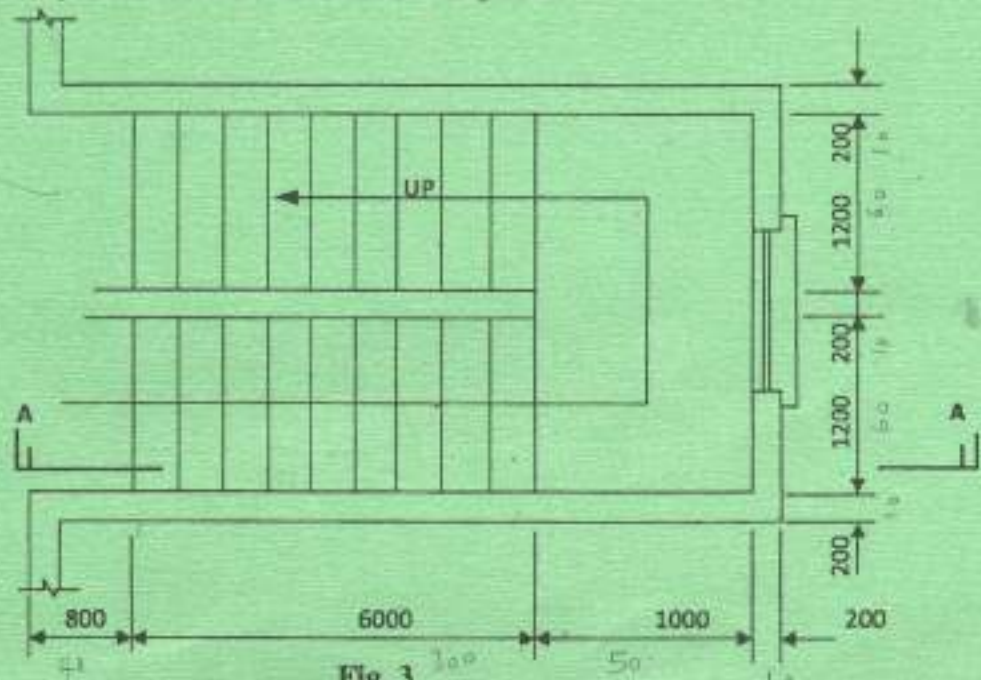


Fig. 3
5

8. (a) Sketch and label a schematic drawing of the following systems in water supply to a maisonette.

(i) direct cold water supply;

(ii) indirect cold water supply.

Give brief description of how it operates.

(15 marks)

(b) To a scale of 1:10, draw a fireplace and a chimney as per Kenya Building code requirements.

(15 marks)

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