



2705/205

**BUILDING CONSTRUCTION II
AND DRAWING II**

June/July 2017

Time: 3 hours



18 AUG 2017

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:

Answer booklet;

Drawing paper size A3.

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

*Answer **FIVE** questions choosing **TWO** questions from section **A**, **TWO** questions from section **B** and **ONE** question from either section.*

All questions carry equal marks.

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

Candidates should answer the questions in English.

This paper consists of 5 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 II

Answer at least **TWO** questions from this section.

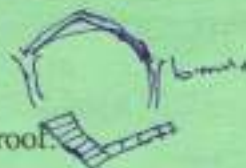
1. (a) Explain how the following functional requirements are achieved in a tilled roof construction:

- (i) strength and stability; *→ provide stiff & crush*
 (ii) weather resistance; *→ provide - Dis. c.*
 (iii) sound insulation. *→ provide soft & push*

(6 marks)

- (b) With the aid of sketches, explain the following types of shell roofs:

- (i) domes;
 (ii) barrel vaults.



(9 marks)

- (c) Sketch and label a valley treatment on a tiled roof.

(5 marks)

2. (a) Explain **two** designs of upper floors which are determined by the nature of the building structure. (4 marks)

- (b) With the aid of sectional sketches, explain the following non-self centering floors:

- (i) beam and slab;
 (ii) hollow slab;
 (iii) drop slab;
 (iv) flush slab.



(16 marks)

3. (a) **Figure 1** shows a typical steel truss. Sketch the connection details at joint A and B. (8 marks)

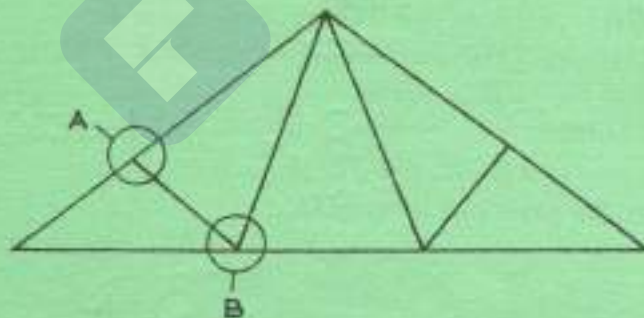


Fig. 1

- (b) With the aid of labelled sketches differentiate between a double roof and a framed roof. (8 marks)

- (c) Sketch and label a section through a reinforced concrete roof slab having a parapet wall. (4 marks)

4. (a) With the aid of a sketch, outline the procedure of a timber flat (10 marks)
- (b) Explain how each of the following influence the design of a roof:
- (i) span;
- (ii) pitch.
- (c) Distinguish plain tiles from interlocking tiles stating **two** conditions that ensure each is waterproof. (6 marks)



(4 marks)

SECTION B: DRAWING II

Answer at least **TWO** questions from this section.

5. (a) Outline the **four** types of construction works. (8 marks)
- (b) **Figure 2** shows a vestibule frame to a swing door. To a scale of 1:10, draw section A - A. (12 marks)

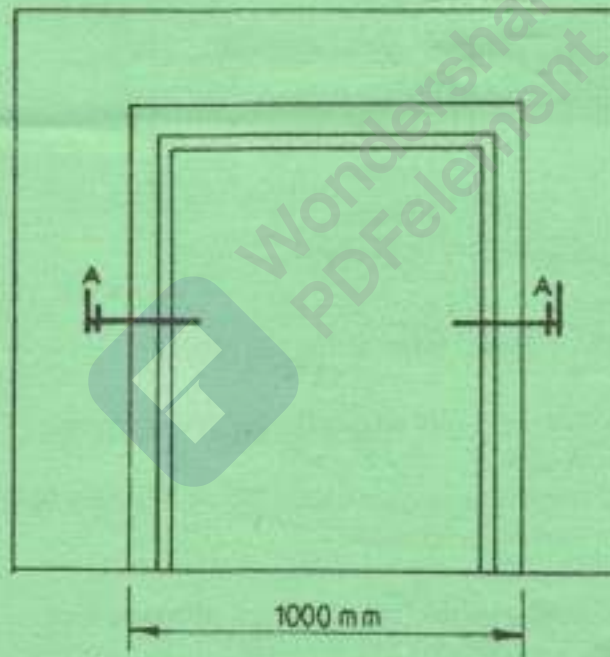


Fig. 2



6. (a) Outline the responsibilities of a local authority in construction. (6 marks)

- (b) Figure 3 shows the plan of a stair. Using the data in Table 1 and to a scale of 1:25 draw section X - X. (14 marks)

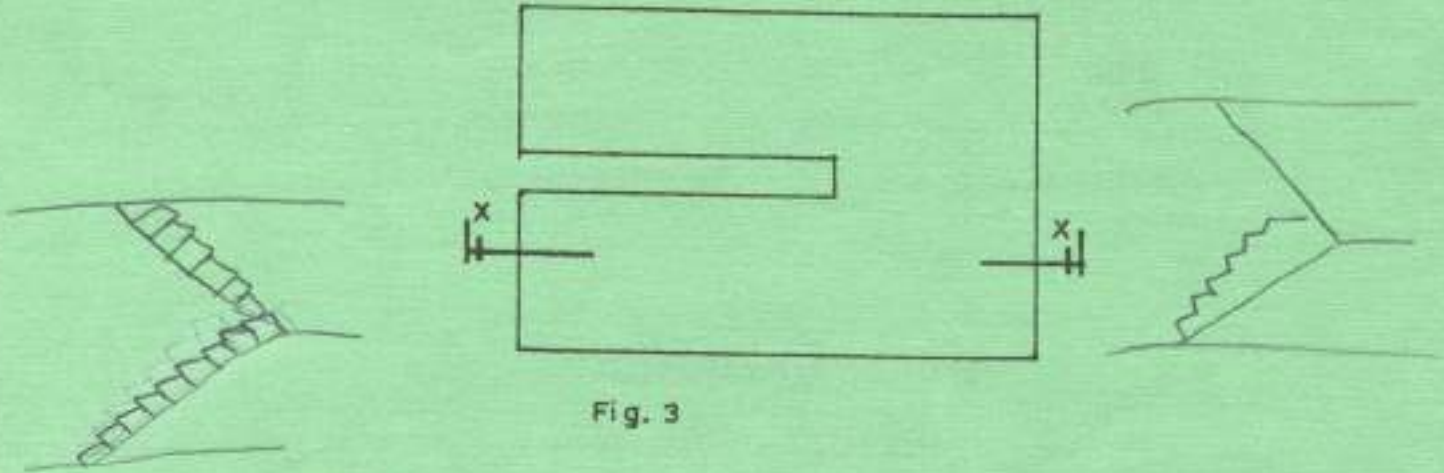


Fig. 3

Table 1

ITEM	
Headroom height	2700 mm
Floor thickness	150 mm
Rise	150 mm
Tread	250 mm
Waist thickness	150 mm
Landing	1200 mm
Flight width	1000 mm
Stair width	2200 mm
Main reinforcements	Y12 @ 200 c/c
Distribution bars	Y10 @ 200 c/c

Assume any other relevant information not given.

7. (a) State four drawings necessary on-site during construction. (2 marks)
- (b) Figure 4 shows a combined column base for a one storey building. Using the data in Table 2 and to a scale of 1:25, draw:
- section A-A;
 - the reinforced concrete column detail up to the roof. (18 marks)

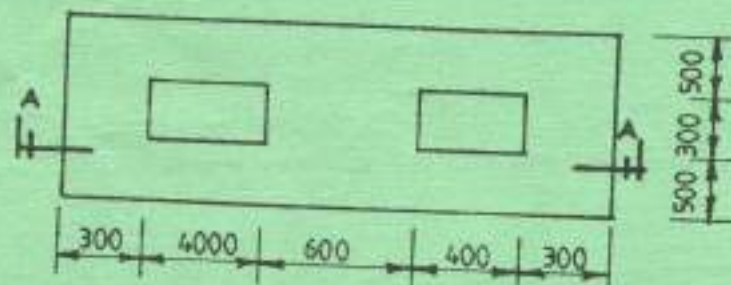


Fig. 4



Table 2

DATA	
Depth of column base	500 mm
Beam depth	450 mm
Column height	2400 mm
Slab thickness	150 mm
Blinding thickness	50 mm
Main bars	Y12 @ 200 c/c BEW
Distribution bars	Y10 @ 200c/c
Starter bars	4Y16
Links	R8 @ 150 c/c
Column reinforcements	6Y12 throughout

Assume any other information not provided.

8. (a) Explain **four** types of buildings and state **two** examples in each. (12 marks)
- (b) A combined strip foundation has a 20 mm thick expansion joint, 200 mm wall thickness and strip of width of 1200 mm. To a scale of 1:20 draw the detail of the strip foundation. (8 marks)

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