

2705/205
BUILDING CONSTRUCTION II
AND DRAWING II
June/July 2018
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:

Answer booklet;

Drawing instruments;

Drawing papers size A2.

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

Answer FIVE questions choosing FOUR questions from section A and ONE question from section B.

Questions in section A carry 15 marks each while those in section B carry 40 marks each.

Candidates should answer the questions in English.

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 II

Answer **FOUR** questions from this section.

1. (a) State **three** requirements to be considered in the selection of the type of upper floor construction. (3 marks)

(b) With an aid of a sketch, briefly describe the following form of construction of suspended floors:

- (i) solid concrete; ✓
- (ii) timber floated floor; ✓
- (iii) precast floor slab. ✓

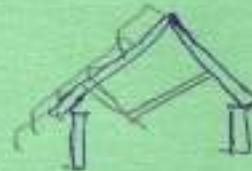
(12 marks)

2

(a) State **four** functional requirements of a roof. ✓ (4 marks)

(b) With the aid of well labelled diagrams, describe the construction of the following roof structures:

- (i) closed couple roof;
- (ii) trussed roof. ✓



(11 marks)

4
12
18

3

(a) Briefly describe **three** factors influencing the choice of roof coverings. (9 marks)

(b) State **three** advantages and **three** disadvantages of galvanised steel roof covering. (6 marks)

4

(a) Define the following members of a roof structure:

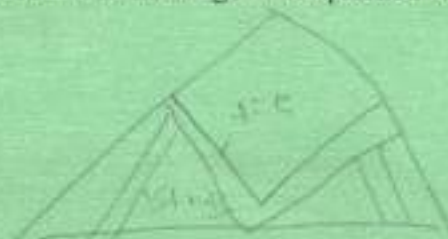
- (i) common rafter; ✓
- (ii) purlin; ✓
- (iii) ceiling joist; ✓
- (iv) dragon tie. ✓

(4 marks)

(b) State **two** building regulations for a roof structure. (2 marks)

(c) Sketch a well labelled details of the following timber pitched roofs with interlocking concrete tiles:

- (i) open eave; ✓
- (ii) closed eave; ✓
- (iii) flush eave. ✓



(9 marks)

4
2

5. (a) Define the following:
- conduit;
 - duct.
- (2 marks)
- (b) Outline **two** reasons for creating openings in domestic upper floor. (8 marks)
- (c) With an aid of a sketch, show the procedure of fixing pipes through an monolithic upper floor. (5 marks)
6. (a) State **four** factors which influence the choice of materials for the construction of framed structures. (4 marks)
- Span*
→ Availability of material
→ Load on the
- (b) **Figure 1** shows a line diagram of a steel framed building, 7.5 m x 45 m long.

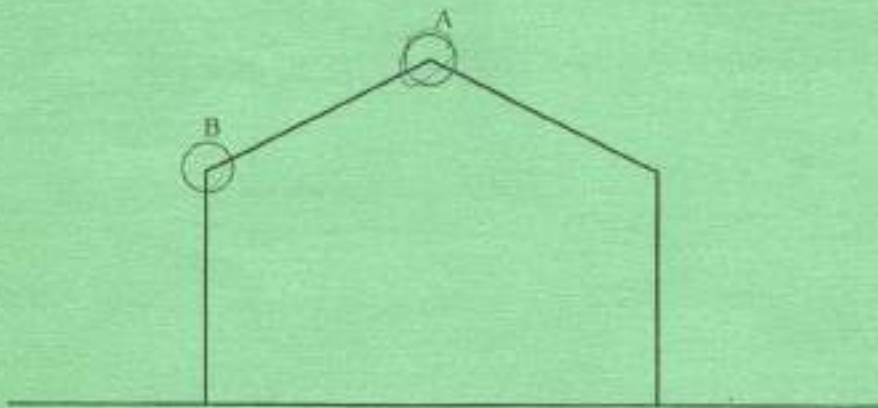


Fig. 1

- (i) By using a line diagram, sketch a suitable method of bracing the roof against the wind forces. (3 marks)
- (ii) Sketch details 'A' and 'B' to illustrate the construction of the roof in figure 1 above. (8 marks)

SECTION B: DRAWING II

Answer ONE question from this section.

7. Figure 2 shows a sketch of a cantilever slab. Using the information given below draw to a scale of 1:20:

- (i) the longitudinal section X-X
- (ii) plan
- (iii) cross-section Y-Y, 1200 mm from bearing.

(40 marks)

Information:

- Clear span - 3000 mm
- Overall depth of fixed end - 580 mm
- Overall depth at free end - 180 mm
- Width of cantilever beam - 300 mm

Reinforcement

- Main steel - 5 No, 16 mm diameter with 3 bards curtailed at 1500 mm from support
- Anchor bars - 2 No - 10 mm diameter
- 8 mm diameter stirrups - @ 300 c/c
- Thickness of bearing wall - 400 mm

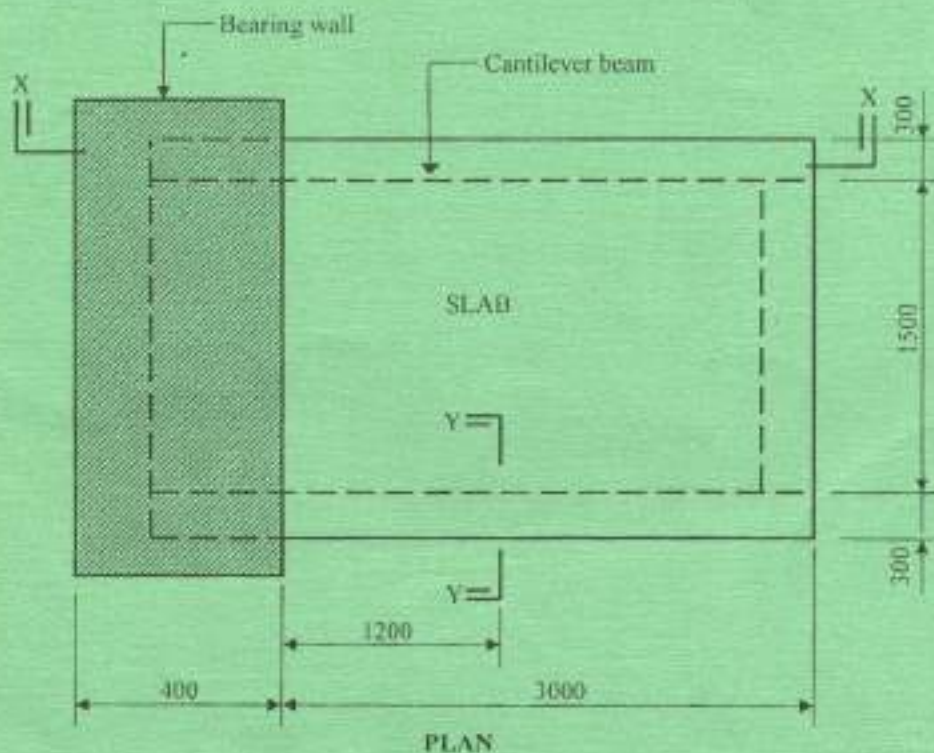


Fig. 2

8. (a) **Figure 3** shows part elevation of a precast concrete portal frame. To a scale of 1:10, draw a typical method of joining the pitched spanning member at **detail 1**. (8 marks)

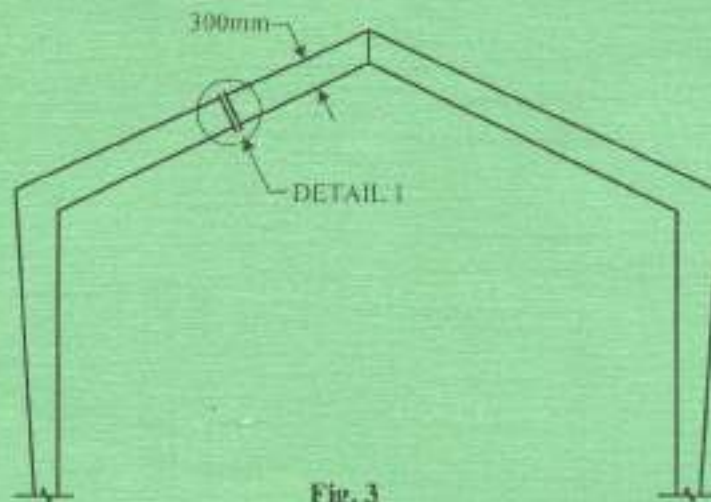


Fig. 3

- (b) **Figure 4** shows a plan of a guest wing built on a made up ground.

All walls are supported on a raft foundation. To a scale of 1:5 draw section A-A showing the following:

- 300 mm thick concrete foundation
- 12 mm diameter reinforcement bars
- Sand filling 300 mm thick
- 100 mm concrete floating slab.

(20 marks)

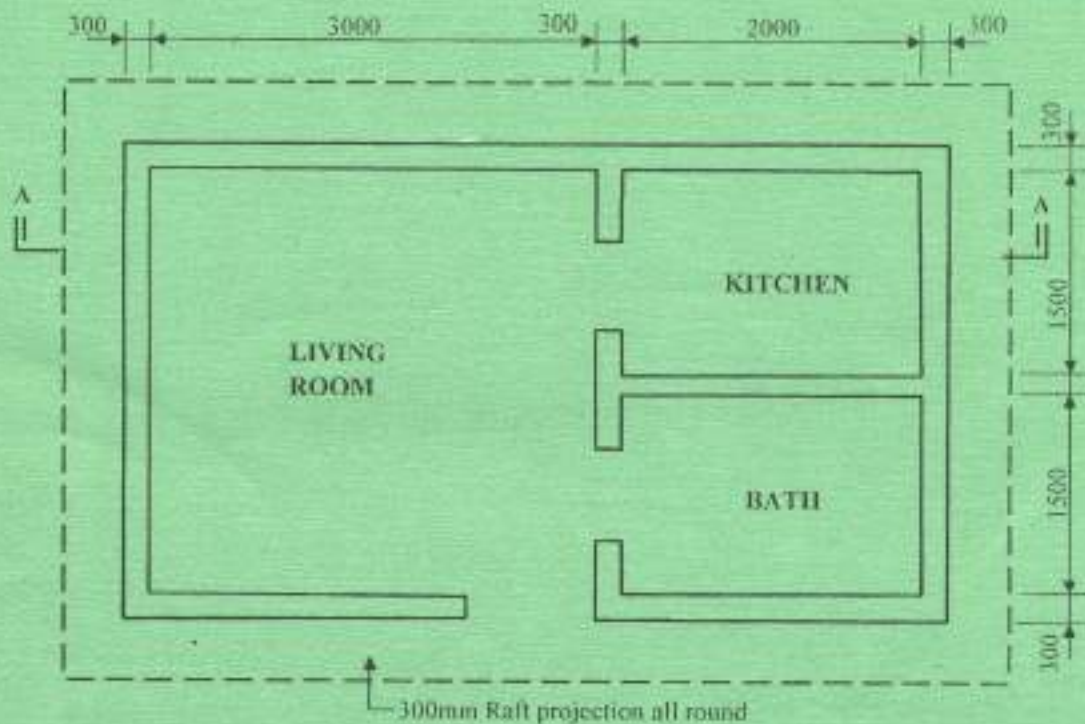


Fig. 4

5

1200 12

(c) **Figure 5** shows the elevation of a flush door.

To a scale 1:25, draw section X-X showing the following features:

- (i) square jamb and reveal;
- (ii) splayed jamb and reveal;
- (iii) square jamb without reveal.

(12 marks)

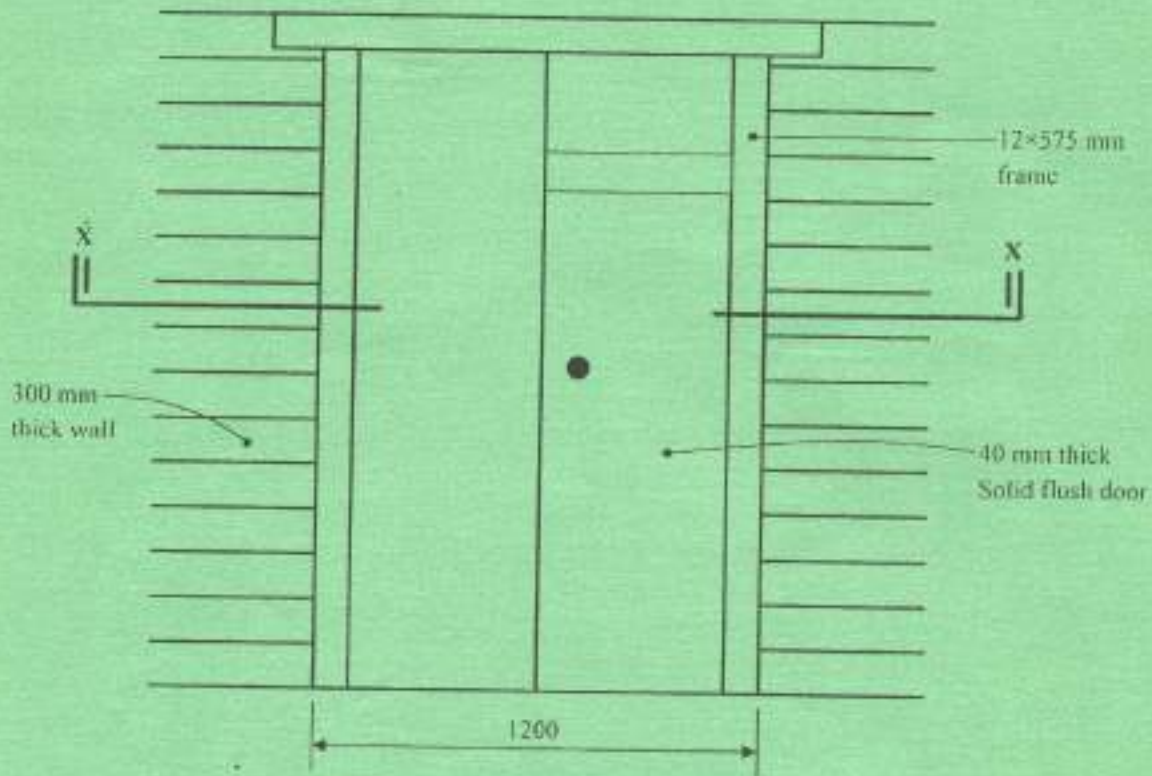


Fig. 5

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