

To Sam

2705/205
BUILDING CONSTRUCTION II
AND DRAWING II
Oct./Nov. 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;*
- Scientific calculator;*
- Drawing instruments, metric scale rule/drawing paper size A₁.*

*This paper consists of EIGHT questions in TWO sections; A and B.
 Answer any FIVE questions choosing at least TWO questions from each 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.

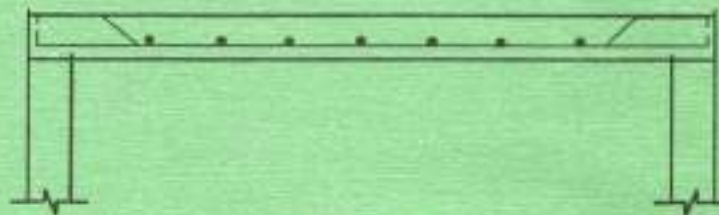
SECTION A: BUILDING CONSTRUCTION II

Answer at least *TWO* questions from this section.

1. (a) Illustrate the following joints used in timber upper floors:
- housed joint;
 - dovetailed notch;
 - steel hanger.
- (6 marks)
- (b) Using a neat and labelled sketch show a fire place opening in an upper timber floor plan. (6 marks)
- (c) **Figure 1** shows a simple concrete slab. Describe the design principles involved before its construction. (8 marks)



SIMPLE SLAB



SECTION

Fig. 1



2. (a) Define a roof. (5 marks)
- (b) State five functions of roof coverings. (5 marks)
- (c) With the aid of sketches citing the following features - falls, insulation and reflection, describe a concrete flat roof. (10 marks)

3. (a) Using line diagrams describe the following long span basic steel roof forms:

- (i) ditched trusses;
- (ii) flat top girders;
- (iii) north light;
- (iv) monitor.

(10 marks)

(b) Describe the general principles of roof design in relation to:

- (i) strength;
- (ii) durability;
- (iii) fire resistance;
- (iv) condensation.

(10 marks)

4. (a) Illustrate in section the laying of the following tiles:

- (i) Italian tiles;
- (ii) Spanish tiles;
- (iii) double Roman tiles.

(9 marks)

(b) Illustrate the following features of a tile profile sheet:

- (i) sheet width;
- (ii) net cover;
- (iii) lap.

(7 marks)

(c) State four factors that determine the temperature on a particular roof covering.

(4 marks)

SECTION B: DRAWING II

Answer at least TWO questions from this section.

5. (a) Define the following documents in design:

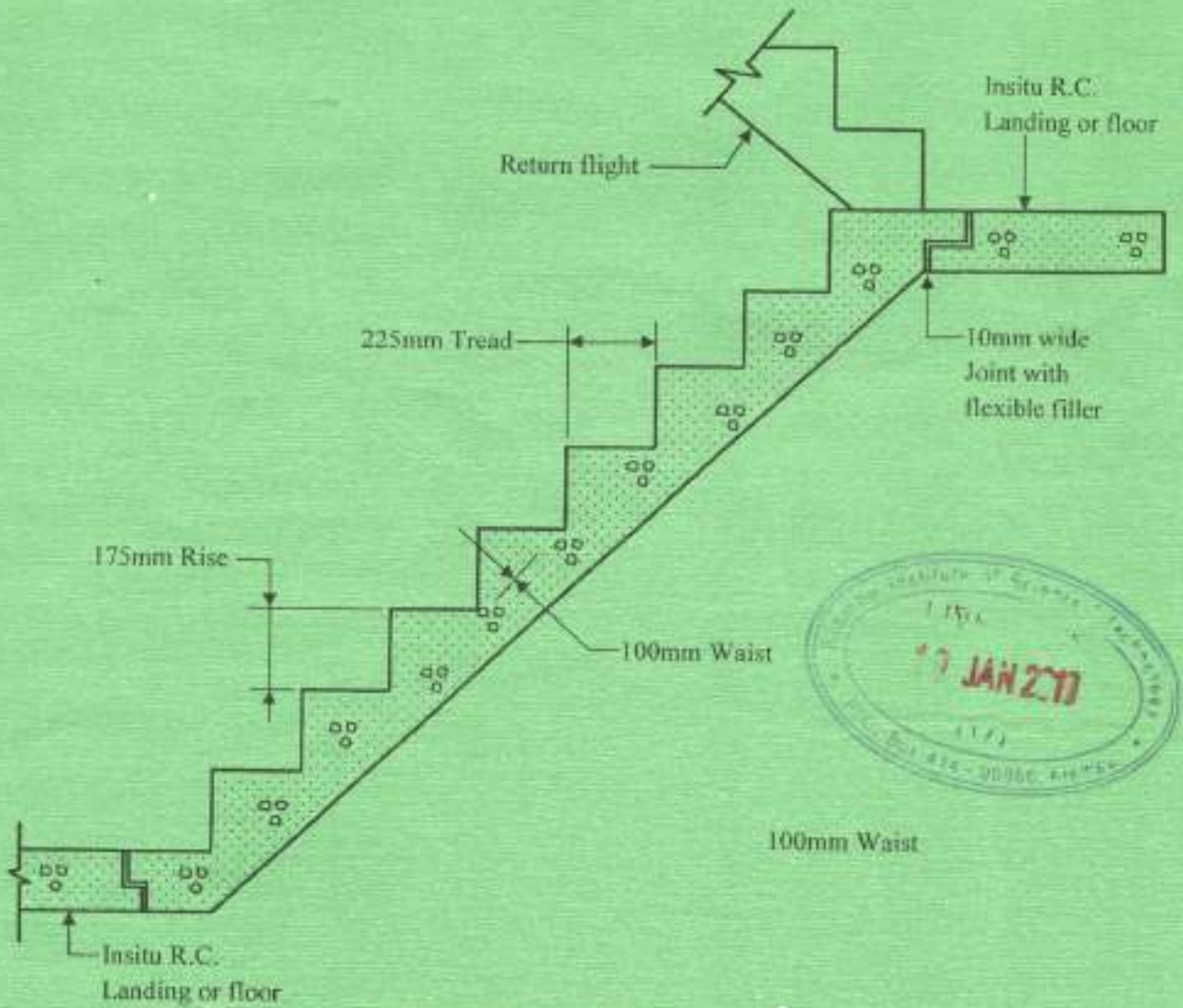
- (i) architectural drawings;
- (ii) engineering drawings;
- (iii) schedules;
- (iv) specification;
- (v) bill of quantities or contract bills;
- (vi) contract document

(12 marks)

- (b) Sketch the following features:
- (i) soil;
 - (ii) hanging edge;
 - (iii) reinforced concrete;
 - (iv) blockwork;
 - (v) boiler;
 - (vi) switch.
- (6 marks)
- (c) Outline planning application necessary for permission to develop a proposed site. (2 marks)
6. (a) State **eight** areas of inspection for a building as construction progresses. (4 marks)
- (b) A multistorey building whose depth of excavation is 10 meters has an average soil density of 1800 kg/m^3 . Typical building weight = 1200 kg/m^2 . Design and calculate the number storeys. (9 marks)
- (c) Define the term working drawings and describe how they work in relation to:
- (i) plans;
 - (ii) sections;
 - (iii) elevations.
- (7 marks)
7. (a) State **three** functions of a door. (3 marks)
- (b) Outline **three** factors that determine choice of a door type. (3 marks)
- (c) Draw a door to scale 1:5 in section from top to bottom given the following information:
- Door height = 2040;
 - Width = 826;
 - 20 x 13 site fixed beads
 - 19 x 35 site fixed architrave;
 - 19 x 35 factory fixed architrave;
 - 57 x 43 framing
- It is a flush door with hardwood threshold. Assume any other information. (14 marks)



8. (a) State **four** advantages of precast concrete stairs. (4 marks)
- (b) **Figure 2** shows a precast concrete stair. To scale 1:10 draw a floor junction detail showing all reinforcement. (16 marks)



PRECAST CONCRETE STAIR

Fig. 2

THIS IS THE LAST PRINTED PAGE.