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 A_3.
*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:

   (i) housed joint;
   (ii) dovetailed notch;
   (iii) 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)

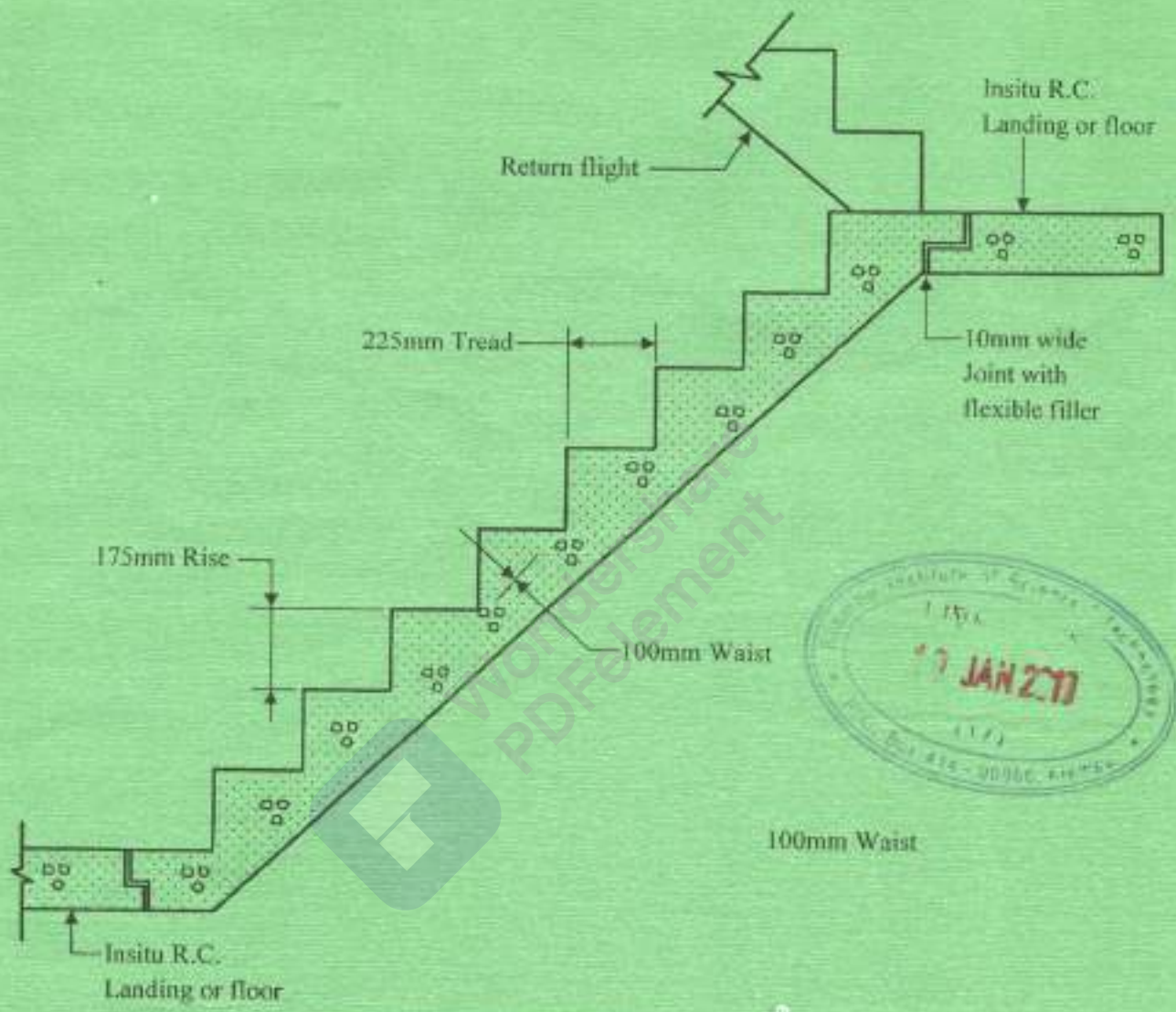
(c) Draw a door to scale 1:5 in section from top to bottom given the following information:
Door height = 2040;
Width = 826;
20 x 13 site fixed beads
19 x 35 site fixed architrave;
19 x 35 factory fixed architrave;
57 x 43 framing

It is a flush door with hardwood threshhold. 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

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