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;
Scale rule;
Drawing papers size A2;
Non-programmable scientific calculator.

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

1. (a) Sketch and label the following types of roofs:

   (i) couple;
   (ii) collar;
   (iii) lean-to.

   (12 marks)

   (b) Outline **five** factors which are to be considered in the choice of upper floor construction for precast concrete units. (5 marks)

   (c) State **three** advantages of hollow pot upper floor construction over solid concrete upper floor. (3 marks)

2. (a) Explain **four** functional requirements of roof construction. (8 marks)

   (b) Sketch and label a TRADA timber roof truss. (6 marks)

   (c) Sketch and label a section through a concrete flat roof showing the method of water proofing. (6 marks)

3. (a) (i) State **four** advantages of tongued and grooved (T & G) joints over butt joints in roof construction.

   (ii) Sketch and label a vertical section through tongued and grooved, boarding firring and joist at the junction between a parapet wall and flat roof.

   (iii) Sketch and label a sprocketted eaves details.

   (14 marks)

   (b) With the aid of a labelled sketch, show the following details on tiled roofs:

   (i) span;
   (ii) rise;
   (iii) pitch;
   (iv) gauge.

   (6 marks)

4. (a) (i) Outline **four** requirements of roof covering materials.

(ii) Describe the following types of roof covering materials:

(I) galvanised corrugated steel sheets;
(II) fibre cement profiled sheets;
(III) plain tiles.

(13 marks)

(b) An architectural ground floor plan of a simple building measures; 8.0 m length, by 4.0 m wide. The angle of the pitched roof at wall plate is 30° and the eave measures 600 mm from the external wall. If the roof is gabled and plain tiles measuring 265 mm by 165 mm wide and 12 mm thick are used, calculate the number of tiles required for the roof.
Make necessary assumptions where required. (7 marks)

SECTION B: DRAWING II

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

5. (a) A TVET institution is preparing a proposal of a student centre. The building should be three storey and to house a theatre, on the ground floor. Other floors to accommodate indoor games court, offices and the student canteen.

Describe the following stages in the process of architectural design in relation to the student centre.

(i) inception;
(ii) feasibility;
(iii) outline proposal;
(iv) scheme design.

(12 marks)

(b) Explain the roles of each of the following parties in the implementation of a building project.

(i) client;
(ii) architect;
(iii) quantity surveyor;
(iv) Consulting engineer.

(8 marks)

6. Sketch and label a plan, and a vertical section through a dog leg in-situ concrete public stair case for one storey height, given the following information.

1.	Rise	150 mm
2.	Going	300 mm
3.	Head room	2700 mm
4.	Suspended concrete slab	150 mm
5.	Width	1200 mm
6.	Height of balustrades	840 mm

Assume any other relevant and necessary information not given.

(20 marks)

7. (a) Explain **four** requirements in the process of approving architectural drawings by county government. (8 marks)

(b) **Figure 1** shows the plan of a building to a scale of 1:50, draw section A-A using the data in **table 1.**

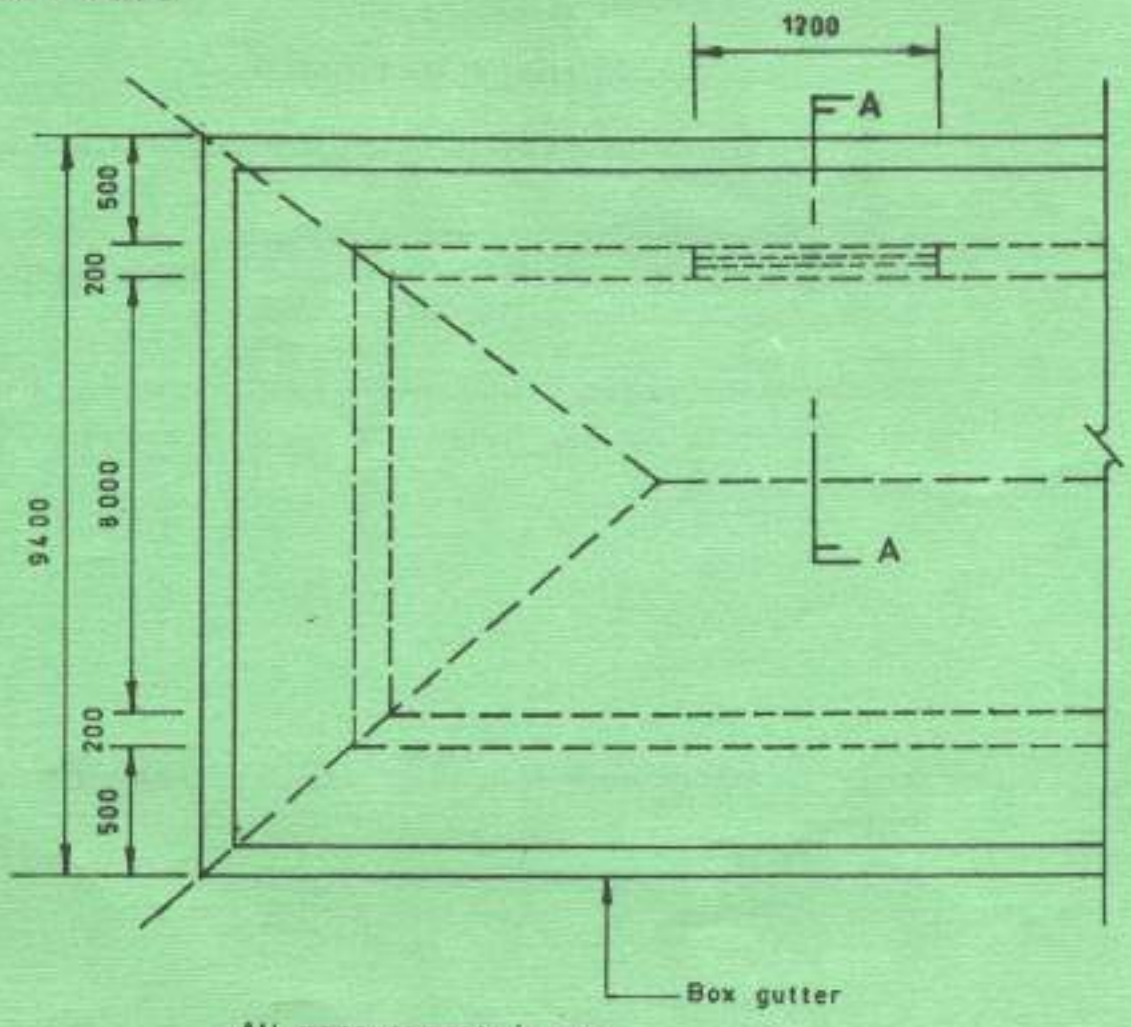
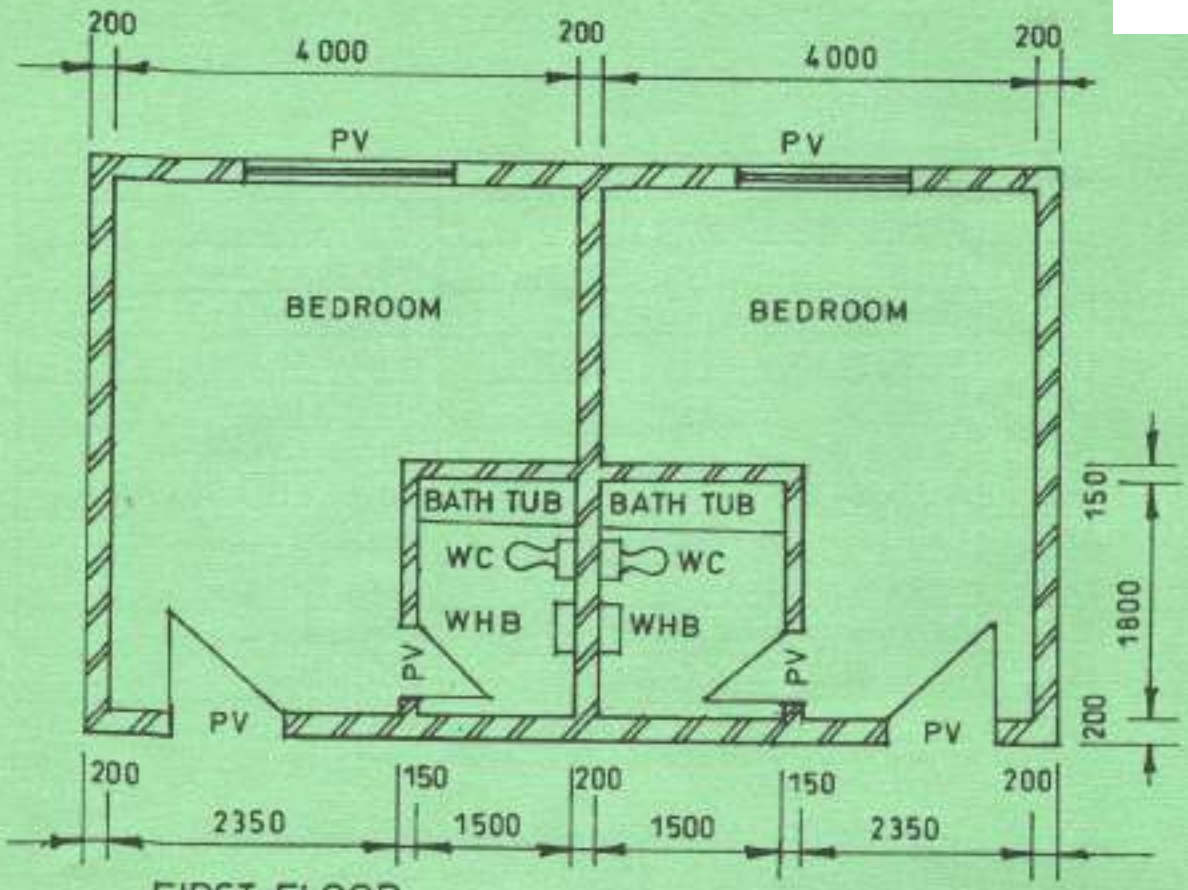
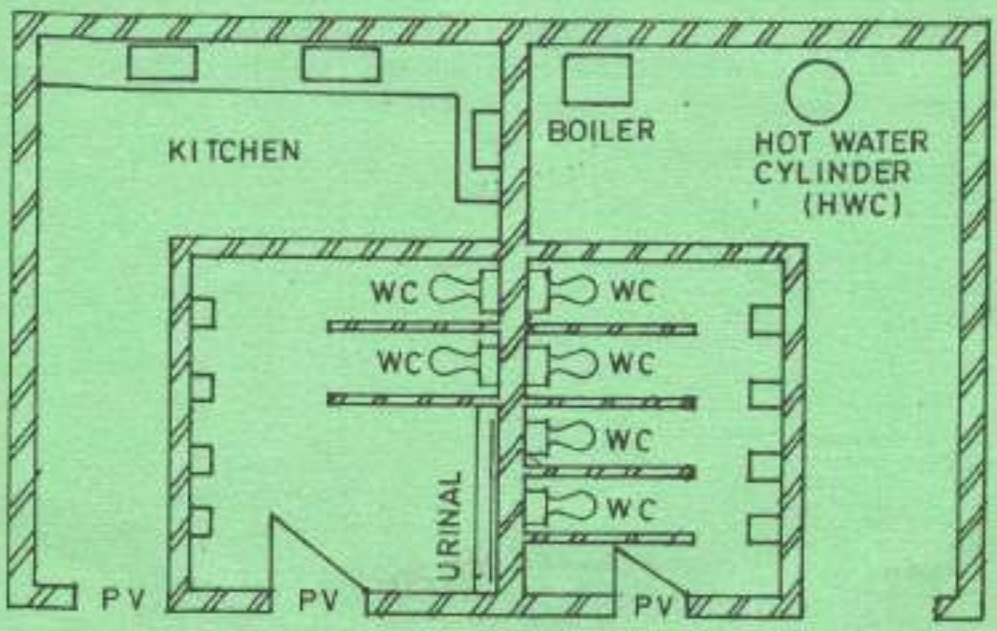


Fig. 1



FIRST FLOOR



GROUND FLOOR

Fig. 2

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