2705/303
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2710/303
BUILDING CONSTRUCTION III,
DRAWING III AND SERVICES
June/July 2020
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN BUILDING TECHNOLOGY
DIPLOMA IN ARCHITECTURE

MODULE III

BUILDING CONSTRUCTION III, DRAWING III AND SERVICES

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Answer booklet;
Scientific calculator;
Drawing instruments.
*This paper consists of **EIGHT** questions in **THREE** sections; **A**, **B** and **C**.*
*Answer **TWO** questions from section **A**, **TWO** questions from section **B** and **ONE** question from section **C** in the answer booklet provided.*
*Each question in section **A** carry **25** marks and questions from section **B** carries **15** marks each whereas each question in section **C** carry **20** marks each.*
Maximum marks for each part of a question are as indicated.
Candidates should answer the questions in English.

This paper consists of 8 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 III

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

1. (a) (i) State **four** merits of timber portal frames.
(ii) Explain the term 'pre-fabrication' in framed structures. (6 marks)

(b) With the aid of a labelled sketch, explain the procedure of traditional method of wall underpinning. (10 marks)

(c) With the aid of a sketch, explain the procedure of laying P.V.C tiles on a floor. (9 marks)

2. (a) State **four** precautions taken before a demolition exercise. (4 marks)

(b) Explain building code requirements for stairs in relation to each of the following:

(i) access;
(ii) dimensions;
(iii) functionality. (6 marks)

(c) Sketch and label a gantry scaffold stating **one** situation that necessitates its use. (7 marks)

(d) Explain **four** qualities of a plastering material. (8 marks)

3. (a) (i) **Figure 1** shows a double glazed window. Sketch and label section X - X.

(ii) State **four** merits of the window in (i) above. (9 marks)

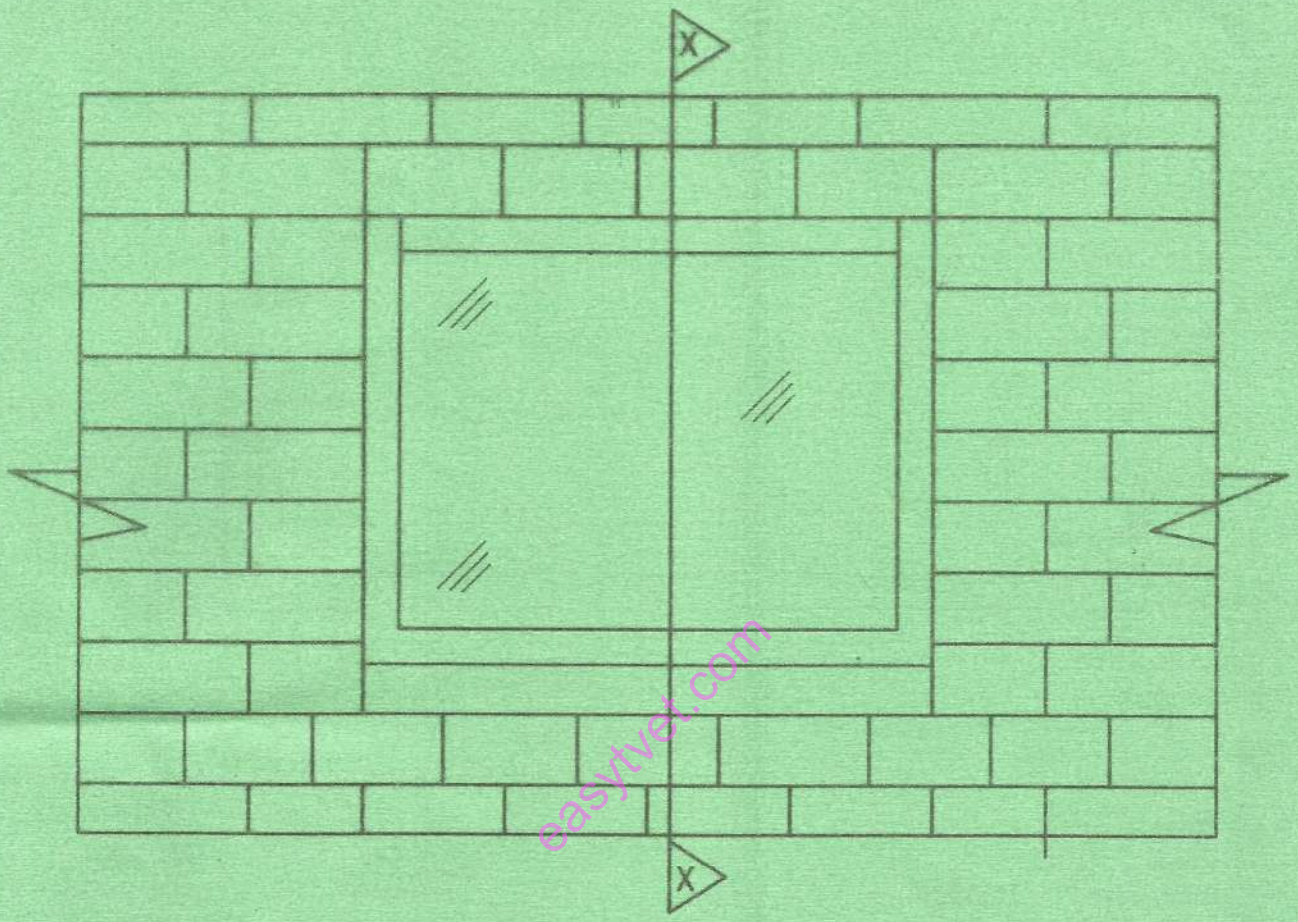

Fig. 1

(b) Outline the procedure of hanging a timber door to a door frame. (7 marks)

(c) With the aid of a labelled sketch, outline the procedure of fixing a cornice. (9 marks)

SECTION B: DRAWING III

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

4. **Figure 2** shows a concrete suspended floor. To a scale of 1:50, draw section A-A using the data given.

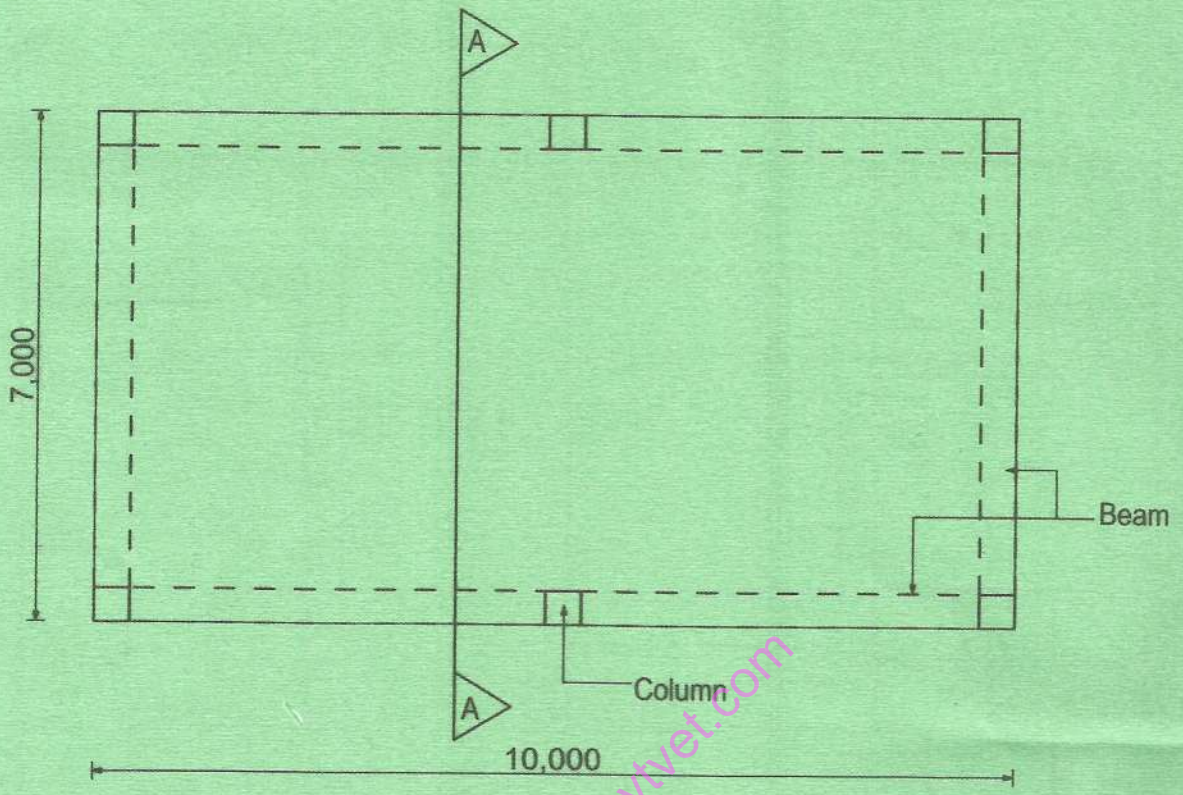

Fig. 2

Data

Beam size 200 x 450 mm.
Column size: 200 x 200 mm
Floor to floor height 2850.
Pad foundation size 800 x 800 x 500 mm.
Slab thickness 150 mm.
Concrete cover 25 mm.
Main reinforcement T12 200 mm c/c.
Distribution bars T10 200 mm c/c.
Wall thickness 200 m.
Hardcore 200 mm.
Blinding 50 mm.
Finish 50 mm.
Strip foundation 600 x 200 mm
Trench depth 1,000 mm.
Depth of columns 1500 mm.

Assume any other necessary information. (15 marks)

5. **Figure 3** shows a plan of a concrete flat roof. To a scale of 1:10, draw section B - B using the data given.

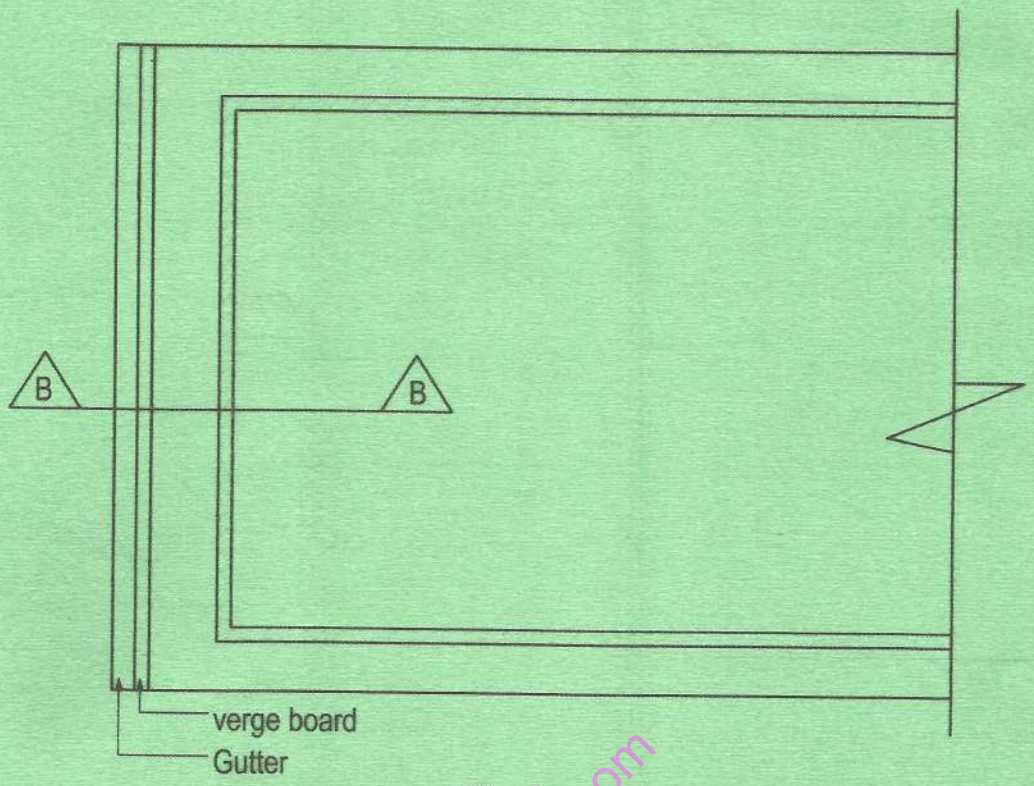

Fig. 3

Data

Eaves 500 mm.
Verge board 200 x 25 mm.
Gutter 200 mm ϕ half board.
Wall thickness 200 mm.
Wall height 2400 mm.
Slab thickness 150 mm.
Drip batten 50 x 50 mm.
Cement sand screed 75 mm laid to a full 20 mm thick asphalt.

Assume any other necessary information. (15 marks)

6. **Figure 4** shows a plan section of a closed storm water drain. To a scale of 1:10, draw section C - C using the data given.

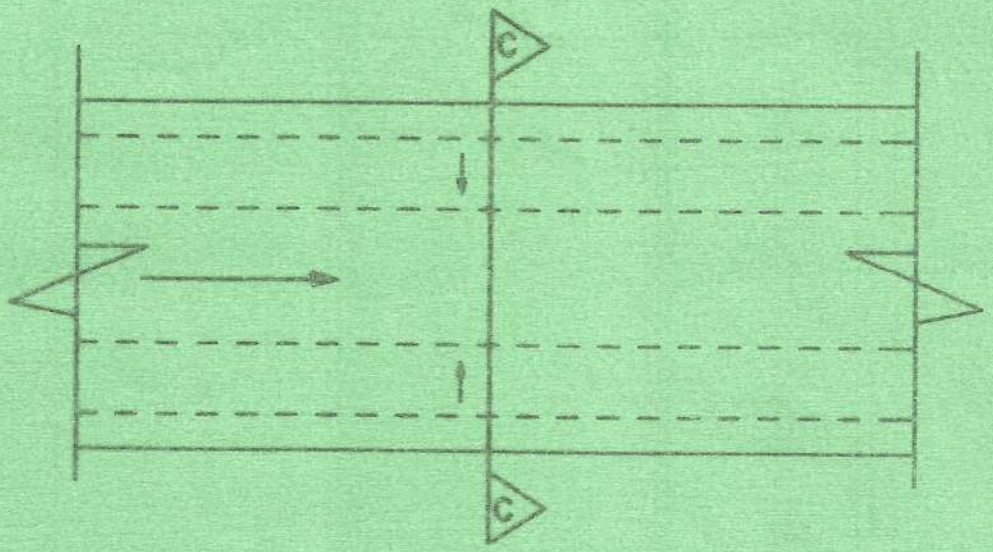

Fig. 4

Data
Width of the drain at the top 1500 mm.
Width of the drain at the bottom 750 mm.
Concrete wall thickness 150 mm.
Base concrete size 1200 x 150 mm.
Concrete cover 1500 x 150 mm.
Concrete blinding 50 mm.
Depth of the drain 950 mm.
Internal plaster/screed finish 20 mm.

(15 marks)

SECTION C: SERVICES

*Answer **ONE** question from this section.*

7. (a) State **five** water supply by-laws in Kenya. (5 marks)

(b) Explain **three** electrical dangers attributed to attitude of electricians. (6 marks)

(c) With the aid of a labelled sketch, describe a combined drainage system. (9 marks)

8. (a) Differentiate between male and female joints in plumbing works. (4 marks)

(b) **Figure 5** shows a plumbing installation. Determine the cost of the installation using the data given.

Cost of ball valve @ Ksh 1500.
Control valves @ Ksh 1000.
Cistern @ Ksh 5000/ m^2.
Cost of 25 mm pipe @ 250/m.
Cost of labour 40% of material cost.
Use prorata rates for other sizes of pipes.
Hot water cylinder @ Ksh 20,000.
Boiler @ Ksh 25,000.
Transport cost 5% of total cost.
Waste 5%.

(16 marks)

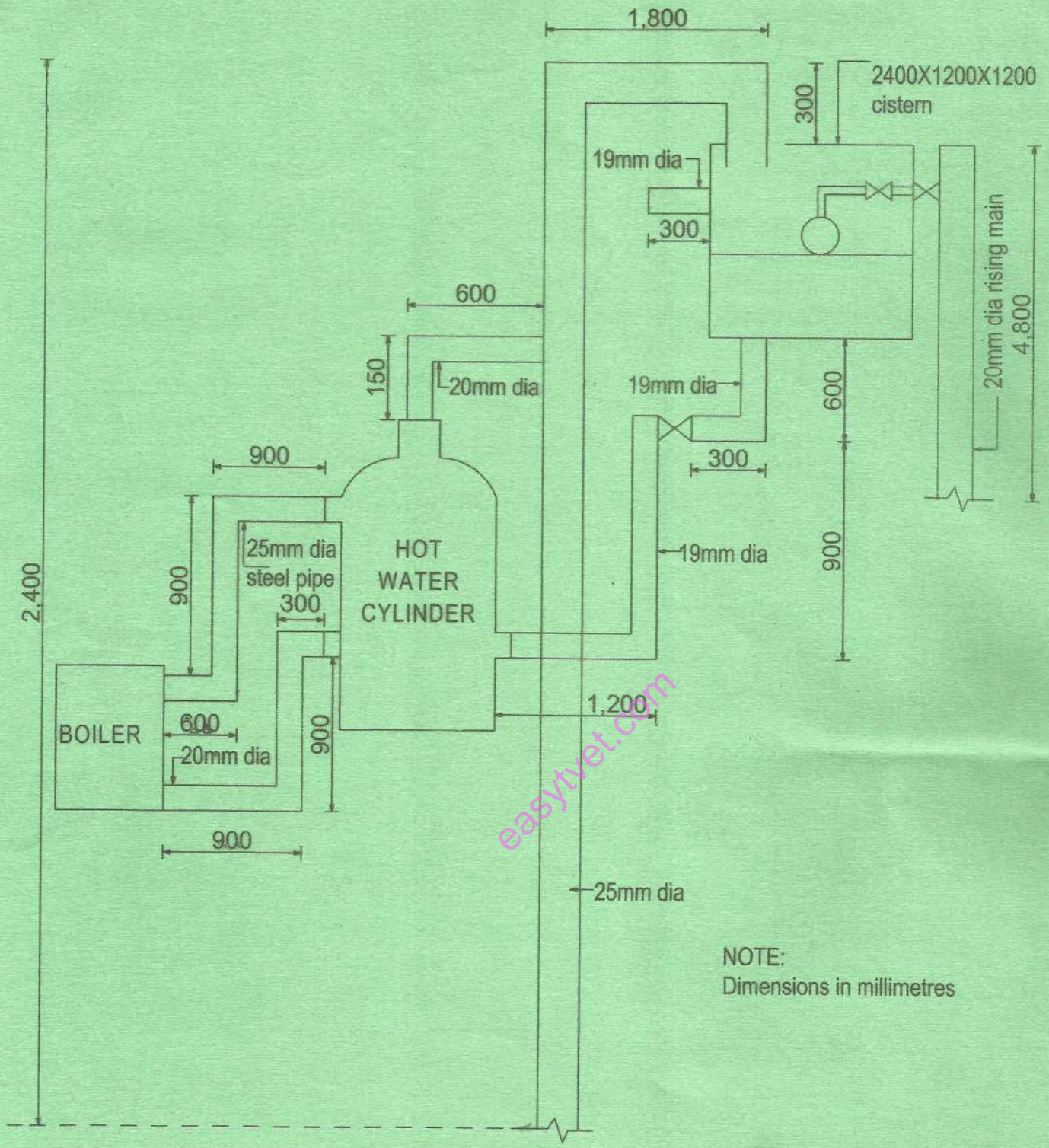

Fig. 5

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