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**BUILDING CONSTRUCTION III,  
DRAWING III AND SERVICES**

June/July 2021

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;*

*Drawing paper size A3.*

*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 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 III

*Answer TWO questions from this section.*

1. (a) State **three** precautions observed when preparing paint. (3 marks)

*→ Cover your nose and mouth.  
→ Use hand gloves & a mixing stick*

(b) Describe each of the following members used in temporary works:

- (i) props;
- (ii) joists; *→ This are timber members that carry adjacent members which hold the loads*
- (iii) braces; *→ This are timber frames used to connect 2 adjacent members into position.*
- (iv) sole plate. *→ A sole plate is a member used to hold fitting timbers on the ground.*

(8 marks)

(c) With the aid of a labelled sketch, outline the procedure of installing a steel portal frame to a concrete base using a pocket connection. (9 marks)

(d) **Figure 1** shows a line diagram of a raking shore. Sketch and label the detail at joint A. (5 marks)

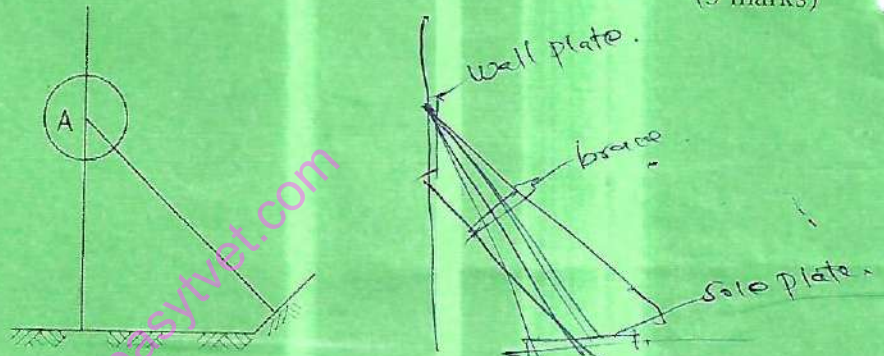


FIGURE 1

2. (a) State **five** environmental requirements during demolition. *→ have a good dumping place for the waste* (5 marks)

(b) With the aid of a labelled sketch, outline the procedure of laying a brick veneer wall facing. (11 marks)

(c) With the aid of a labelled sketch, outline the procedure of constructing a braced ledged battened door. (9 marks)

3. (a) With the aid of a vertical cross-sectional sketch, outline the procedure of laying a granolithic floor finish on a concrete ground floor slab. (10 marks)

(b) Sketch each of the following hardware in second fixing:

- (i) window stay;
- (ii) butt hinge;
- (iii) barrel bolt.

(6 marks)

- (c) With the aid of a labelled sketch, outline the procedure of fixing a timber skirting on a masonry wall. ✓ (9 marks)

### SECTION B: DRAWING III

Answer TWO questions from this section.

4. Figure 2 shows a plan of a building with a gable roof. To a scale of 1 : 20 draw section A - A using the data given. (15 marks)

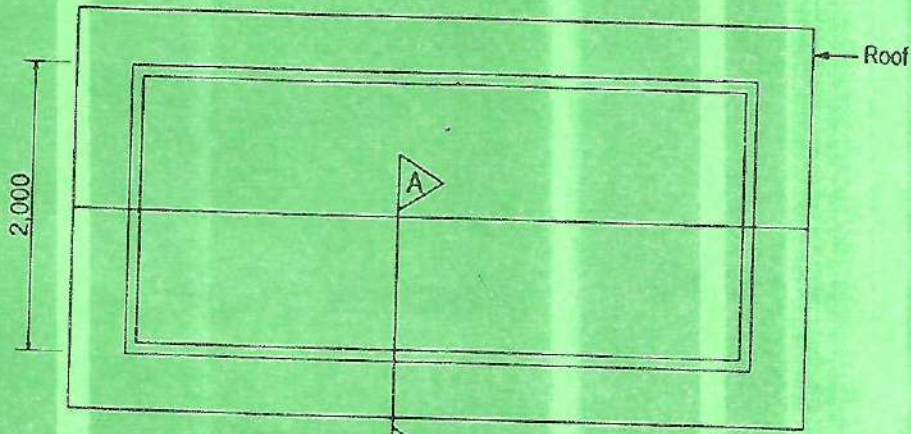
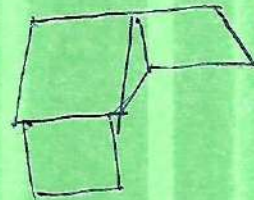


FIGURE 2

#### DATA

Wall thickness	200 mm
Hardcore	200 mm
Blinding	50 mm
Foundation depth	800 mm
Strip footing	600 x 200 mm
Wall plate	100 x 50 mm
Rafters and tie beam	75 x 50 mm
Ties and king post	50 x 50 mm
Ceiling joists	50 x 50 mm
Ceiling thickness	20 mm
Floor slab thickness	150 mm
Purlins	50 x 50 mm
Fascia board	200 x 25 mm
Roof covering	Iron sheets at 30° pitch
Height of superstructure wall	2400 mm



Assume any other necessary information.

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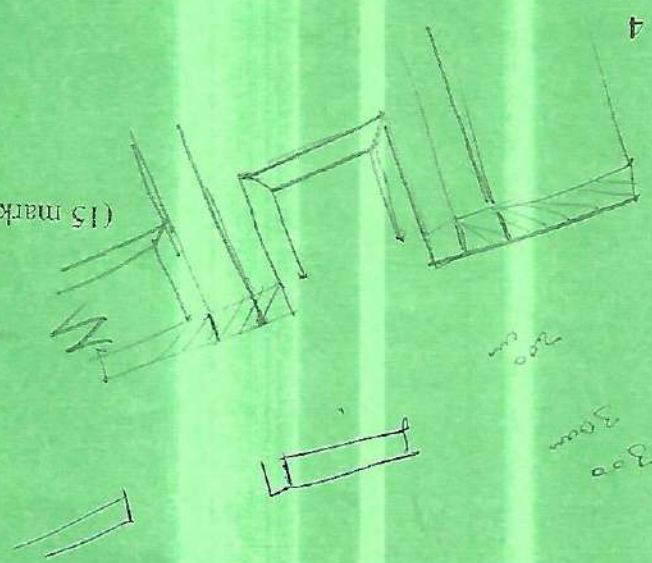
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Turn over

(15 marks)



Assume any other information.

- DATA**
- Window frame 100 x 50 mm
  - Transome 100 x 50 mm
  - Window opening 110 mm
  - Sills 100 x 50 mm
  - Panels width 300 mm
  - Wall thickness 200 mm

FIGURE 3

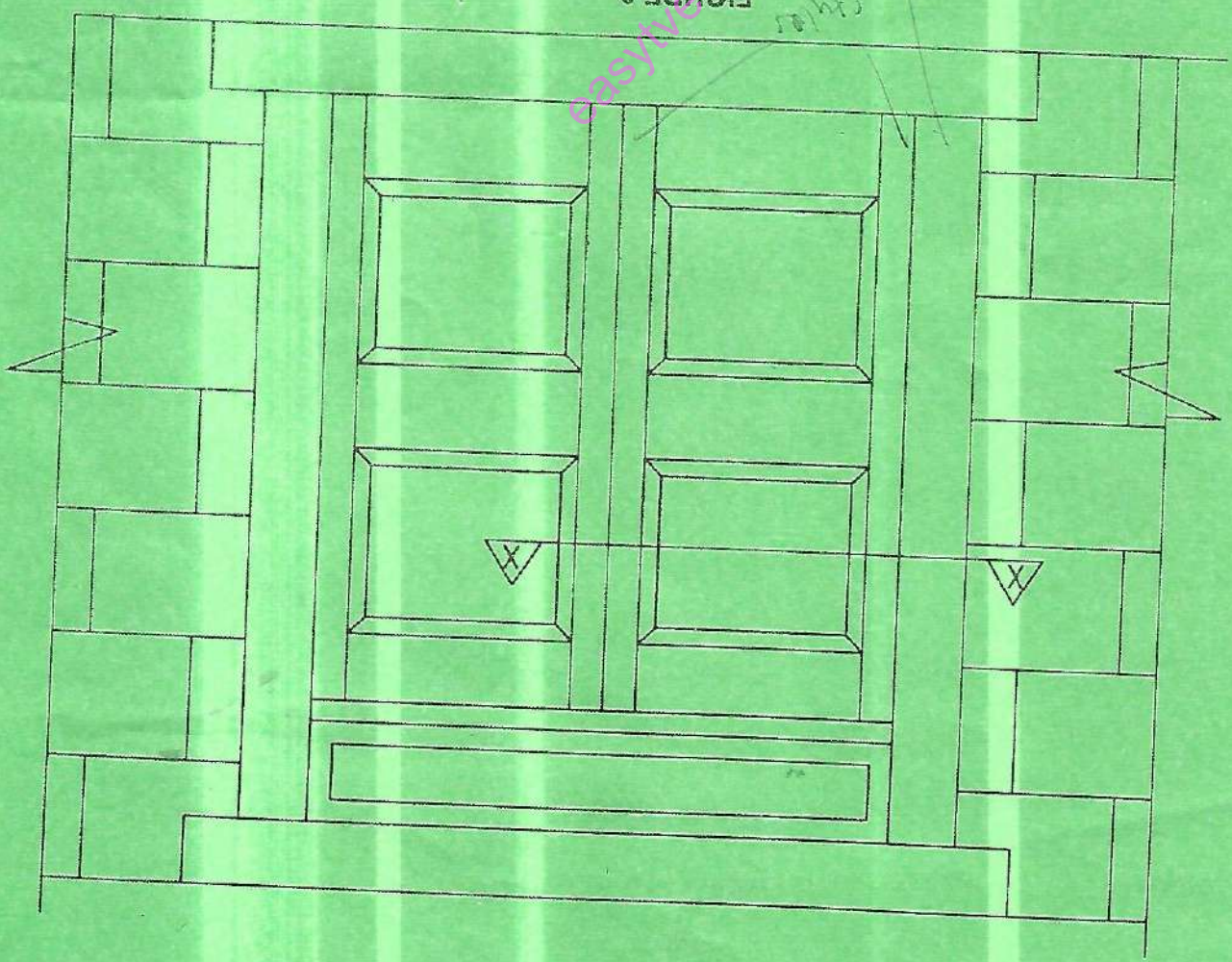


Figure 3 shows the elevation of a timber window in a wall opening. To a scale of 1 : 5 draw section X - X using the data provided.



## SECTION C: SERVICES

Answer **ONE** question from this section.

7. (a) State **three** IEEE regulations relating to electrical conduits. (3 marks)
- (b) Describe the following plumbing fitting:
- (i) tee;
  - (ii) adaptor;
  - (iii) coupler;
  - (iv) elbow. (8 marks)
- (c) With the aid of a labelled vertical cross sectional sketch, outline the procedure of constructing a manhole. (9 marks)
8. (a) Outline **four** considerations when installing gas lines. (6 marks)
- (b) State **five** advantages of mechanical ventilation. (5 marks)
- (c) With the aid of a labelled sketch, explain the indirect cold water supply system. (9 marks)

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