1704/103
BUILDING CONSTRUCTION I
AND DRAWING
June/July 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN BUILDING TECHNOLOGY

MODULE I

BUILDING CONSTRUCTION I AND DRAWING

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
    Answer booklet;
    Mathematical tables/Scientific calculator;
    Drawing instruments;
    Metric scale rule;
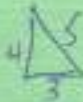   *Drawing paper size A3.*
This paper consists of EIGHT questions in TWO sections; A and B.
Answer FIVE questions; choosing at least TWO questions from each section.
All questions carry equal marks.
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.

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.

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SECTION A: BUILDING CONSTRUCTION I

Answer at least TWO questions from this section.

1. (a) With the aid of diagrams, outline the setting out of a building using the 3:4:5 method.
(8 marks)

(b) Using labelled sketches, explain each of the following methods of ground water control:

(i) well point;
(ii) sump and side drains.
(12 marks)

2. (a) Outline **five** factors to be considered in choosing a type of foundation. (5 marks)

(b) Sketch and label timbering in firm soils. (4 marks)

(c) Outline **two** functional requirements of a foundation. (4 marks)

(c) Outline the procedure of constructing a brick wall. (7 marks)

3. (a) Sketch and label a cross section through a solid ground floor. (5 marks)

(b) Define the term rendering. (2 marks)

(c) Sketch and label a segmental arch. (6 marks)

(d) Differentiate between stretcher bond and flemish bond. (4 marks)

(e) State **three** factors that influence the method of timbering to trenches. (3 marks)

4. (a) With the use of sketches, differentiate between wide strip foundation and deep strip foundation. (6 marks)

(b) Outline the slump test procedure of fresh concrete. (8 marks)

(c) Define the following terms as used in concrete:

(i) water/cement ratio;
(ii) workability;
(iii) setting.
(6 marks)

SECTION B: DRAWING

Answer at least TWO questions from this section.

5.   **Figure 1** shows a truncated hexagonal pyramid. Using first angle projection draw the following:

   (i)   front elevation;

   (ii)   end elevation in the direction of arrow EE;

   (iii)   true shape of the cut surface;

   (iv)   plan;

   (v)   surface development of the frustrum.
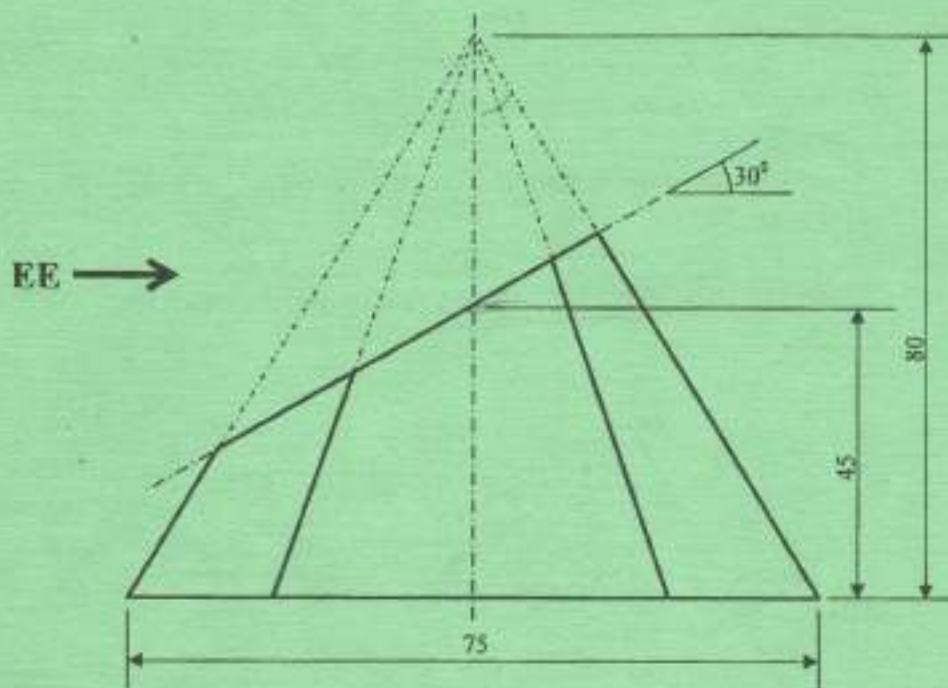
(20 marks)

EE ⟶

30°

80

45

75

Fig. 1

Neghibour

Elting

exsting

6.   (a)   **Figure 2** shows a rectangle of sides 38 mm and 65 mm. Construct a square equal in area to the rectangle.   (5 marks)
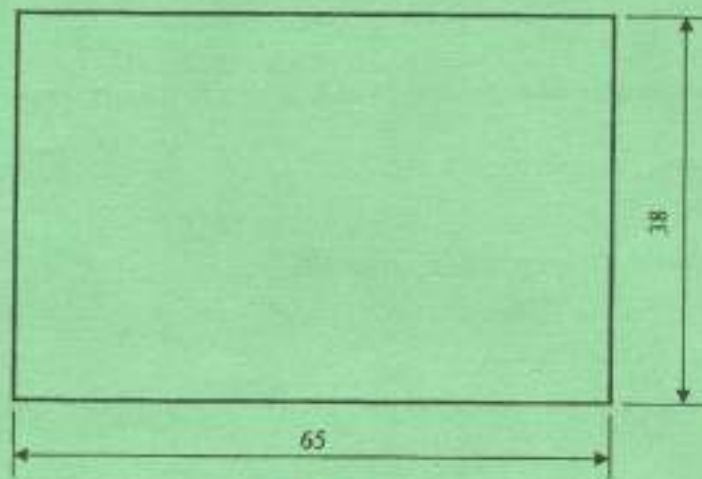

38

65

Fig. 2

(b)   Construct a regular pentagon of sides 40 mm.   (5 marks)

(c)   **Figure 3** shows the layout of a crank mechanism, in which **OB** rotates about **O** and **A** slides as shown.

Draw the locus of point **C** for one revolution of crank **OB**.   (10 marks)
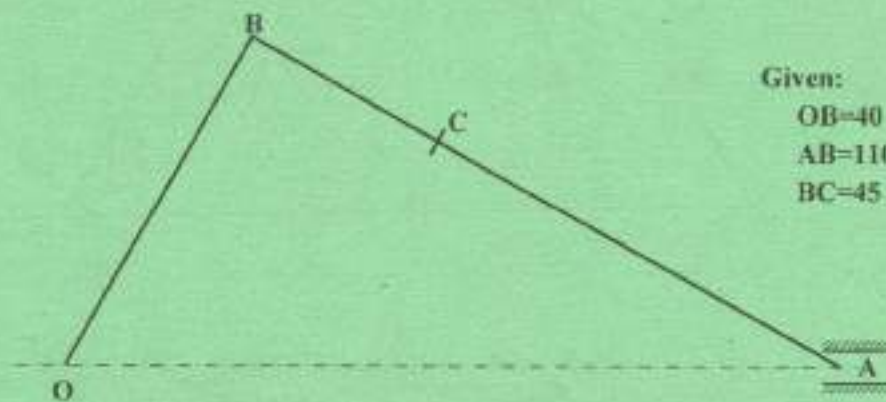

B

C

Given:
OB=40
AB=110
BC=45

O   A

Fig. 3

7.   Draw the following tools using free hand:

(i)   hack saw;
(ii)   wooden float;
(iii) flat screw driver;
(iv)   claw hammer.

(20 marks)

8. **Figure 4** shows a rocker bearing drawn in isometric projection. Using third angle orthographic projection, draw the following in full size and indicate six dimensions.

(i)   front elevation in the direction of arrow FE;
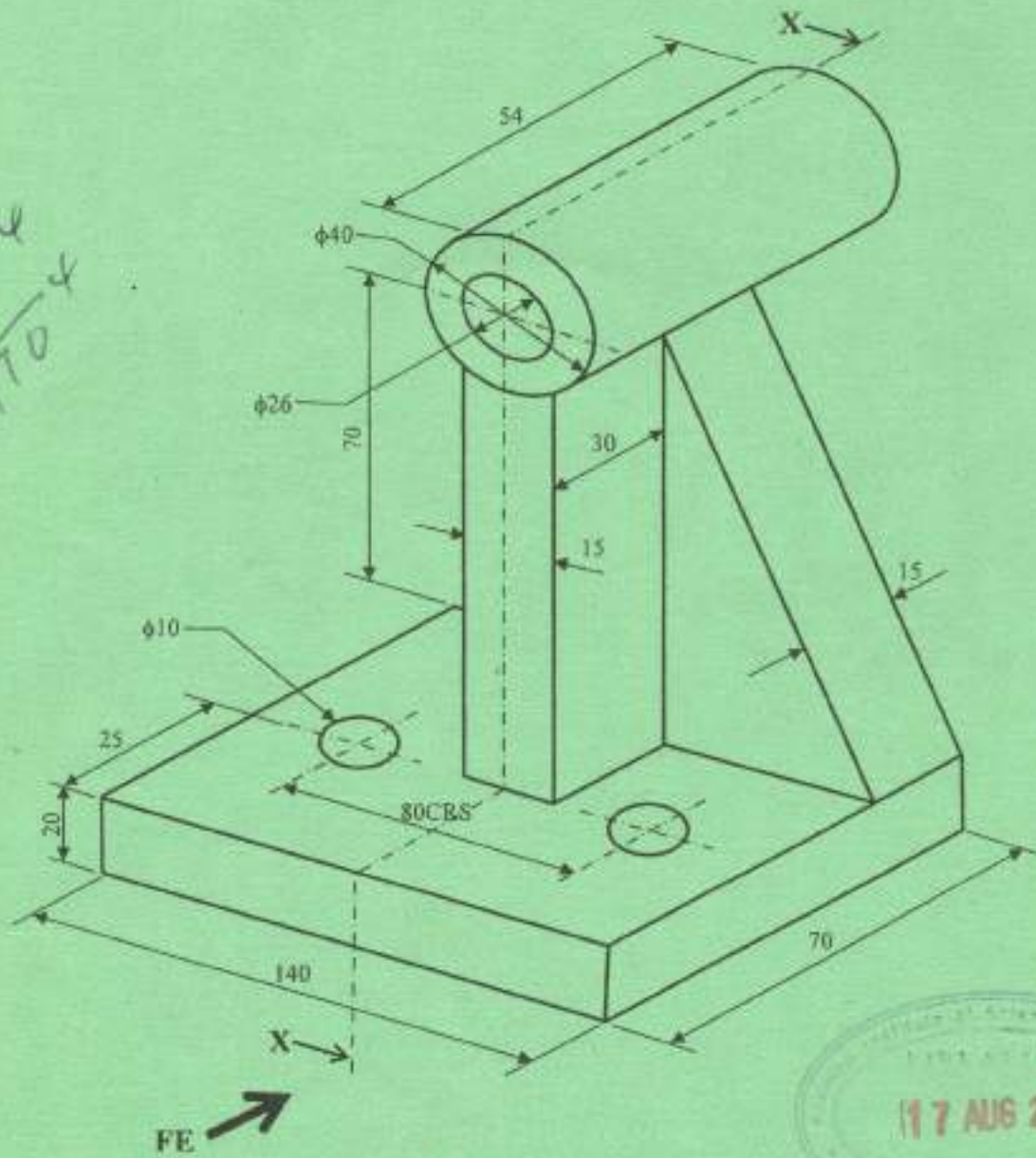(ii)   section X–X;
(iii)   plan.

(20 marks)

Fig. 4

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