

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.*

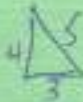
*This paper consists of EIGHT questions in TWO sections; A and B.
Answer FIVE questions; choosing at least TWO questions from each section.
All questions carry equal marks.
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.*

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.**

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)

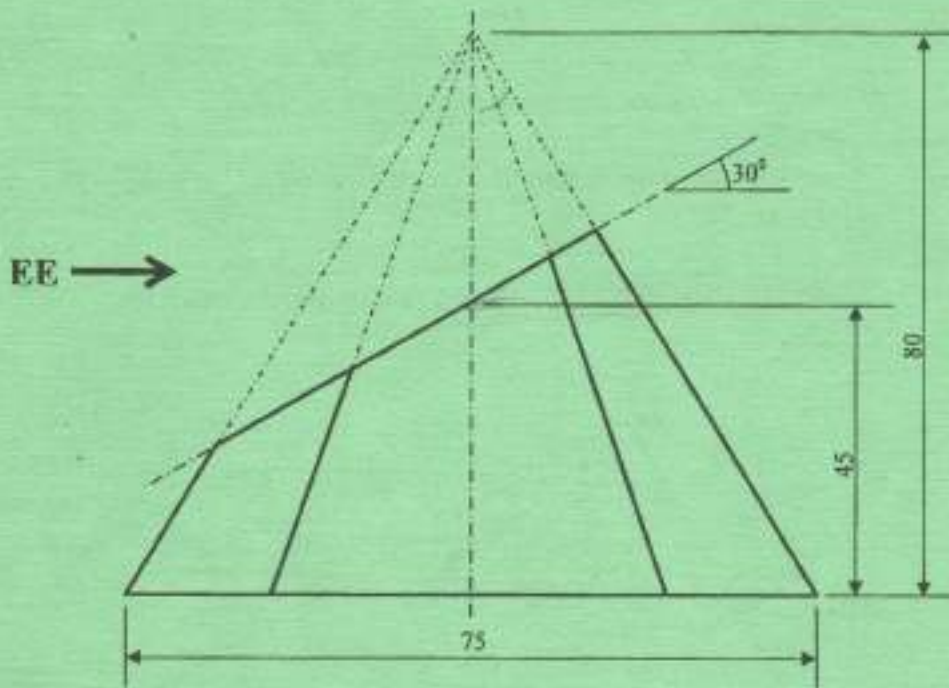


Fig. 1



Handwritten calculations:
 $\frac{75}{2}$
 $2 \sqrt{\frac{75}{4}}$
 $\frac{15}{2}$

Neighbour

asking
asking

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)

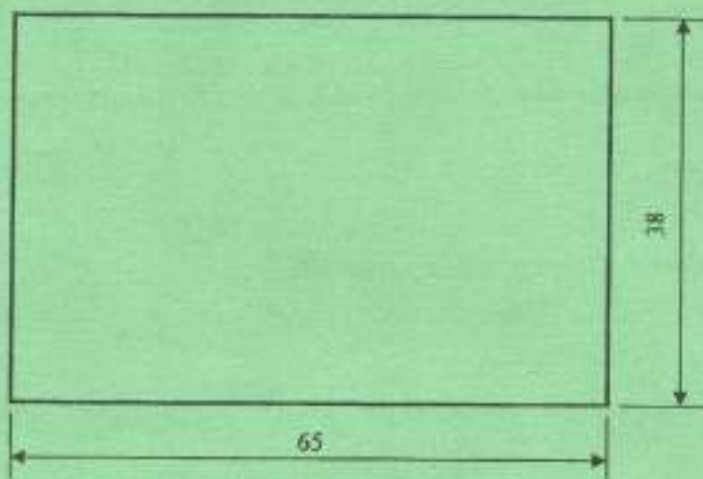


Fig. 2

- (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)

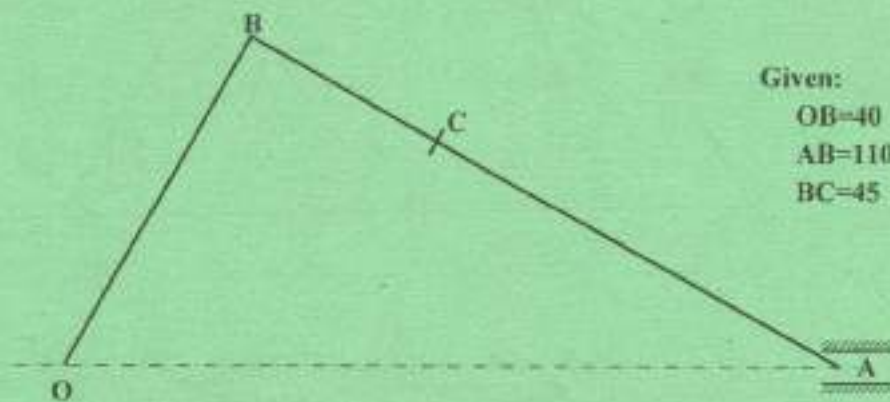


Fig. 3

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)

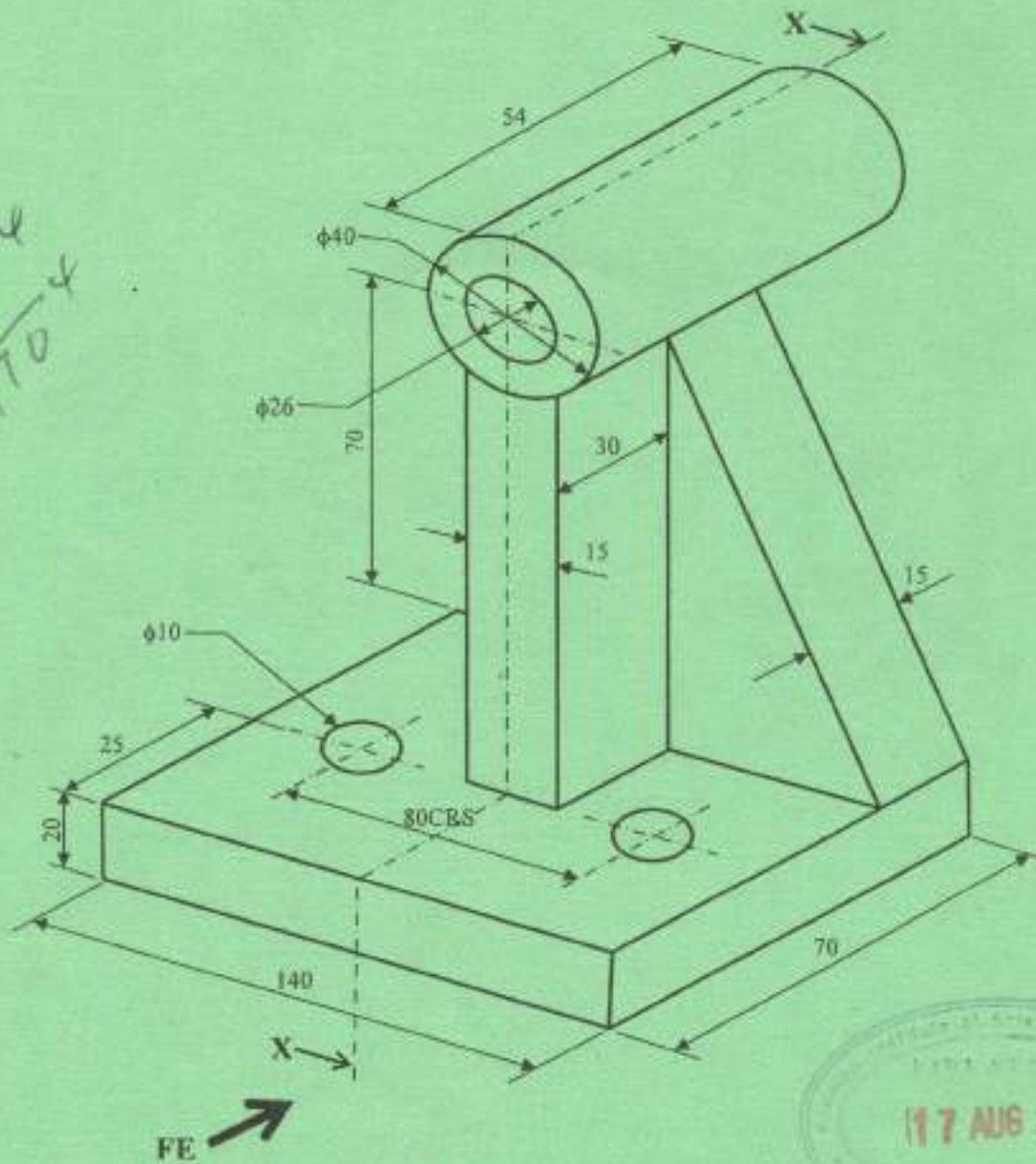


Fig. 4



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Handwritten notes in the left margin:
 $\frac{36}{22} = 1.636$
 $\frac{22}{22} = 1$
 $\frac{22}{22} = 1$