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**BUILDING CONSTRUCTION I
TECHNICAL DRAWING AND
CONSTRUCTION PLANT**

June/July 2019

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN BUILDING CONSTRUCTION
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE**

MODULE I

**BUILDING CONSTRUCTION I, TECHNICAL DRAWING AND
CONSTRUCTION PLANT**

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Drawing instruments;

Drawing paper size A3.

This paper consists of EIGHT questions in THREE sections A, B and C.

Answer any FIVE questions; choosing TWO questions from section A, TWO questions from section B and ONE question from section C in the answer booklet provided.

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 TWO questions from this section.

1. (a) ✓ State **three** methods of levelling a building site. ✓ (3 marks)
- (b) Describe the following in the building process:
- ✓(i) site clearing;
 - ✓(ii) setting out of the building;
 - (iii) establishing of the datum point. (9 marks)
- (c) ✓(i) Define the term timbering.
- ✓(ii) Sketch and label a cross-sectional detail of timbering to dry loose soil. (8 marks)
2. (a) ✓ Sketch and label a vertical cross section through a reinforced concrete raft foundation. (8 marks)
- (b) With the aid of sketches, describe the following methods of setting out of buildings:
- (i) ~builders square;
 - (ii) ✓3:4:5 method. (10 marks)
- (c) State **two** methods of fixing door frames to masonry wall. (2 marks)
3. (a) ✓ State **four** functions requirements of a wall in building construction. (2 marks)
- (b) ✓ State **four** functions of a fireplace. (4 marks)
- (c) ✓ Sketch and label a vertical section through a wooden casement window frame with a transom. (10 marks)
- (d) ✓ Outline **four** functional requirements of a timber ground floor. (4 marks)

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Answer **TWO** questions from this section.

4. A front elevation of a truncated hexagonal pyramid of 32 mm sides and a vertical height of 70 mm is shown in figure 1. Draw the following in 1st angle projection:

- front elevation;
- plan;
- end elevation in the direction shown with arrow "A";
- auxiliary plan from the angle shown.

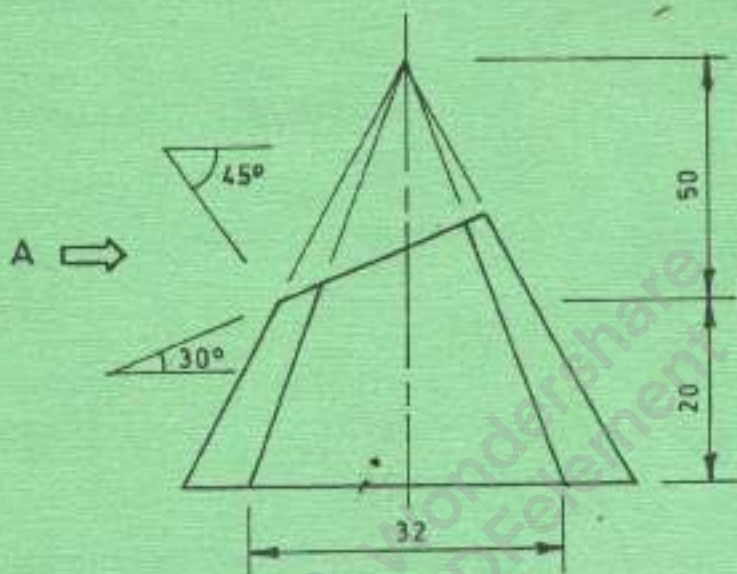


Fig. 1

(20 marks)

5. (a) A triangle has the following details $AB = 50$ mm, $BC = 40$ mm, angle $BAC = 30^\circ$. Draw the triangle and a circle passing through points A, B and C. (5 marks)
- (b) Figure 2 shows a solid block drawn in isometric projection. Draw the following views of the block in 3rd angle projection:
- front elevation from the direction "F";
 - the plan;
 - end elevation from x.

(15 marks)

Turn over

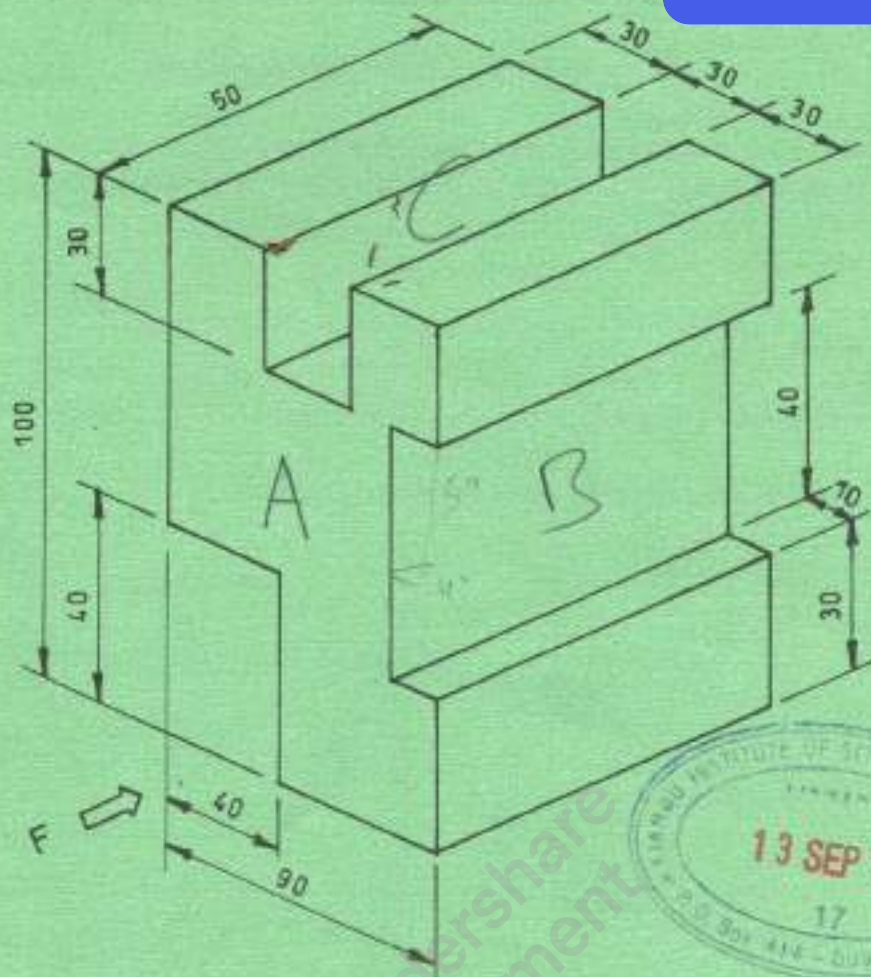
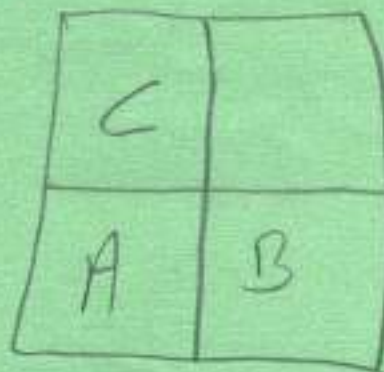


Fig. 2

6. Figure 3 shows an elevation of intersecting cylinders. Draw the following in 3rd angle projection:

- a complete plan;
- end elevation viewed from the direction of arrow X;
- development of half of cylinder marked B.

(20 marks)



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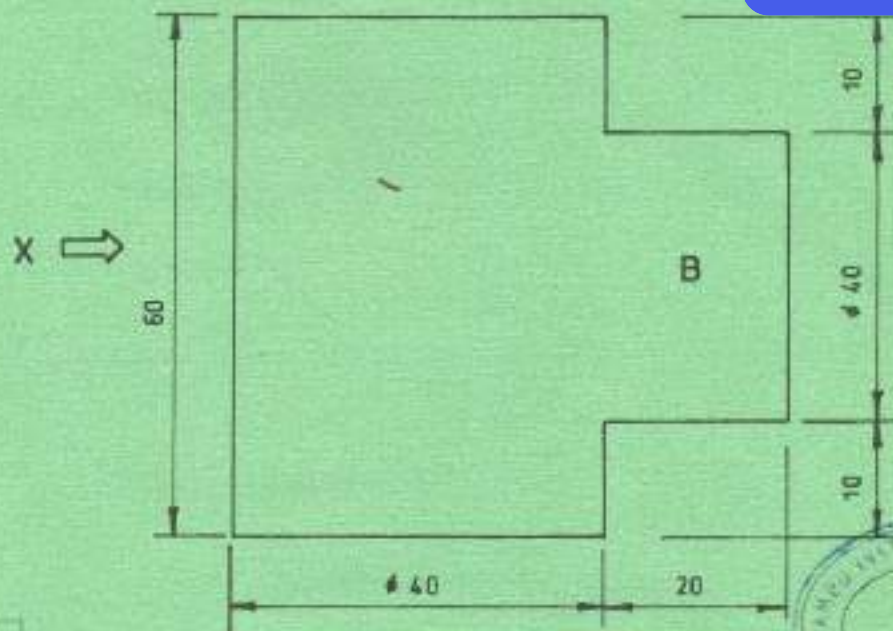


Fig.3

SECTION C : CONSTRUCTION PLANT (20 marks)

Answer *ONE* question from this section.

7. (a) Outline **four** advantages of using construction plants over manual work. (6 marks)
- (b) Describe the following types of scrapers:
- (i) crawler drawn scraper;
 - (ii) two axle scraper;
 - (iii) three axle scraper. (9 marks)
- (c) State **five** advantages of transporting concrete by pumping method. (5 marks)
8. (a) State **four** types of cranes. (2 marks)
- (b) State **four** types of conveyors. (4 marks)
- (c) Explain **four** factors considered to achieve maximum out put of a scraper. (8 marks)
- (d) Outline **four** differences between a centrifugal and displacement water pump. (6 marks)

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