2705/105
2707/105
2709/105
BUILDING CONSTRUCTION I
TECHINICAL 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.

Turn over

SECTION A : BUILDING CONSTRUCTION I (40 marks)

*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)

SECTION B : TECHNICAL DRAWING (40 marks)

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:

(a) front elevation;

(b) plan;

(c) end elevation in the direction shown with arrow "A";

(d) auxiliary plan from the angle shown.

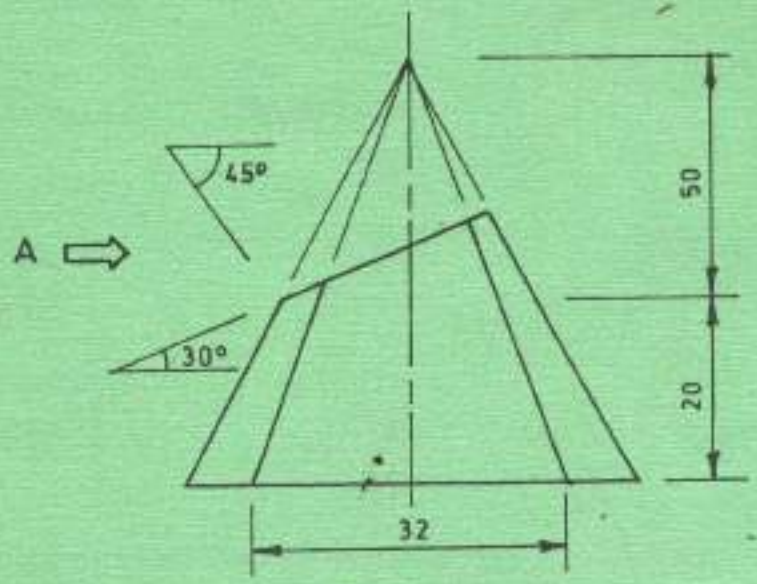


Fig. 1

(20 marks

5. (a) A triangle has the following details AB = 50 mm, BC = 40 mm, angle BAC = 30°. Draw the triangle and a circle passing through points AB 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:

(i) front elevation from the direction "F";

(ii) the plan;

(iii) end elevation from x.

(15 marks)

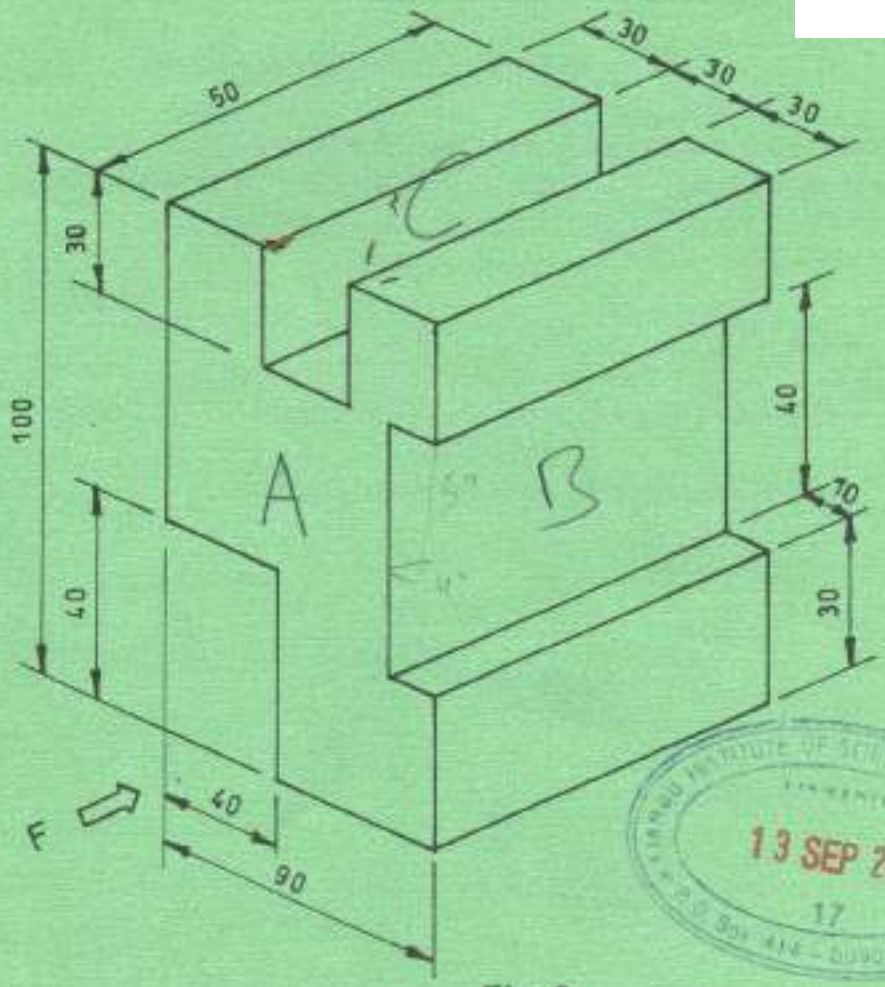


Fig. 2

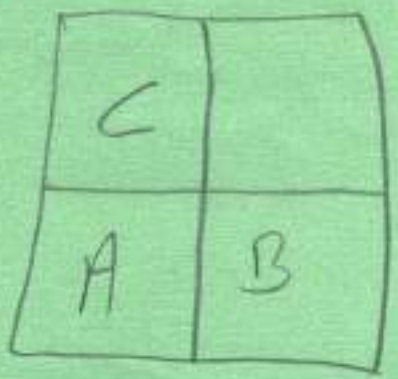
6. **Figure 3** shows an elevation of intersecting cylinders. Draw the following in 3rd angle projection:

(a) a complete plan;

(b) end elevation viewed from the direction of arrow X;

(c) development of half of cylinder marked B.

(20 marks)



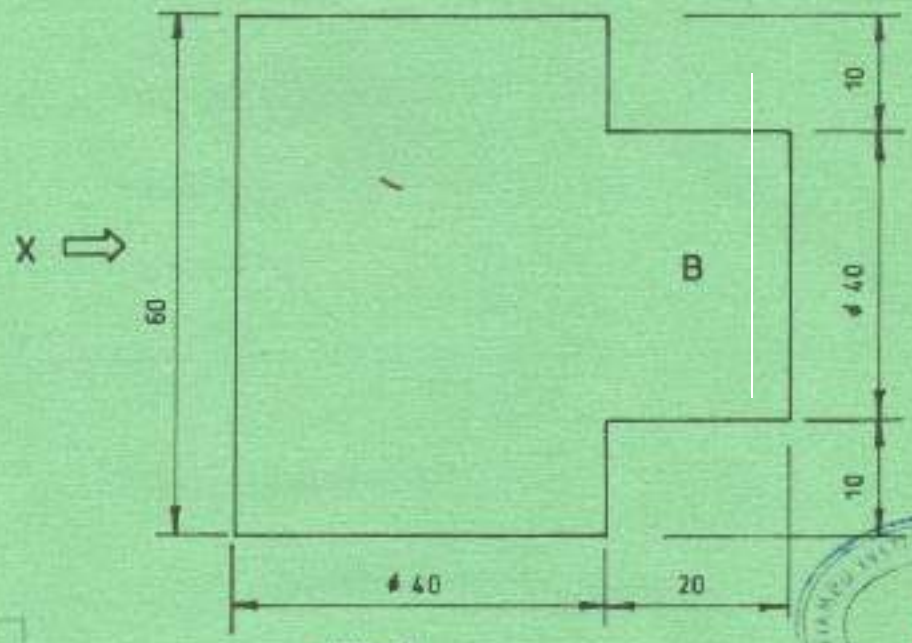


Fig.3

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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