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

June/July 2017

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN BUILDING TECHNOLOGY
DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN ARCHITECTURE**

MODULE I

BUILDING CONSTRUCTION, TECHNICAL DRAWING AND CONSTRUCTION PLANT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

answer booklet;

scientific calculator;

A3 drawing paper;

drawing equipment.

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

*Answer **FIVE** questions choosing **TWO** questions from section **A**, **TWO** questions from Section **B** and **ONE** question from section **C** in the answer booklet provided and drawing paper where necessary.*

Maximum marks for each part of a question are as 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

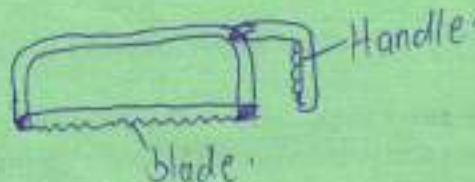
Answer TWO questions from this section.

- 1. (a) Explain the following stages of construction:
 - (i) inception stage;
 - (ii) design stage;
 - (iii) construction stage. (6 marks)
- (b) Outline four activities in 'site investigation'. (4 marks)
- (c) (i) Sketch and label the three ways of levelling sloping site. (10 marks)
- (ii) State one reason for levelling a sloping site.
- 2. (a) Outline five factors that may determine the method of excavation. (10 marks)
- (b) Sketch and label three ways of forming barriers around excavations on site. (9 marks)
- (c) Define a deep excavation. (1 mark)
- 3. (a) Explain the function of a foundation. (2 marks)
- (b) Sketch and label the following types of foundations:
 - (i) stepped foundation;
 - (ii) strip foundation. (6 marks)
- (c) Differentiate between the following in walling:
 - (i) masonry wall and monolithic wall;
 - (ii) strength and stability of a wall. (8 marks)
- (d) Outline two functions of hardcore in solid ground floors. (4 marks)

SECTION B: TECHNICAL DRAWING

Answer TWO questions from this section.

- 4. (a) Using free hand, sketch an isometric view of the following hand tools:
 - (i) wooden float;
 - (ii) hacksaw. (10 marks)

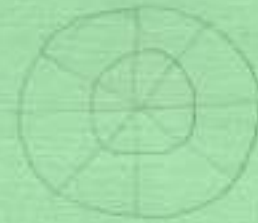


- (b) Using the concentric circle method construct an ellipse whose major axis is 100 mm and minor axis is 70 mm. (6 marks)
- (c) Using oblique cabinet draw a regular cube of sides 50 mm. (4 marks)

5. Figure 1 shows a section through two cylinders of different radii.

Draw the following:

- (i) the front elevation;
- (ii) the plan.



(20 marks)

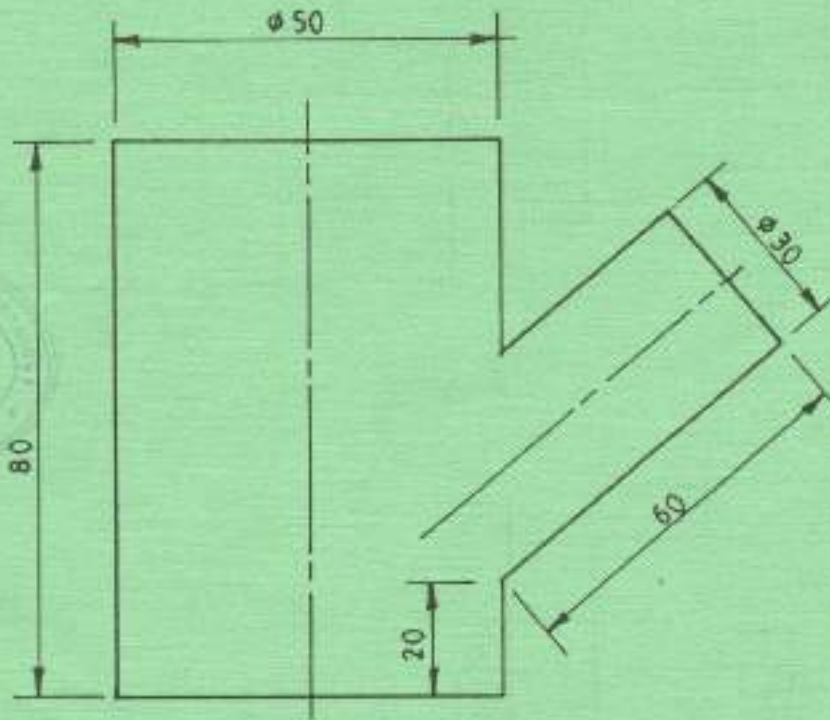


Fig. 1

6.

Figure 2 shows orthographic views of a shaped object. To a scale of 1:1, draw an isometric view of the object with X as the lowest point indicating at least four dimensions. (20 marks)

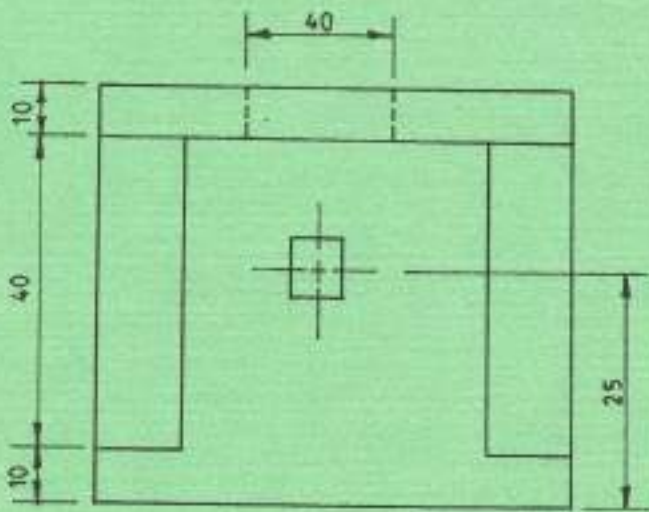
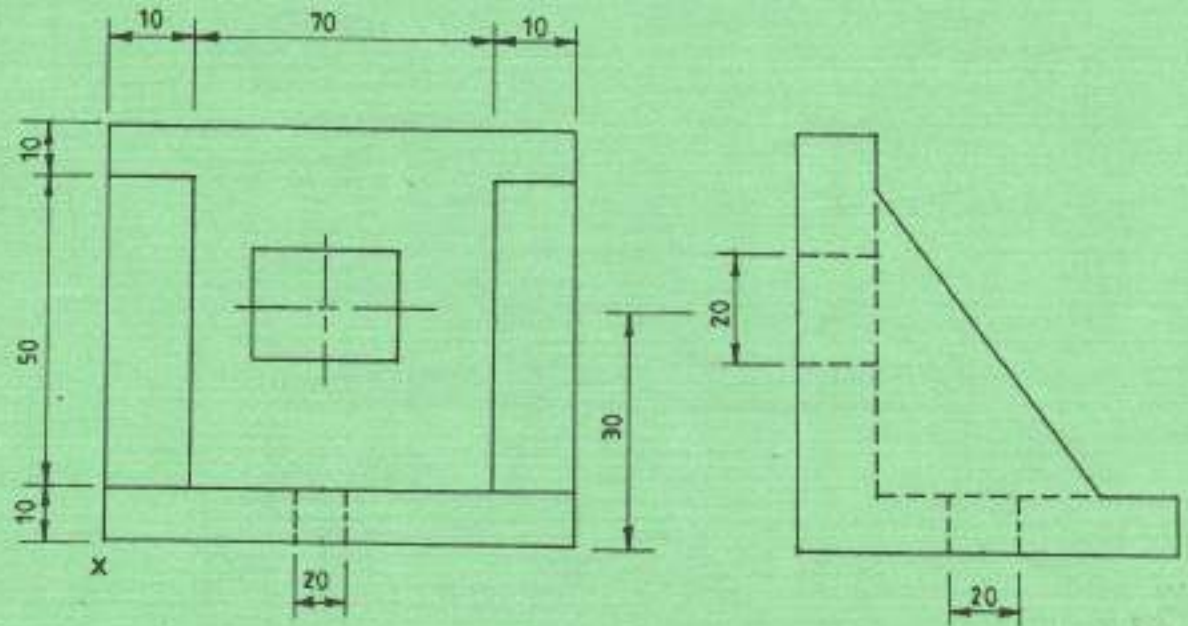
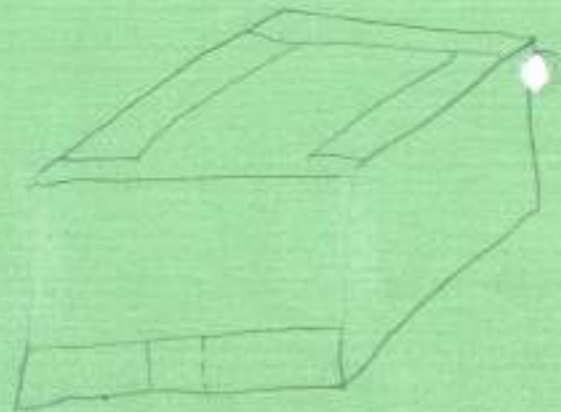


Fig. 2



SECTION C: CONSTRUCTION PLANT

Answer ONE question from this section.

7. (a) State five reasons for using construction plant. (5 marks)
- (b) State:
- Eliminate heavy manual work
 - Reduce overall cost
 - Inc rate of output
 - Maintain standard rate of production
- (i) four advantages of hiring plant; (8 marks)
- (ii) four advantages of owning plant.
- Handwritten notes:*
 - More economical
 - Available
 - Better maintained
 - Hiring cheap
 - Owing

(c) With the aid of a sketch describe two wheeled roller. (7 marks)

8. (a) Explain the following terms in relation to trucks:
- (i) pay load;
 - (ii) struck capacity;
 - (iii) heaped capacity. (6 marks)

(b) Outline five factors that determines the output of a transportation plant. (10 marks)

- (c) Explain each of the following terms as used in drilling and blasting:
- (i) blast hole;
 - (ii) booster;
 - (iii) burden;
 - (iv) face. (4 marks)

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