2705/105
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2709/105
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.

Turn over

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.
   (ii) State **one** reason for levelling a sloping site. (10 marks)

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)

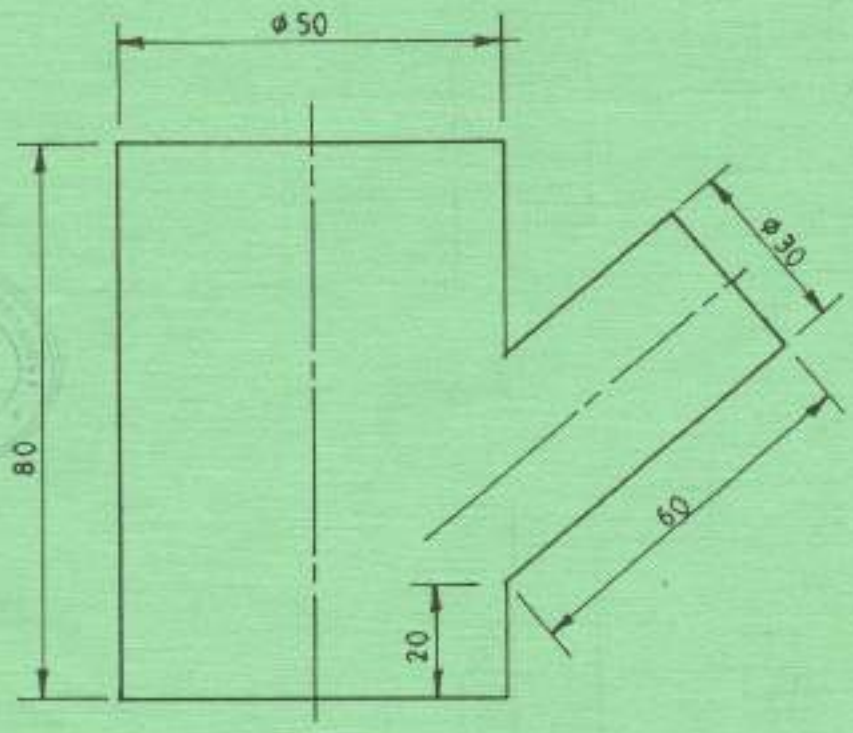

Fig. 1

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)

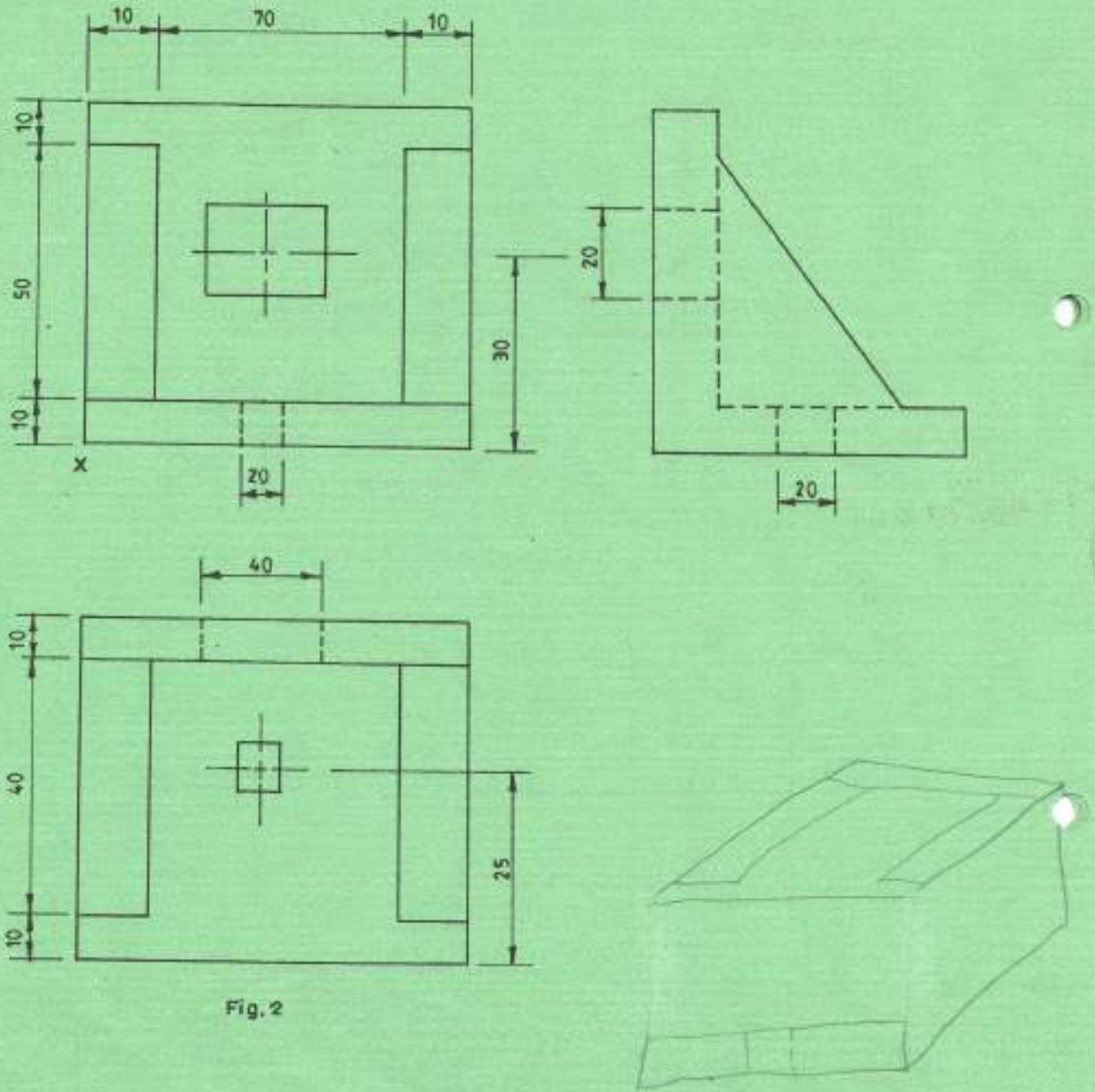

Fig. 2

SECTION C: CONSTRUCTION PLANT

*Answer **ONE** question from this section.*

7. (a) State **five** reasons for using construction plant. (5 marks)

(b) State:

(i) **four** advantages of hiring plant;
(ii) **four** advantages of owning plant. (8 marks)

(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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