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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**

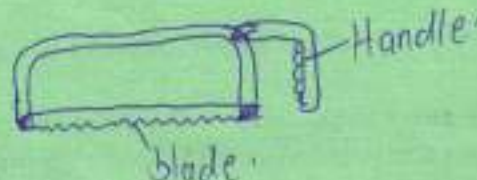
Answer **TWO** questions from this section.

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)  
*Topography*
- (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)  
*Depth of excavation, Distance to dumping site, Output of excavation, Height constraint.*
- (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)  
*fill*

**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 80 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)

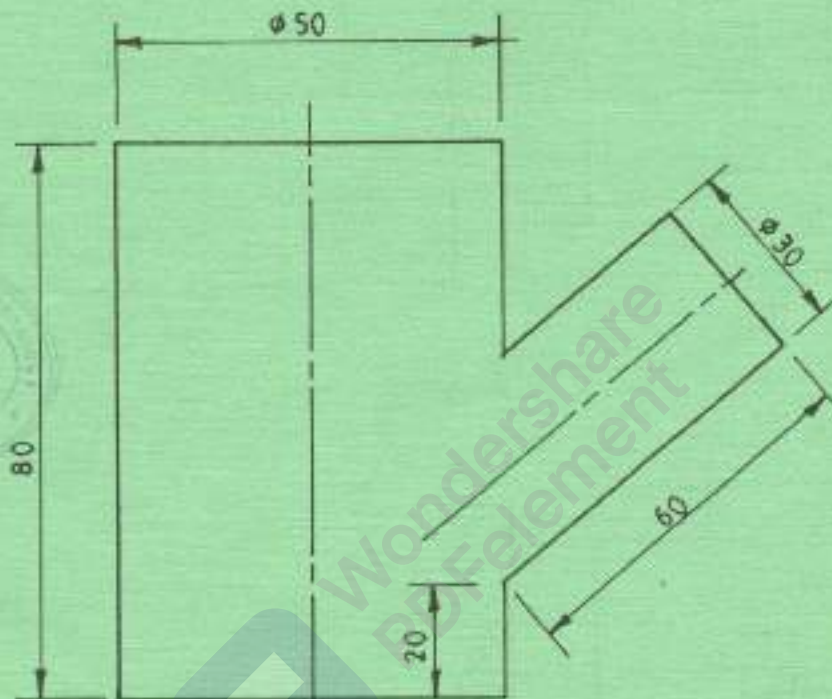


Fig. 1



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)

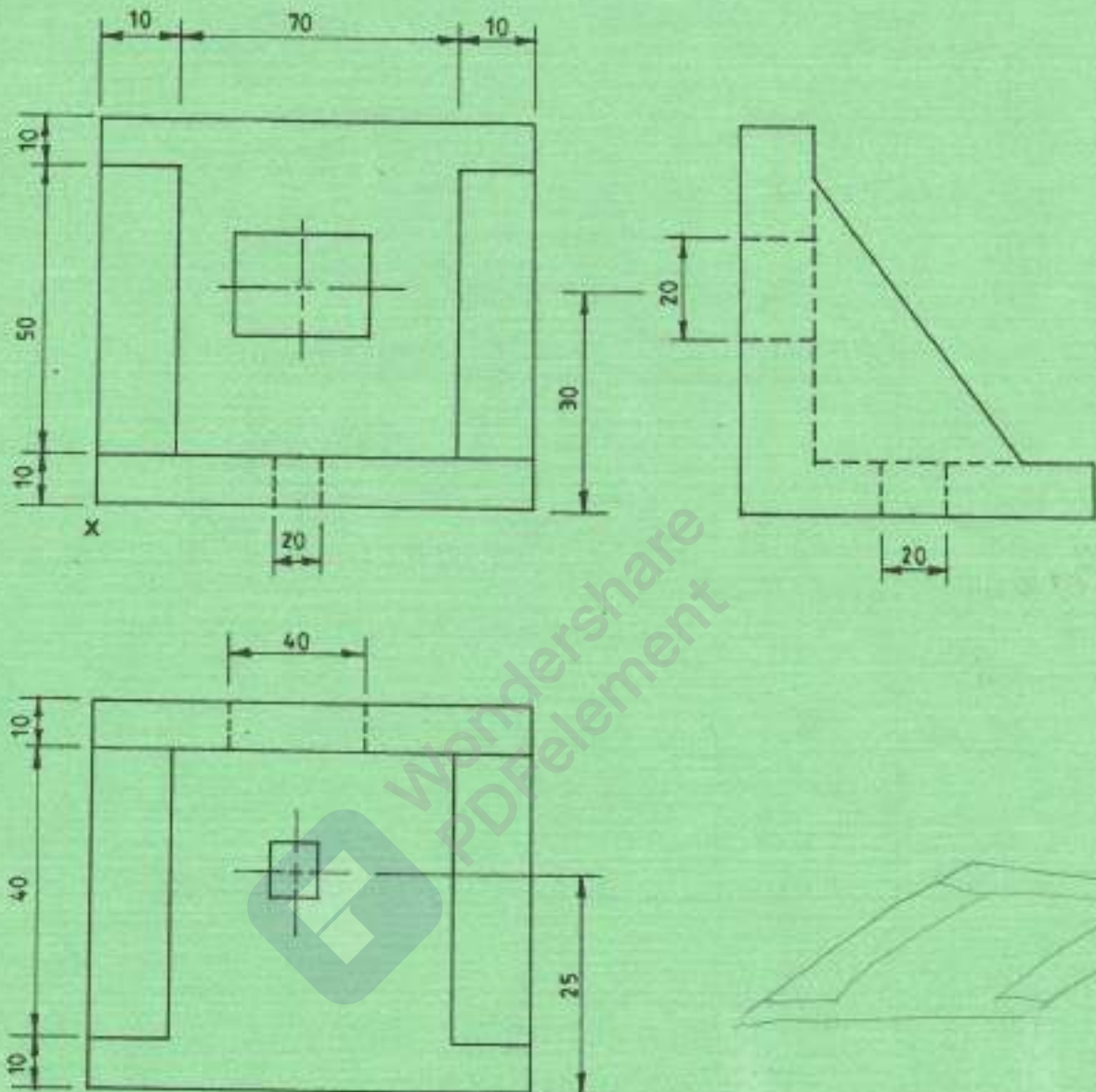


Fig. 2

**SECTION C: CONSTRUCTION PLANT**

Answer *ONE* question from this section.

7. (a) State five reasons for using construction plant. (5 marks)
- (b) State: (8 marks)
- (i) four advantages of hiring plant;
  - (ii) four advantages of owning plant.
- (c) With the aid of a sketch describe two wheeled roller. (7 marks)
8. (a) Explain the following terms in relation to trucks: (6 marks)
- (i) pay load;
  - (ii) struck capacity;
  - (iii) heaped capacity.
- (b) Outline five factors that determines the output of a transportation plant. (10 marks)
- 16 AUG 2017 (c) Explain each of the following terms as used in drilling and blasting: (4 marks)
- (i) blast hole;
  - (ii) booster;
  - (iii) burden;
  - (iv) face.

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