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

Oct./Nov. 2022

Time: 3 hours



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**DIPLOMA IN BUILDING TECHNOLOGY  
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:*

- Answer booklet;*
- Drawing instruments;*
- Drawing paper size A3;*
- Scientific calculator.*

*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.*

*All questions carry equal marks.*

*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) Outline **four** roles of a quantity surveyor in the building process. ✓ (6 marks)
- (b) State **two** advantages of using 3 : 4 : 5 method in setting out. ✓ (2 marks)
- (c) Illustrate the following method of protection to excavations: ✓
- (i) soil heaps; (8 marks) ✓
- (ii) continuous rail fixed on poling boards. (4 marks) ✓
- (d) Explain **two** activities in site clearance. (5 marks)
- (e) With the aid of a sketch, describe the sump method of dewatering. (5 marks)

2. (a) (i) State **three** causes of foundation failure. ✓
- (ii) **Figure 1** shows a profile of a sloping site. Sketch and label a suitable foundation for a domestic house. (8 marks)

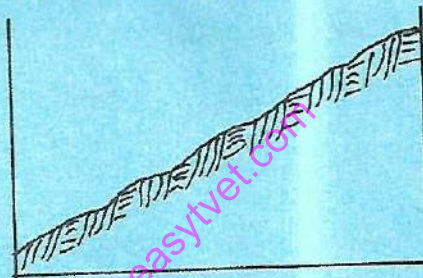


Fig.1

- (b) State **five** effects of dampness in a building. (5 marks)
- (c) Outline **four** causes of cracking in walls. (6 marks) ✓
- (d) Outline the procedure of fixing a door frame as the construction work progresses. (6 marks) ✓
3. (a) State **three** rules observed in bonding blockwork. (3 marks)
- (b) Outline **four** reasons for underpinning. (6 marks)
- (c) (i) State **two** purposes of hard core in ground floor construction.
- (ii) Sketch and label a vertical section through a solid ground floor. (8 marks)

- (d) Explain **four** causes of a smokey chimney. (8 marks)

### SECTION B: TECHNICAL DRAWING

Answer **TWO** questions from this section.

4. (a) Draw a line  $AB = 135$  mm and divide it in the ratio 2 : 3 : 5. (3 marks)
- (b) Illustrate how the paper sizes A0 to A5 are generated. (5 marks)
- (c) Draw a circle to touch three sides of triangle  $XYZ$  given  $XY = 90$  mm,  $YZ = 80$  mm and  $XZ = 70$  mm. (7 marks)
5. **Figure 2** shows a pictorial drawing of a shaped block. Draw the orthographic views in first angle projection. (15 marks)

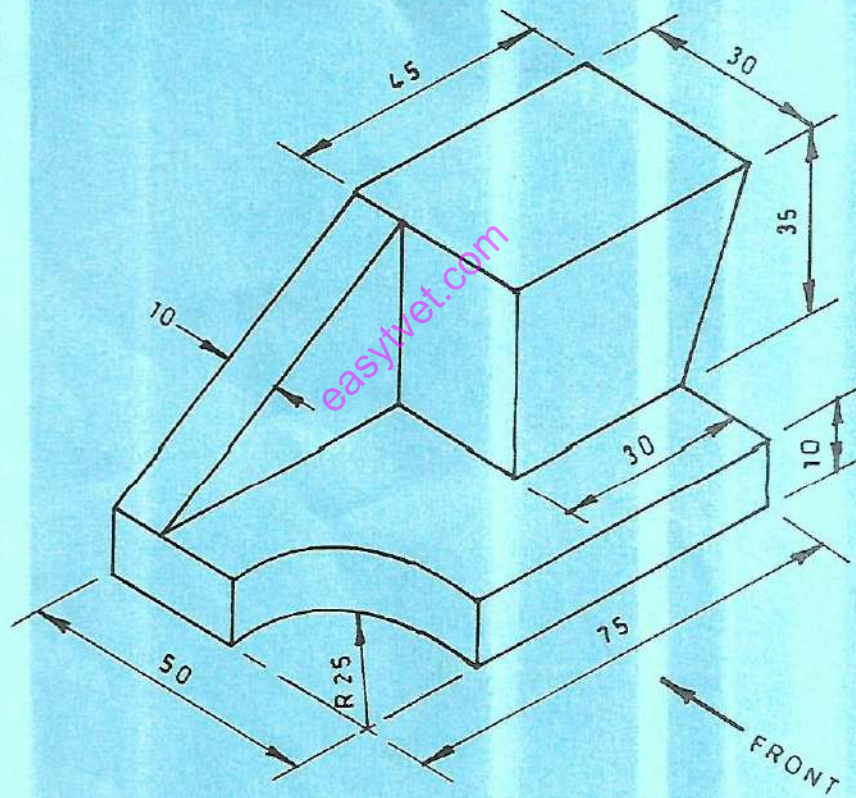


Fig.2

6. Figure 3 shows the intersection between two unequal pipes.

(a) Copy and complete the given views.

(b) Draw the surface development of the smaller pipe slit along S - S. (15 marks)

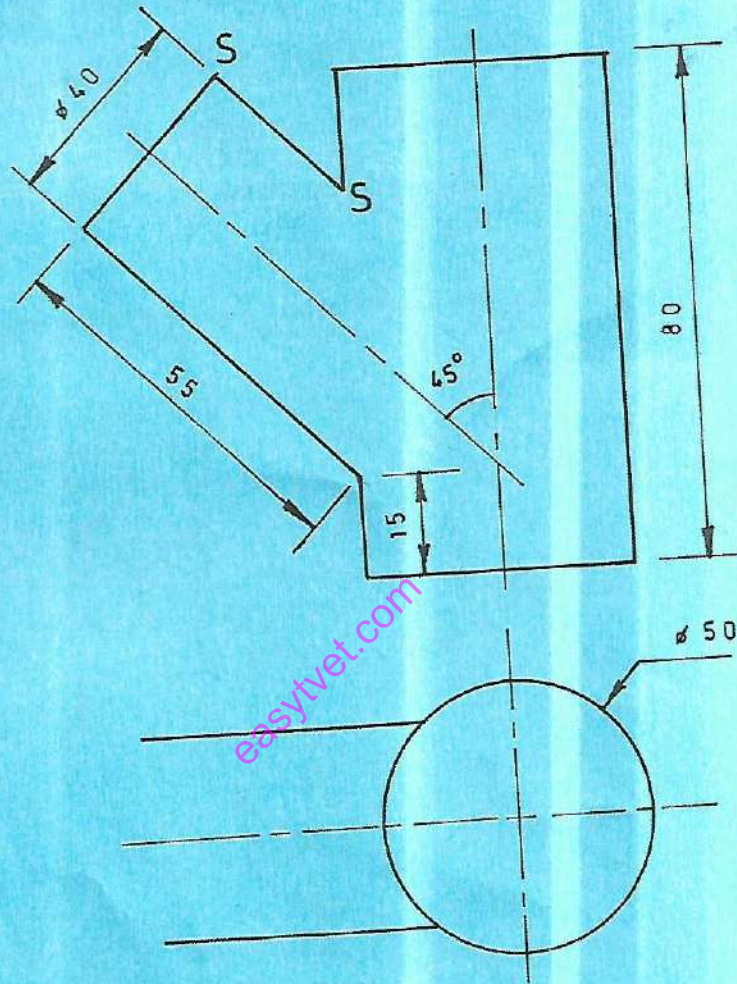


Fig.3

## SECTION C: CONSTRUCTION PLANT

*Answer ONE question from this section.*

7. (a) (i) Name **six** classifications of construction plant. (8 marks)  
(ii) State **five** reasons for using plant in the construction industry. (6 marks)
- (b) Describe the **three** types of rollers. (6 marks)
- (c) Sketch and label a six wheeled grader. (6 marks)
8. (a) State **four** advantages of using a belt conveyor. (4 marks)
- (b) Differentiate between rear dump truck and a bottom dump truck. (4 marks)
- (c) State **five** factors considered in the selection of an excavating plant. (5 marks)
- (d) With the aid of a labelled sketch, describe a lorry mounted telescopic crane. (7 marks)

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