THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL OF TANZANIA

FORM TWO NATIONAL ASSESSMENT

072 **ARCHITECTURAL DRAUGHTING**

Time: 2:30 Hours. **ANSWER** **Year: 2024**

Instructions

1. This paper consists of sections **A**, **B** and **C** with a total of **seven (7)** questions.
2. Answer **all** questions.
3. Section A carries **15** marks; section B carries **45** marks and section C carries **40** marks.
4. All writing must be in **black** or **blue** ink and drawings must be in **pencil**.
5. Cellular phones and unauthorized materials are **not allowed** in the examination room.
6. Write your **Assessment Number** at the top-right hand corner of every page.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORE	EXAMINER'S INITIIALS
1		
2		
3		
4		
5		
6		
7		
TOTAL		
CHECKER'S INITIALS		

1. Choose the correct answer from the given alternatives and write its letter in the box provided.

(i) Who is responsible for financing construction projects among the following building team members?
A. An architect
B. A general foreman
C. A contractor
D. A client

Correct answer: D (A client)

A client is the owner or sponsor of the construction project and is responsible for providing the financial resources required for its completion. The architect designs, the contractor builds, and the foreman supervises, but none of them fund the work.

(ii) Which instrument will you use to draw a horizontal line when using an A1 drawing board?
A. Tee-square
B. Set square
C. Protractor
D. Compasses

Correct answer: A (Tee-square)

A Tee-square is used on a drawing board to draw horizontal lines and to guide set squares when drawing vertical or inclined lines. It ensures precision in technical drawings, which is essential for architectural work.

(iii) An engineer is inspecting a floor plan drawing sheet for the site work. Which position should he locate the title block?
A. At the lower left corner of the sheet
B. At the lower right corner of the sheet
C. At the centre part of the sheet
D. At the upper right part of the sheet

Correct answer: B (At the lower right corner of the sheet)

The title block is always located at the lower right corner because this position remains visible even when the drawing is folded. It also provides easy access to essential information such as the title, scale, date, and name of the draughtsman.

(iv) Suppose you are required to make a pavement block in quadrilateral shape in which all of its side's angles are equal. What is the shape of the pavement block?

A. Trapezoid

B. Rhombus

C. Rhomboid

D. Trapezium

Correct answer: C (Rhomboid)

A rhomboid has all its sides and angles equal, making it a quadrilateral where opposite sides are parallel, and all angles are equal but not necessarily right angles. This differentiates it from a rhombus or trapezoid.

(v) Suppose you are practising to draw geometrical figures with a compass and a ruler. Which angle is not possible to construct with the instruments you have?

A. 60°

B. 45°

C. 40°

D. 120°

Correct answer: C (40°)

A 40° angle cannot be constructed accurately using only a compass and a straightedge because it is not a standard geometric construction angle. Angles such as 60°, 90°, 120°, and 45° can be constructed through basic bisections and equilateral triangle methods, but 40° cannot.

(vi) The projection where the projectors are parallel to each other and also perpendicular to the plane is referred to as

A. Perspective

B. Isometric

C. Oblique

D. Orthographic

Correct answer: D (Orthographic)

Orthographic projection uses parallel lines that are perpendicular to the projection plane to represent an object accurately in two or more views. It is commonly used for technical drawings to show true dimensions.

(vii) You are asked to draw a perspective view of an object. Where will the projection lines converge?
A. At the varnishing point
B. At the ground line
C. At the horizon line
D. At the eye point

Correct answer: C (At the horizon line)

In perspective drawing, projection lines converge at a vanishing point located on the horizon line. This creates the illusion of depth and distance, simulating human vision accurately.

(viii) Which one is the shape of architectural drawing scale ruler?
A. Flat and hexagonal
B. Triangular and beveled
C. Triangular and flat
D. Triangular and hexagonal

Correct answer: B (Triangular and beveled)

An architectural scale ruler is triangular with beveled edges, allowing multiple scales to be included on one instrument. The beveled shape also makes reading measurements more precise and comfortable.

(ix) How would you represent a diameter of a circular soak away pit when dimensioning?
A. D
B. Dia
C. Ø
D. d

Correct answer: C (Ø)

The symbol Ø is the standard engineering and architectural notation for diameter. It is universally recognized and avoids confusion when specifying circular dimensions in technical drawings.

(x) A draftsman must not use a scale which is either enlarging or reducing when drawing a plan of an object. Which scale should a draftsman use?

A. 3:2

B. 1:4

C. 1:0.5

D. 1:1

Correct answer: D (1:1)

A 1:1 scale means full-size drawing, where the drawing size is exactly equal to the real object's size. This scale is used when the object fits on the drawing sheet without needing reduction or enlargement.

2. Match the description of architectural draughting lines in List A with the corresponding parts of a circle in List B by writing the letter of the correct response below the item number in the table provided.

List A

(i) A straight line drawn through the center, meeting the circumference at both ends.

(ii) A straight line drawn from the center to the circumference.

(iii) A straight line drawn across the circle, meeting the circumference at both ends.

(iv) A straight line which touches the circumference.

(v) Any part of the circumference.

List B

A. Chord

B. Segment

C. Tangent

D. Sector

E. Arc

F. Diameter

G. Radius

H. Normal

Correct Matching:

(i) F – Diameter

(ii) G – Radius

(iii) A – Chord

(iv) C – Tangent

(v) E – Arc

3. (a) Explain the importance of adding auxiliary views on the orthographic projection.

Auxiliary views are important because they show the true shape and size of inclined surfaces that cannot be seen accurately in the main orthographic views.

They help in visualizing and dimensioning slanted or oblique features of objects which appear distorted in the primary projections.

(b) Analyse four steps to be followed in drawing an auxiliary view.

The steps in drawing an auxiliary view start with

1. identifying the inclined surface that needs to be represented in true shape.
2. Then, a new reference line or auxiliary plane is drawn at right angles to the inclined surface.
3. Next, projection lines are extended perpendicularly from the chosen surface onto the auxiliary plane.
4. Finally, transfer the distances from the front or top view to complete the auxiliary view accurately.

(c) Differentiate between secondary and partial auxiliary views.

A secondary auxiliary view is drawn from a primary auxiliary view to show the true shape of a surface inclined in two directions,

while a **partial auxiliary view** includes only the inclined portion of the object that needs clarification, not the entire object.

4. (a) Identify five factors that should be considered when selecting the appropriate pencil for a particular drawing.

When selecting an appropriate pencil, the draughtsman should consider

(i) the type of drawing to be made, such as construction lines or final outlines.

(ii) The required line thickness is also important, as detailed work requires fine leads.

(iii) The nature of the paper surface must be considered because rough paper suits hard leads while smooth paper suits soft leads.

(iv) The durability of the pencil matters for long drafting tasks, and lastly,

(v) the draughtsman's hand pressure affects the hardness level chosen.

(b) Explain the use of hard pencil lead, medium pencil lead, and soft pencil lead in architectural draughting.

Hard pencil leads, usually marked H, are used for fine construction lines because they produce thin, light marks that erase easily.

Medium pencils, marked HB or F, are used for ordinary outlines and general work.

Soft pencils, marked B or 2B and above, produce thick and dark lines suitable for final outlines, lettering, and shading.

5. A welder is required to choose among various drawing of the polygon in order to produce formwork

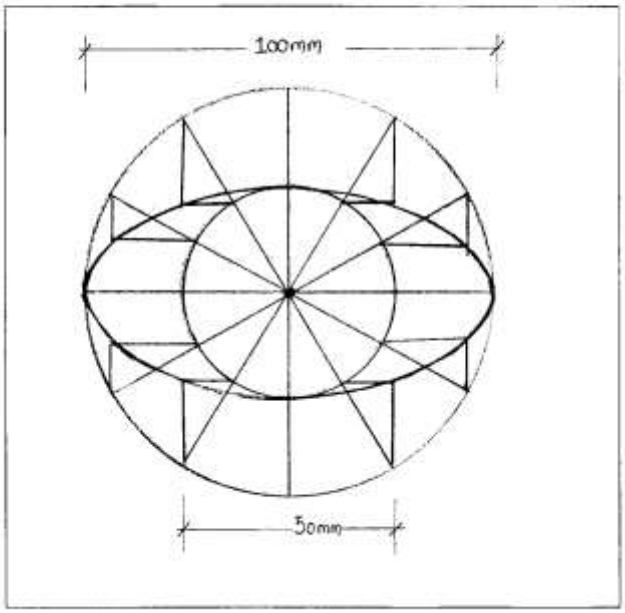
for pavement blocks. If an ellipse is chosen;

(a) Describe the shape of pavement blocks to be produced.

The shape of pavement blocks will have two axis or diameter which are lagre diameter (major diameter) and small diameter (minor diameter)

(b) Draw an ellipse by using an auxiliary method given that the major and minor axes are 100 mm

and 50 mm respectively.



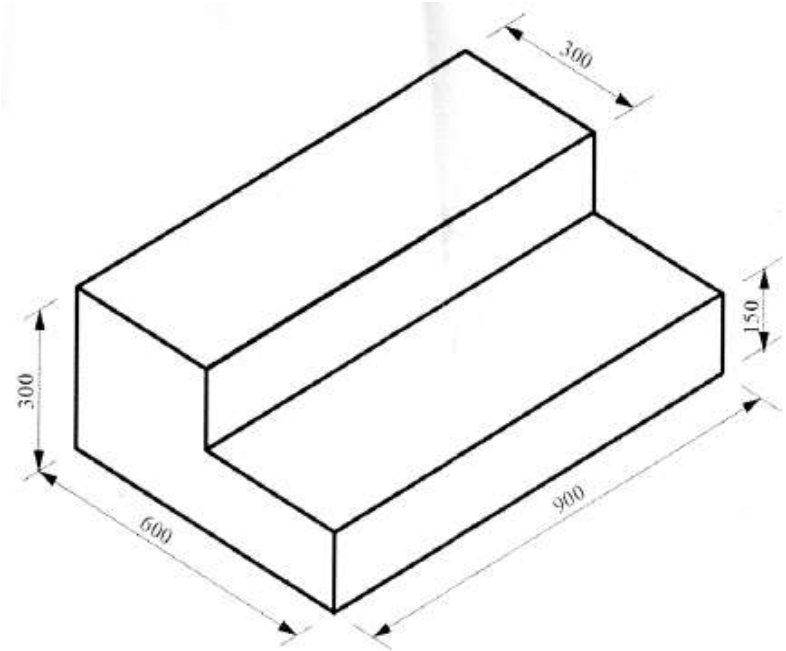
SECTION C (45 Marks)

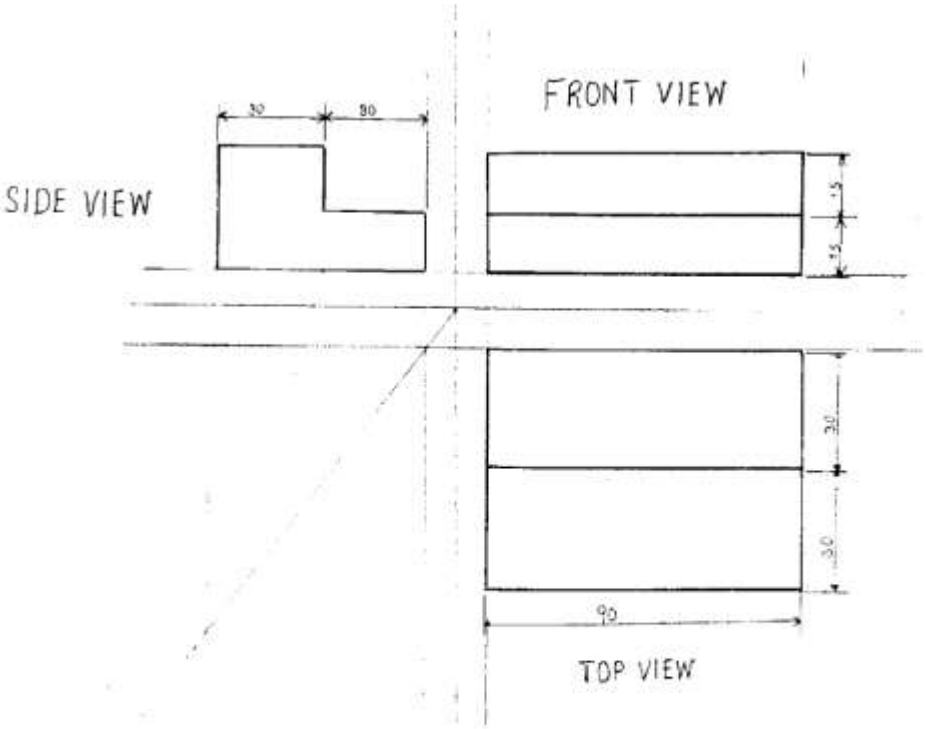
Answer **all** questions in this section.

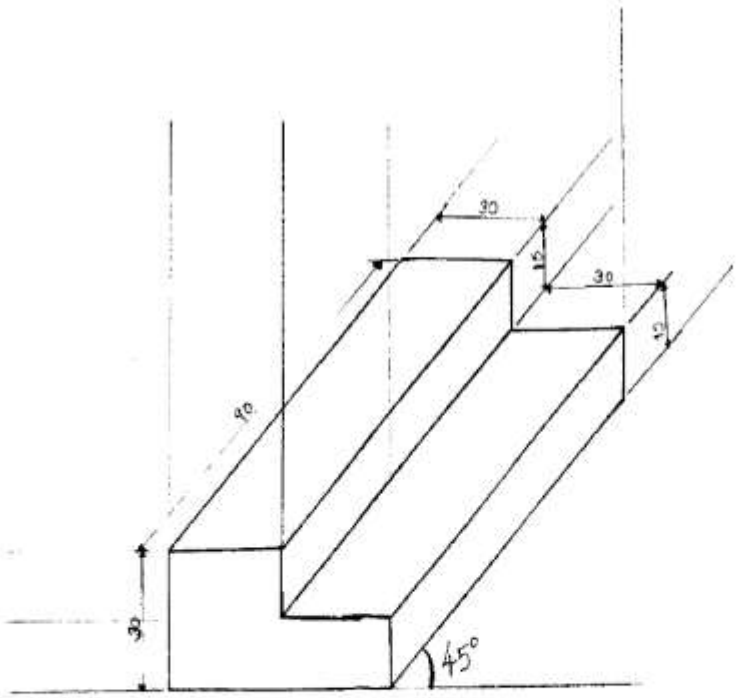
6. The figure below is a sketch of a residential house step. By using a scale of 1:10, draw:

   (a) The plan and front elevation of a step in first angle projection.

   (b) The cavalier oblique projection when given an oblique angle of 45°.





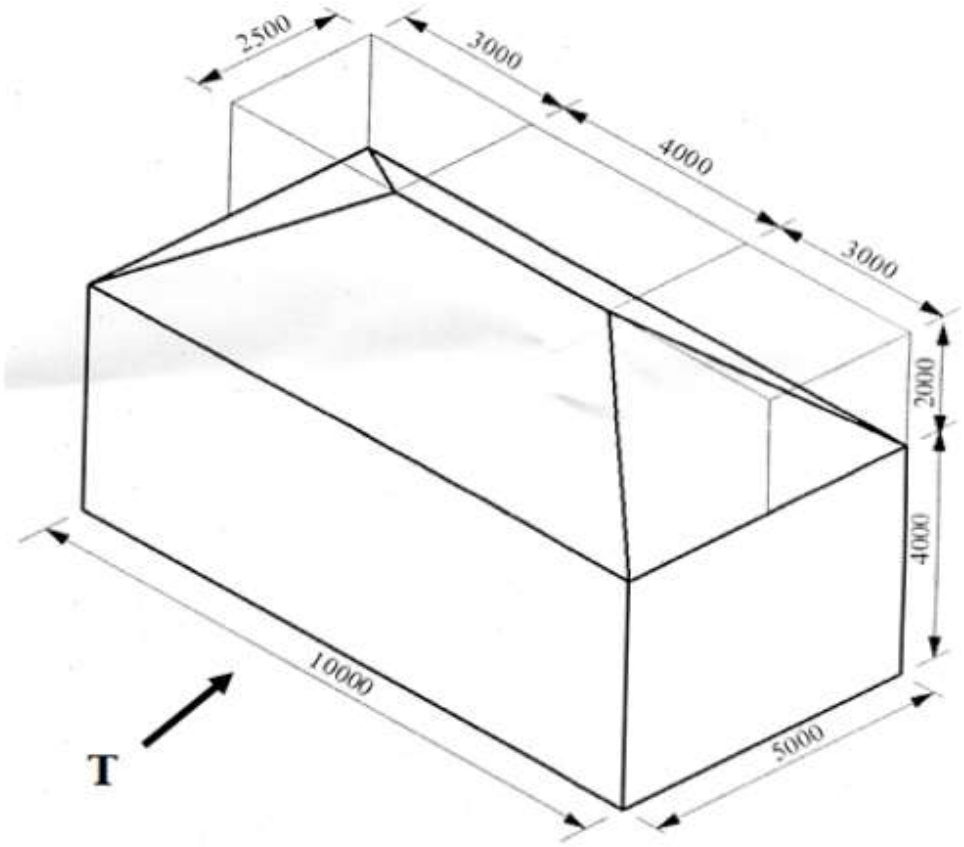


SCALE: 1:10	CAVALIER	No	FORMAT
DIM: mm		6(b)	A3

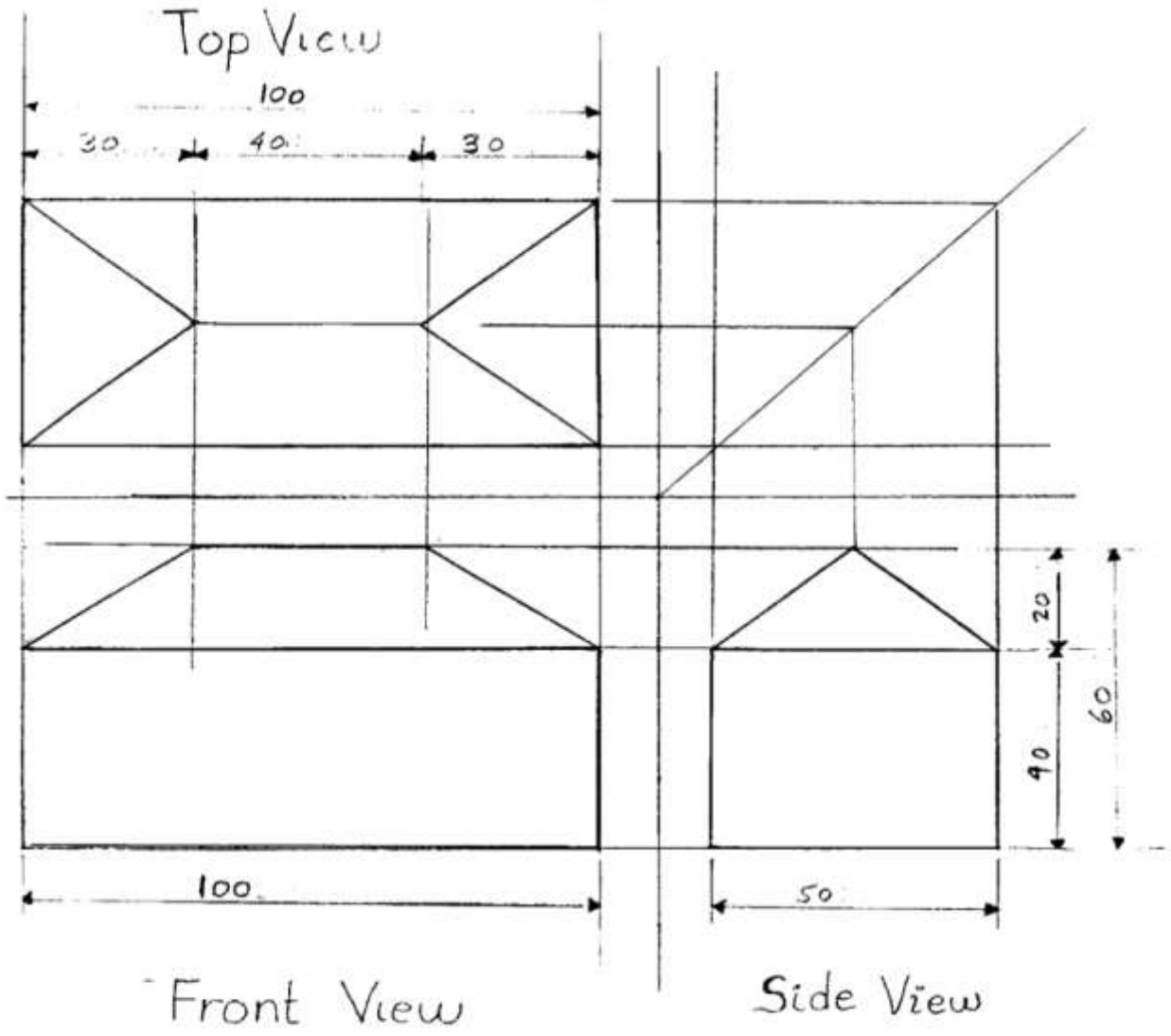
7. The figure below is a pictorial model sketch of a house with missing elevation. By using a scale of 1:100, draw:

   (a) The front elevation indicated by arrow T, right side elevation, and plan in third angle projection.

   (b) The isometric projection.



7(a)



SCALE : 1:100	THIRD ANGLE PROJECTION.	A_3
DIMENSION: mm		
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